

BRITAIN'S LEADING MAGAZINE FOR ATARI ST OWNERS

ISSUE 4 ■ NOVEMBER 1989 ■ £2.95

ST FORMAT

COVER DISK 4



INTERPHASE

EXPLORE OUR EXCLUSIVE
PLAYABLE DEMO OF MIRROR-
SOFT'S BREATHTAKING CYBER
WORLD! FULL REVIEW PAGE 60

WHAT! NO COVER DISK?
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EXCLUSIVE

STE

THE INSIDE STORY

We break into Atari's ST for the 90s

HOW TO CRACK/LASERPRINTERS/EVADING VIRUSES/TEN TOP GAMES

ALL FIR



GAMES MACHINE "TOP SCORE" AWARD

"Grab hold of Voyager as soon as you can."

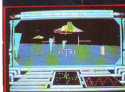
"The most atmospheric 3D game you'll ever play."

ZZAP "SIZZLER" AWARD.
ZZAP 64.



"Dragonninja is fun to play ... well implemented and extremely addictive."
ACE MAGAZINE.

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C+VG GAME OF THE MONTH - C+VG.

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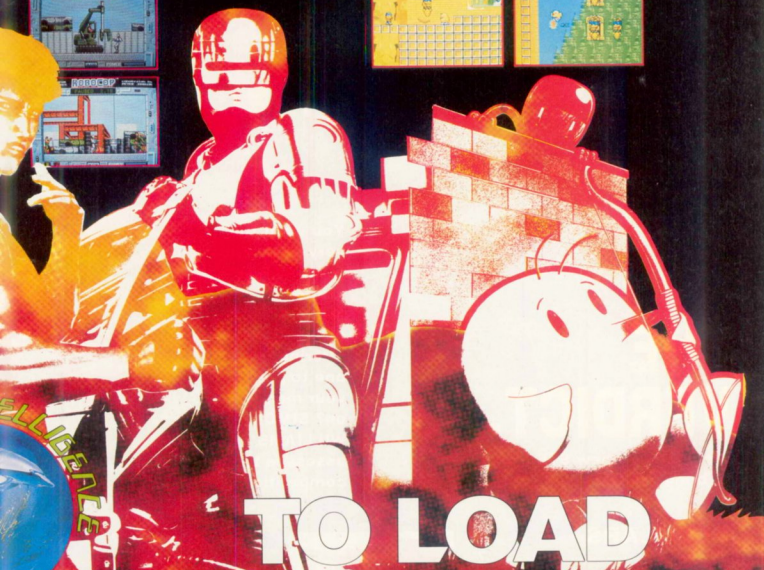
"Irresistible... an arcade-perfect conversion."

ZZAP SIZZLER - ZZAP 64.

"A superb game in every respect."

C+VG HIT - C+VG.

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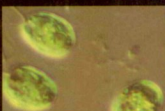
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We rip Atari's new STE wide open to bring you the definitive report.

LASER

You want the very best. You want a laser printer. But is Atari's own peculiar offering the one to put your money on? SIMON WILLIAMS assesses the competition



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Side A

- INTERPHASE** Truly amazing fully playable demo of Mirrosoft's remarkable new cyberworld
- FIRESTORM** An excellent PD game for you to play - and to crack (see our guide, page 93)
- MONST** A monitor/debugger - vital for exploring machine code (see page 93)
- ANIMATE4** Superb animation (see page 102)

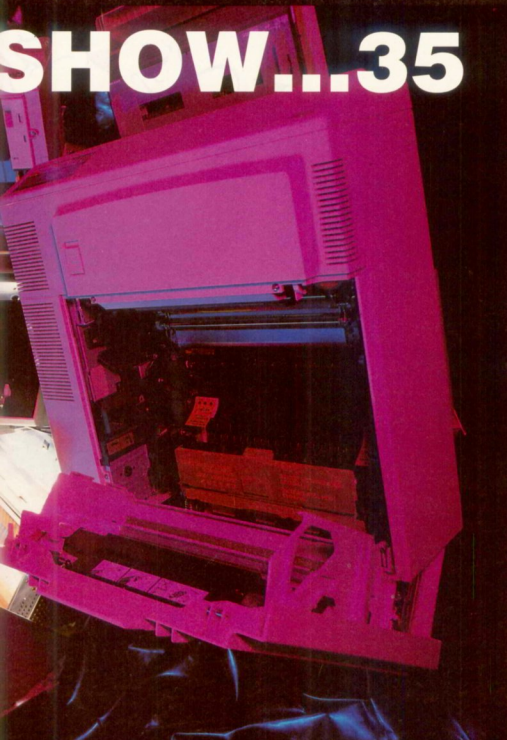
Side B

- GFA DEMOS** Our Basic tutorial illustration (see page 107)
- GENESIS** Lightning fast fractal generator
- INVADERS** Space aliens are back - zap 'em again!
- PLUS** ATOMS • CRUNCHER • HEROES
DSLIDE • TINYSTUF



■ Genesis! Fabulous fractals faster than you can say ST Format!

SHOW...35



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GAMES

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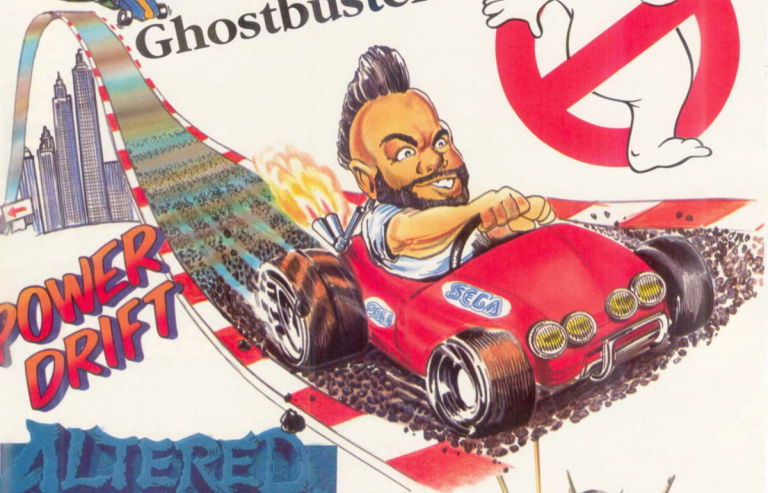
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**THRILLS, SPILLS,
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EXCITEMENT!**

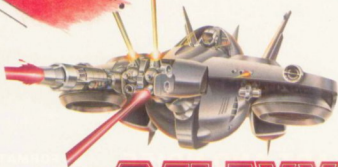


Ghostbusters II



**POWER
DRIFT**

**ALTERED
BEAST**



 **ACTIVISION**

**GALAXY
FORCE**



■ Atari's new £2,000 TT Unix machine gets its first British showing at the 1989 PC Show...



■ ... and the STACYS: extremely sexy (and, at 13lbs, pretty hunky too). £1,300 well spent

ATARI FUMBLE NEW MACHINES

THE
PERSONAL
COMPUTER
SHOW

Atari astonished industry watchers keen to get their first UK view of their new machines at the PC show when they announced a press conference – and then almost totally ignored the TT and STACYS!

Even more bizarrely, the STE was neither displayed nor mentioned. Since the Atari village was the largest of all the exhibition stands, it was confidently expected that much would be made of the new ST compatibles. (Even so we managed to get our hands on one: see full report on page 15.)

Instead they were banished away to a dark corner. In fact it appeared that Atari's attention, like

that of the attendant press, was distracted by a rather sweet piece of PC kit – a £600 286.

The majority of the Atari village was given over to their PC range of machines, with no sign of the STE anywhere and the TT and STACYS Portable confined to a small area at the back of the stand. The reason for this, according to Atari's Peter Walker, was that they "didn't think they would sell."

STACY TAKES HARD LINE

To confuse things even further, it's now been announced that, contrary to previous reports, Atari won't be selling the non-hard drive STACYS laptop in the UK.

Instead, all models released in this country are to contain 20Mbyte hard drives and one, two or four megabytes of memory, retailing from £1,500 up.

To prove that the STACYS is compatible with all ST software and hardware, Hisoft were demonstrating it running Spectre GCR – the Mac emulator which can read Mac disks. Since Mac disks must be read at different speeds depending on the track being read, this is no mean feat.

Unfortunately, the laptop is much heavier than expected (roughly the same as an electric typewriter) – this largely due to the internal hard drive. A backlit LCD

screen gives the full 640x399 pixel display. Unfortunately, screen updating is slow.

Since Apple have recently announced their own Portable Laptop for just under £4,000, the STACYS makes a far cheaper alternative to portability if you want to run it with Hisoft's new Mac emulator – Spectre GCR. One unit was present at the Show, and very impressive it looks too: full review as soon as we can blag one!

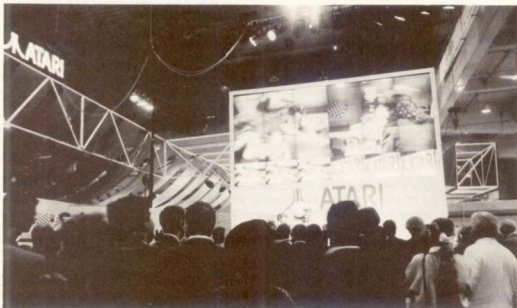
Atari intends to aim the STACYS at serious wordprocessing users and musicians wanting to compose music on tour. They expect the user of this kind of portability to be able to afford the additional cost of a hard drive, which is why they're not selling a model without the drive.

TT RACE

On the TT side, Atari received five models from Germany just in time to take them to the show. These models were allegedly saleable, though they're only for demonstration purposes at the moment. Further versions appear for general release this month.

The TT is supposed to be compatible with all existing ST software, yet First Word+, one of the major ST wordprocessors, would not run correctly.

Atari's Product Manager Bob Katz claimed that, "Although First Word+ is good, it makes some unusual calls which are not supported." One wonders how much other software makes these same calls...



■ Pictures from an exhibition: Atari's "Village" was hugely impressive, by far the loudest and brashiest at PC Show '89. Yet the new STE and the STACYS were hardly given floorspace. Why?

FLEET STREET MOVES ON UP

The upgrade to Fleet Street Publisher, Mirrosoft's versatile DTP package, made it in time for the Show boasting major new additions. FSP 3 is now clearly becoming a serious rival for Signa's hitherto unchallenged DTP software, Calamus.

One of Mirrosoft's big boasts is the way that FSP 3 handles multiple-page documents. In FSP 1.1, multiple pages had to be saved as separate files but now you can have almost as many pages as you want with the number dependent on the name of the file.

For example, if you named a file REPORT then this would be renamed to REPORT00.PAG. The 00 extension is the page number so you could use up to 99 pages in its instance. They're still saved as separate files but, as far as the user is concerned, they're all one document.



■ Fleet Street Publisher: spoiling for a fight with Calamus?

An option to group boxes is likely to make page layouts faster to modify. By grouping several boxes together you can move them around as if they're one object and rescale them together.

End of the line for PC Show?

There was much talk at the Show that we could be seeing its death throes. Its two organisers, VNU and Montbuild, were at each other's throats, alleging breach of contract, unfair tactics and generally Not Playing Ball. To add to the rumours, publishing and exhibition giants EMAP announced a show for next autumn at Earls Court.

■ Meanwhile, Atari's UK boss Bob Gleadow (pictured right, under the hammer) told *ST Format* of the company's intentions to organise a show for the first half of 1990.

The plan (as it stands this week) is to gather together programmers, business users and gamers in a location where each could have separate territory to pursue their own interests, without having to fight for space.

THE
PERSONAL
COMPUTER
SHOW

HALF PRICE MAC ON OFFER!

Hisoft's Spectre GCR, the much talked about Mac emulator capable of reading Mac-formatted disks, made its presence known at the Show – even if it was only a single unit on the HiSoft stand, running on a STACY.

The deal includes Spectre version 2, which boasts increased compatibility and better sound (still not quite as good as a genuine Mac, though).

Release dates are still a month away. HiSoft are selling GCR for £379; price for an upgrade from Spectre 128 has not yet been announced.

■ Look out for the full review of Spectre 128, coming up soon in *ST Format*.

One of the best options is support for Postscript. The entire page can be saved on disk as a Postscript file so you could then send it to a bureau for specialised printing. Postscript support was added to an extra version of FSP – version 2 and distributed in the States alone.

On top of all of this is a phonetic spell checker which presents an option box whenever suspect spellings are encountered. For example, if you spelt phonetic as fonetik (not that you would, of course) then the correct spelling would be suggested.

Fleet Street 3 is £200, with upgrades costing £100. Mirrosoft are on 01-928 1454.

GIVING THE RUNAROUND

FSP 3 is keeping the same standard WIMP environment as its parent which is far easier to pick up and learn than Calamus' icon driven setup. You can now import GEM metafiles and an improved range of editing facilities lets you manipulate them easily.

It's possible to draw a line around images and have text run around it, allowing much improved layout designs. This irregular text repel block is treated separately from the image and can be moved around the page.

TO ABSENT FRIENDS: THOSE THAT NEVER MADE IT

It's an age old tradition at any computer show that the machines, releases and enhancements most eagerly expected and most fervently announced don't actually appear. The PC Show is no different. Join with us, then, in toasting a few absent friends...

■ St Peter – Gabriel, that is. Shrewd Atari press officers hinted that "someone big in the music world" (Plácido Domingo?) would be putting in an appearance at the Atari Village, and then refused to confirm or deny rumours that the muso concerned may or may not be Peter Himself, nudge nudge.

Of course the right-on crooner – who'd attend the opening of an envelope provided it was made of recycled paper and had Amnesty International stamped on it – was never booked...

■ Instead the musician actually booked was someone who's very well known to her fans, we're sure, Julia Fordham. The flaxen haired songstress, whose backing band won't leave home without an ST (it says here), was held up in traffic and turned up late for the press conference.

■ Arnor's "major update" to *Protex*, promised for the PC show, also failed to materialise: we are unlikely to see it now until 1990. Expect support for Contents Table, footnotes and various database options. We'll pass on the news as soon as we get it.

■ Power Computing's *PC Ditto 2*, the software-based PC emulator, was also promised, and likewise failed to catch the right tube. Source US software house, *Avant Garde*, have left an entertaining



■ Gleadow ponders Atari's next move as media midget Mallett piles on the pressure

recorded announcement on their phone answering machine to tell callers that a "new version will be along soon." Enhanced features should include greater compatibility with PC software and, most important of all, extra speed. Now Power are pessimistic about it arriving before Christmas.

■ Software houses that chose to stay away from the Show included Electronic Arts, Mirrosoft, Activision and MicroProse – though these last two had booths almost as big as telephone boxes, and MicroProse were entertaining honoured friends and guests upstairs.

■ Domark, usually to be relied upon to pull some daft "wacky funster"-type stunt, were looking very sober and disturbingly grown up – a phase they're going through?



Great cartoon action from Space Ace - due out in time for Christmas

ACE IN SPACE

Readysoft are releasing a follow-up to the mighty *Dragons Lair*, *Space Ace*, before Christmas. This is somewhat unconventional, since the sequel will arrive far in advance of the original, which won't now make its ST debut until early next year.

Space Ace, a cartoon action game based around the popular video of the same name, is being developed simultaneously on the ST and Amiga, with demos already in circulation. If they're anything to go by, the game will run extremely fast and feature terrific animation sequences.

Space Ace is expected to run on four to six double-sided disks - the final number depending on compression methods employed. Single-sided drive owners are confined to just half a game but there are no heavy memory requirements being made - the game will run on 520s and above.

Entertainment International are handling distribution in the UK and expect to sell it for a cool £44.95 - the same price as their Amiga conversion of *Dragon's Lair*.

"We have lots of 16-bit products lined up over Christmas," boasted Marisa Pauwels, EIs product manager, "and *Space Ace* will be one of our major 16-bit titles in the lead up to Christmas."

SHOPPER SHOW: FINAL LINE-UP

The Computer Shopper Show is almost upon us. The Show, which takes place at Alexandra Palace from November 24-26, promises to be "the best Christmas shop you'll ever enter." As a special bonus, take this issue of *ST Format* with you, tell 'em we told you to, and you'll get 50p off the entry price. Can't say fairer than that, now can we?

Last month we announced a fabulous Shopper Show competition, in which one lucky blighter stands to win a five minute helter-skelter chase through the exhibition grabbing anything and everything - hardware and software - on show.

The lucky winner is... oh dear, the first one out of the bag had nothing written on it! The real winner is **J. Leitch** of Llanishen in Cardiff. Well done to him or her (why so formal? Why no Christian name?), and the team looks forward to meeting you at Ally Pally.

By the way, we now have the full list of exhibitors who'll be assisting **J. Leitch** to fill his/her trolley. They are: A&S Distribution, A1 Computer Supplies, Audio Visual Research, B Bytes, Bath Computer Shack (hi, chaps!), Care Electronics, Caspell Computer Services, Computer Communications, Computer Manuals, Computer Store, Database Software, Digita International, Direct Disc International, Direct Disc Supplies, Dowling Computers, Eclipse Computer Supplies, Evesham Micros, Equinox Business Systems, Escroe, Frontier Software, GST Software, Graduate Computing, Graft Vent, HSV Computer Services, Hi Soft, Homesoft, In Store Marketing, Kador, Kempston Data, Little Office, MCD Software, MD Office Supplies, Main Media, Mandarin Software, Manor Court Supplies, Megaland, Microtron, Reflex, Silica Shop, Tynesoft and finally, if only alphabetically, Westoning. Phew, get something from each of that lot and you'll have one heck of a stacked trolley. **J. Leitch!**



QUICKIES • QUICKIES • QUICKIES

■ We've had a number of phone calls from people who were so taken with Akom Ltd's *Times* and *Sun* crosswords on last month's Cover Disk that they want to know more. Volumes of each, featuring 60 crosswords from either *Times* or *Sun*, cost £19.95 and £18.95 respectively: until Christmas, however, there's £1 off each. (There's several volumes in the *ST Format* office the editor would be grateful to lose, since his staff have been spending hours on them!) Get in touch with Akom on 01 852 4575 or write to 51 Manor Lane, London SE1 3 5QW.

■ Apologies to Dataplex of Berkshire: due to circumstances that should have been entirely within our control we managed to screw up their ad. We should have said that their prices exclude VAT. Oops, sorry chaps!

■ Mastertronic is talking a good fight about its new £4.99 label, 16 Blitz (geddit). "We feel the time is right to attack the 16-bit market," Virgin Mastertronic veteran Frank Herman said, "and set a precedent the rest of the industry will follow." Apparently no-one will buy £9.99 games, but everyone's going to splash out on a fiver, as it were.

ST FORMAT NEXT MONTH

The December edition of *ST Format* hits the streets on **THURSDAY NOVEMBER 16**. Here's a glimpse of some of the goodies in store:

ON THE DISK

An exclusive fully playable demo of Ocean's *Op Wolf* follow-up *Operation Thunderbolt!*

TONS OF GAMES

More pages dedicated to all that's best in ST entertainment than ever before!

HARD DISKS: A MAJOR ROUND-UP

We check out the latest in mass data storage from Gasteiner, Third Coast and more

SCANNER SUZUKI

Don't spend a penny (!) until you've read our exclusive guide to the field

ROBOKIT

A thrilling new hardware and software robotics package

TELETEXT ADAPTOR

Teletext and the telly on your ST with a brave new device

QUARTET

It's the new sound sensation that's sweeping the ST nation!

PLUS

Page after page of authoritative, informative and entertaining sections on music, art, education, public domain software, adventures, technical hints and tips, games cheats, readers letters, news, reviews and previews, our exclusive US column... you wouldn't get your hat on!

The management wish to make it clear that we are not in any position to complete or indeed accurate account of the goodies you'll be finding between the covers of next month's red hot and still glowing *ST Format*. We expect to have so much stuff it would burst its staples, if it had any to burst. There just ain't no stopping us now!

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More hard drivin'

Two US companies have begun selling removable hard drive units, in competition with Atari's own Megafile 44 (reviewed on page 42). Both are based on the same Syquest mechanism as the Megafile 44, with an average access rate of 25 milliseconds.

As Atari continue to delay US shipment of the Megafile 44, Carter Graphics, of Logan, Utah, is advertising their SQ-44-ST Removable Cartridge. It is priced at \$995, including one 44 Mbyte cartridge. And Toad Computer of Severna Park, Maryland, are claiming they will sell theirs for a hundred dollars less.

CLASSY GAMES FOR THE MASSES

Most popular games for the ST Stateside in 1989 so far: Battle Chess from Interplay (released in the UK by Electronic Arts), Spectrum Holobyte's F16 Falcon, Dungeon Master from FTL (UK release by Mirrorsoft) and Cinemaware's DeathBringer.

Dungeon Master's popularity continues after it ended up best selling game of 1988. This year's top game looks likely to be F16, breaking records on the ST and elsewhere.



■ Screaming ahead: F16

ALL THE WAY FROM AMERICA

Stateside news from EUREKA, our own correspondent

Sam's brave new world

An American ST magazine, *START*, has published a revealing interview with Sam Tramiel, president of Atari Corp.

In comparing the TT to the NeXT system – the sleek new workstation from Apple founder Steve Jobs – Tramiel is reported as saying, "I hope it clobbers them. I hope to be making money from the TT before NeXT comes out in any volume."

Tramiel claimed that the number of STs installed around the world now approaches 1,500,000. Among his comments he discussed possible future generations of the ST family, including a RISC-based system and a TOS-compatible 68040 machine.

MEANWHILE, BACK IN THE REAL WORLD

So much for talk of the future. But despite Tramiel's reassurances that the US will get new products first, new products such as the Portfolio continue to ship to European destinations months before American dealers receive them.

Meanwhile, Atari's financial results for the second quarter of this year, down some 20 million dollars to a disappointing 87 million, are being attributed, not altogether convincingly, to two factors: exchange rate fluctuation and depressed US video games sales.

PLAYING DIRTY

A company spokesman did what he could to put an optimistic gloss on the figures, concentrating on the good news and taking the credit, while explaining away the bad and blaming someone else. "Our computer sales in Europe continued to grow during the quarter," he said, "despite a 10% price erosion due to adverse currency fluctuations."

Rumours have begun to circulate that Atari wish to abandon its US dealer network and sell the entire computer product line direct.

■ This may have something to do with reports that Atari is considering selling the Federated Group, its beleaguered chain of retail electronics stores.

■ Following Atari staff changes is like playing *Battle Chess* with the monitor switched off. Now two of Atari's top executives have resigned: Joe Mendolia, vice president of marketing, and Mike Dendo, vice president of sales.



■ Sam Tramiel tells it like it's going to be

"Video game sales, primarily in the US market, remained depressed as a result of the alleged unfair monopolistic practices of an international competitor, which are now the subject of litigation" – a reference to the tactics employed by Nintendo, who are tying up exclusive deals for their coin-op conversions, and generally upsetting people. Evidently "business is war" only when it suits you.

These are the same old excuses trotted out for declining profits in the first quarter of this year.

■ Warner Communications has announced that it may sell its minority share of about 23% in Atari Corporation stock.

■ Atari Corporation, whose shares are currently fluctuating between \$8-10 each, are one of the most traded companies on the American stock exchange: in one week alone more than two million Atari shares changed hands.

news briefs... news briefs... news briefs... news briefs

■ Mendolia's place, incidentally, has been taken by Jim Fisher, ex-head of marketing at Electronic Arts.

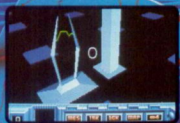
■ Still, it's unlikely Atari will have the same problems with their recently departed staff as SoftLogik, developers of the PageStream DTP package. An employee fired by the company is suspected of having sent them a bomb, which fortunately didn't explode – or perhaps this failure is further evidence of the inefficiency and incompetence for which they sacked him in the first place?

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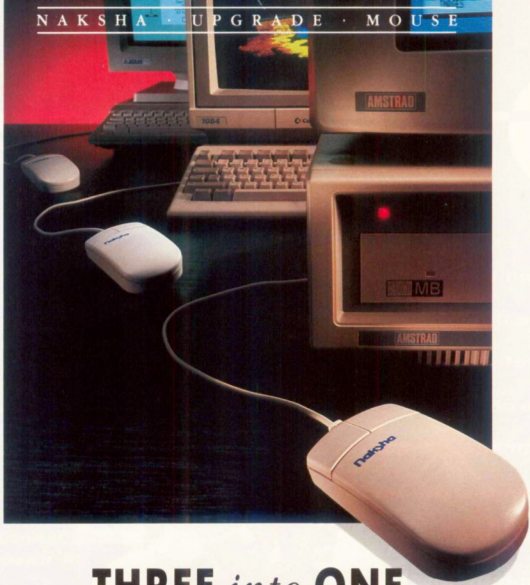
Screenshots from ST version



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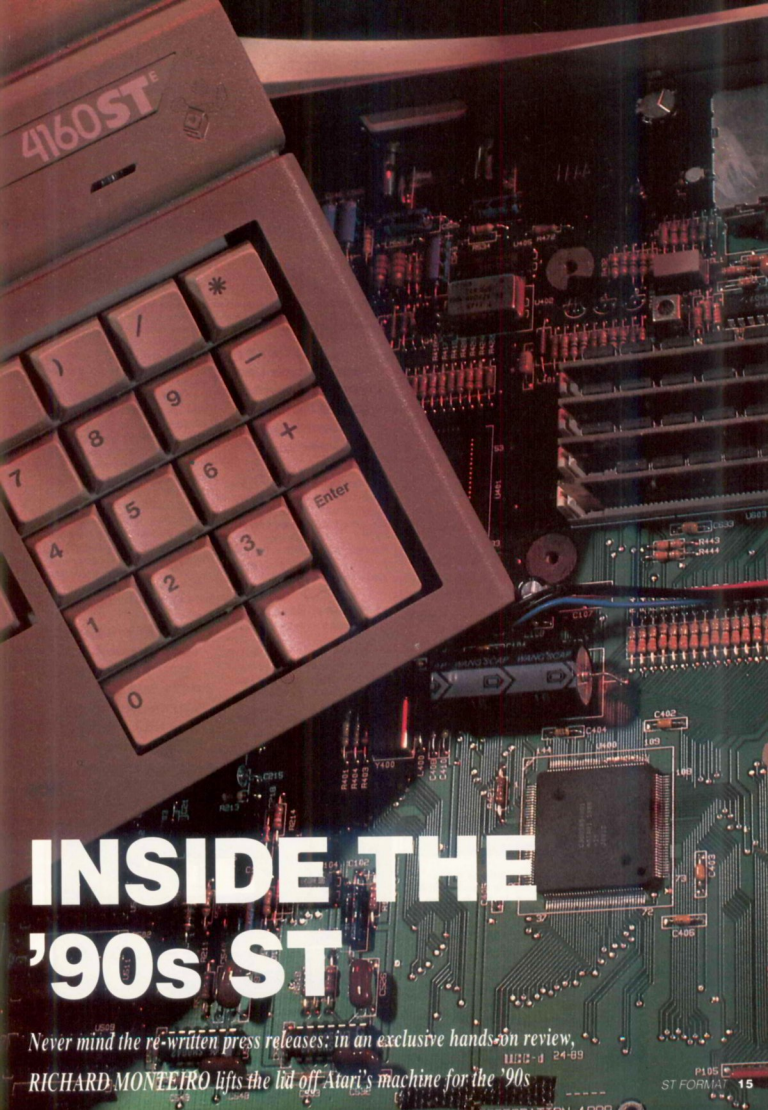
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4160ST^E

INSIDE THE '90s ST

Never mind the re-written press releases: in an exclusive hands-on review,

RICHARD MONTEIRO lifts the lid off Atari's machine for the '90s

1112-J 24-89

After a year of speculation, Atari finally unveiled the STE - E for "enhanced" - at Germany's Atari Messe. Boasting better sound and graphics, new game controller ports and hardware scrolling, the STE also maintains ST compatibility.

If Germany seems an odd place for an American computer giant to launch a new machine, remember that it has an ST user base estimated at 600,000 - the largest in the world. By launching there, Atari can accurately gauge the world's reception.

Atari UK, meanwhile, is playing down the STE, calling it simply the next step in the ST's ever-evolving design - just as double-sided drives have become standard in 520s and TV modulators are built into 1040s.

Indeed, judging by the tiny E on the box, Atari really isn't too keen to shout about the new machine.

Why? Because the computer isn't here yet. Because all the shouting has been done already. Because it doesn't live up to unrealistic expectations. Because there are heaps of standard STs to sell.

VERDICT: STEVE BAK

Software developer/
programmer
(Goldrunner, Return to
Genesis)

"The prospect of the STE doesn't excite me: I won't even look at the machine until Atari has sold several thousand units.

"The problem is that the ST is so well established that it's going to take some spectacular marketing to get the STE noticed.

"When, and if, it does become a moderate success the problems will only just start. Developers will have to write two versions of the same program - three if you count the Amiga."

Nevertheless, the STE is going to become the standard. Not today, but certainly next year.

To date very few programming teams have STE development kits, so unless something unexpected or unannounced occurs, it's unlikely the machine or any software will be widely available until next year. (We can't tell you where we found ours!)

ALL PORTS BULLETIN

In addition to the ST's ports, two phono sockets and two new game controllers have been squeezed in.

Phono sockets are located at the back of the machine, and simply offer left and right channel sound output. An amplifier and speakers can be plugged into these sockets for reproducing stereo sound. Both the YM2149 and DMA sound can be output simultaneously through these sockets.

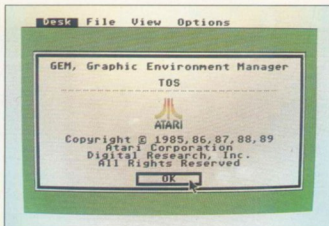
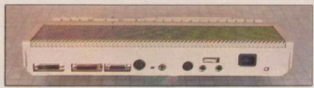
There are two new 15-pin game controller ports on the right side of the computer, just below the MIDI sockets and cartridge slot. Two joysticks can be fitted to each new controller (adaptor required). Paddles can also be plugged into both controllers.

A light gun or light pen can be inserted into the first of the controller ports. The cursor position in the X axis can accurately be measured to within four pixels in 320 by 200 mode, eight pixels in 640 by 200 mode and 16 pixels in 640 by 400 mode. Pixel accuracy is possible in the Y direction.



■ The pinout for the first port (from right to left and top to bottom): 1, up 0; 2, down 0; 3, left 0; 4, right 0; 5, paddle Y; 6, fire 0; 7, VCC; 8, not connected; 9, ground; 10, fire 2; 11, up 2; 12, down 2; 13, left 2; 14, right 2; 15, paddle X. The second port looks after sticks one and three

The STE (below) has RS232, printer, DMA, second floppy, modulator and monitor ports in the same locations as the ST



■ The simple way of discovering which version of TOS your machine has: click on Desktop Info in the Desk menu. TOS 1.6 boasts a pretty rippling Atari symbol and new copyright dates

"Six joysticks? Few games use two... It'd make a great Gauntlet machine!"

- Jez San

The final UK configuration hasn't even been finalised: but if Gleadwood doesn't change his mind again, a 1040STE with 1Mbyte of memory will come first, followed later by a 520STE. Price for the new 1Mbyte machine will be £499 - the same as the existing 1040 it will eventually replace.

SAME AS IT NEVER WAS

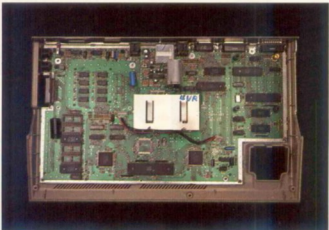
Shiraz Shivi's original ST design has taken some serious pummeling over the years. In its first incarnation the ST appeared in several bits. Eventually everything came together in the now familiar box. Minor internal modifications - cost-cutting exercises, mostly - continually occur. Although Shivi didn't complete work on the STE,

having moved on to Tandem, he started fiddling with the machine almost two years ago.

Externally the STE differs little from its predecessor. Look hard and you notice two new game controllers on the left side and stereo phono sockets at the back. Apart from that, all ports are identical. Inside, things are radically different. Briefly, Shifter has disappeared (swallowed by the memory management unit); the Blitter is present as standard; there's a new chip for handling tone and volume levels; the 68000 processor is - bizarrely - square rather than oblong; and finally, memory comes on neat plug-in boards.

"The ST's so well established it's going to take some spectacular marketing to get the STE going."

- Steve Bak



■ Compare the existing circuitry of the 1040STFM with the STE's layout below. Notice the STE only has four custom chips: DMA, MMU, Blitter and Glue. Although the Blitter isn't present on the ST, there is room for it. And where has Shifter gone on the STE?

A

The LMC1992 volume and tone control chip, a new addition to the standard ST circuit board. The chip alters volume and tone settings in steps of 2dB, and determines whether the YM2149 sound output is mixed with the output from the DAC

B

The modulator in this box allows you to connect STE to TV

C

All DMA (direct memory access) operations are handled by the DMA controller. This 40-pin chip oversees the floppy drive controller, hard drive, laser printer and all other DMA devices. It also looks after PCM (pulse code modulated) sound generation

D

Memory comes on small plug-in boards, each offering 1Mbyte of memory and coming with eight 1Mbit DRAMs. Up to four can be fitted. It's likely that

the STE will come in two configurations: 1Mbyte and 4Mbytes (the model shown here)

E

The WD 1772 floppy disk controller provides low-level access to the STE's doubled-sided 3.5-inch floppy drive. It controls the drive motor, reports on the write-protect status, and reads/writes data

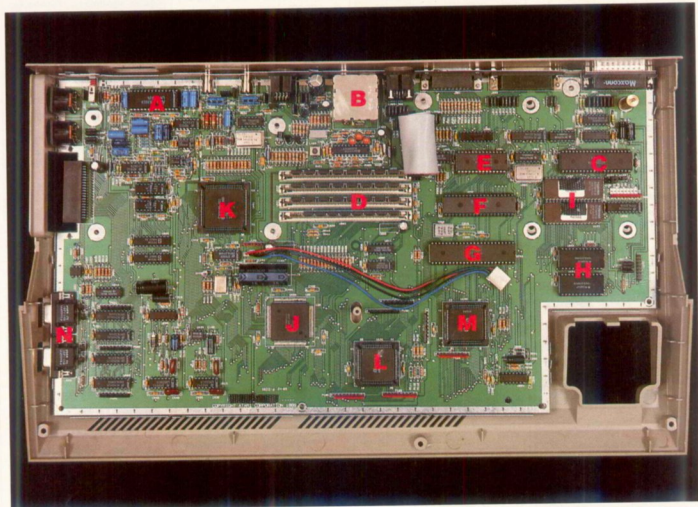
F

Yamaha's YM2149 sound generator maintains inter-ST

compatibility. It offers three independently programmable tone generators, a programmable noise generator, completely software controlled analogue output, programmable mixer for tone and noise, 15 logarithmically raised volume levels, and programmable envelopes

G

The hardworking 68901 MFP (multi-function peripheral) offers 8-bit parallel port; programmable data direction of every port; 16 possible interrupt inputs, four universal timers; and serial interface

**H**

There are two 6850 ACIAs (asynchronous communications interface adaptor). The 6850 talks to serial devices and ensures data flow. One chip communicates with the intelligent keyboard, mouse, and joystick ports, while the other operates the MIDI interface

I

All 192K of the STE's operating system (GEM, TOS in a new version - see overleaf - and so on) is kept on these two ROMs

J

What on earth has Atari done to this chip? The ST's MMU (memory management unit) has 68 pins - here it's more than 100! Two things suggest this custom chip now houses the graphics chip Shifter: extra pins, and the fact that the original MMU worked closely with Shifter to produce the video signal. The new MMU also looks after the coupling of the dynamic RAM with the processor's bus and the DMA's addressing

K

The Glue chip is the most important IC of the four cus-

tom chips, literally holding the system together. Among its many talents, Glue decodes the address range, produces the DMA handshake signals, generates the interrupt signal, and generates timing frequencies of 8MHz and 500kHz

L

The Blitter (bit block transfer processor), standard in the STE, operates automatically on certain A-line and VDI functions, providing considerable increases in the speed at which blocks of memory can be manipulated. The Blitter can be used to provide rapid implementations of the

following: area fills, rotations and magnifications, line drawing, text transformations, text scrolling, window updating, pattern fills, block copying

M

Surprise! The Motorola 68000 processor is no longer oblong, but rather square, like other members of the 68K series. It works the same, though

N

Two new game controllers, allowing up to six joysticks. The 15-pin adaptors can also accept paddles and light gun or pen

LIKE A VERSION: TOS UP

What with all these internal modifications, Atari has had no choice but to include a new version of TOS. Version 1.6 follows on from the yet-to-be-released 1.4.

From a WIMP user's point of view there are no differences between 1.4 and 1.6 - except the alert box produced by clicking on Desktop Icon in 1.6 is a pretty Atari symbol (big deal). Deep down, though, the new TOS looks after the extended palette, hardware scrolling and DMA sound.

Here's what TOS version 1.4 and the STE's 1.6 have that your version of the operating system doesn't:

- Rather than typing in the drive path in the file selector, you can simply click on a drive letter icon;
- You can rename folders by highlighting them and clicking on Show Info;
- A better disk copy process reduces the number of disk swaps required on a single floppy machine. Disk access in general has been greatly improved;
- Files can be moved from one directory, or disk, to another;
- The machine can be reset by holding down Control, Alternate and Delete (PC users will recognize that combination);
- IBM PC disks can be formatted;
- Finally, Undo aborts any printing, copying, deleting or moving operations.

VERDICT: JEZ SAN

Programmer

(Starglider II, Afterburner)

"Graphically it's not leaps and bounds better. The Amiga's had hardware scrolling for five years - and few people use it. It's just too memory wasteful to store complete screens in memory. Scrolling is possible without scroll registers.

"Really the point has been missed: it's all very well having extra colours, but what's the use if you can't display more on screen?"

"Stereo sound has been extremely lousily implemented. Only a few fixed sample rates are possible. Maths-intensive software routines will have to be applied to sample data if other frequencies are wanted.

"And six joysticks? Who's going to write a game in which six are used? It'd make a great Gauntlet engine!"

**VERDICT:****WAYNE SMITHSON**

*Software developer/programmer
(Blood Money)*

"It's really not very exciting - at least not to me. The hardware scrolling is nice, but while it will be useful for some games, others will probably benefit from software scrolling. If you've got loads of sprites moving about, the advantages of hardware scrolling will be cancelled out.

"The Blitter is a complete waste of time and space. It's the same affair that graces Mega STs. No barrel shifting equates to 'Don't bother using me.'

"It's highly unlikely I'll be developing anything for it - certainly not to start with anyway. It depends how many Atari sell."



- IBM PC disks can be formatted;
- Finally, Undo aborts any printing, copying, deleting or moving operations.

COME THE RESOLUTION

From a programming perspective, new graphics registers have been provided by the MMU/Shifter, making it possible to achieve bit-wise scrolling and vertical screen splits.

Scrolling can take place horizontally or vertically a pixel at a time. And, being hardware based, it is damn fast.

Some video registers can be tampered with to split the screen vertically into multiple independent scrolling regions. A single screen doesn't have to be a contiguous block of storage, but could be composed of numerous strips held in memory in any order.

The same data could be repeated on one or more display lines. A screen area could have its own data and scrolling direction.

"Upgrading an ST to an STE? No chance - too costly"
- Tony Single

The STE's palette has been increased from 512 to 4,096 colours. The method is fiendishly clever, and ensures complete com-

patibility with the ST's video modes. The fourth bit of palette resolution has been added above the old most significant bit.

Contrary to reports, there are no other graphic modifications. The STE has exactly the same resolutions, and is allowed an identical number of colours on screen, as the ST: 320 by 200 in 16 colours, 640 by 200 in four colours, 640 by 400 in black and white.

SOUND: ABOUT RIGHT

The STE is equipped to reproduce digitised sound using DMA (direct memory access) - that is, without the 68000's involvement. To retain ST compatibility, the STE also comes with a YM2149 sound generator.

DMA sound is stored in memory as 8-bit samples. The DMA sound chip fetches samples from memory and provides them to a digital-to-analogue (DAC) converter at one of four constant rates between 6.25 and 50kHz.

The output of the DAC is filtered to a frequency equal to 40% of the sample frequency by a four-pole switched low-pass filter. This performs anti-aliasing (smoothing) of the sample data.

The signal is further filtered by a two-pole fixed frequency (16kHz) low-pass filter before being passed to a National LMC1992 volume and tone controller. Finally, the sound is sent to a phono output at the back of the computer.

Two channels, behaving as described above, are available. These are the left and right channels of a stereo system. The stereo sound can be mixed with the YM2149's output before being sent to the monitor's speaker and phono sockets.

The LMC1992, an off-the-shelf chip common in TV sets, provides volume and tone control - both can be attenuated in 2dB steps. Its jobs include setting the master volume, altering left and right volumes individually, defining treble

VERDICT: TONY SINGLE

*Bath Shack repair engineer
(Blood Money)*

"Upgrading an ST to an STE? No chance. Too much has altered internally. The Shifter chip has disappeared altogether - it looks as though it's been incorporated into the MMU chip.

"And heavens knows what they've done to the Glue - it's also a lot bigger. There's also a new tone/volume controller chip on the board. On top of all that there are stereo phono sound jacks and two new-style game controllers. Introducing all that into an ST would be a nightmare. Too costly.

"I'm surprised Atari has kept the standard joystick and mouse ports in the annoying location underneath the unit. There's plenty of room on either the left or right side of the machine. I guess it was just down to cost.

"Most of the important chips - apart from the one that usually dies first, the MMU - have been socketed. I hope Atari keeps it that way - it makes my life easier!"

and bass separately, and determining whether or not YM2149 and DMA sound is mixed.

All in all - as is clear from the programmers and others we've talked to - the verdict must be that this is not a radical rewrite of the ST's specification. In a sense that's not a bad thing, because very soon - within a year, I'd guess - it will replace the 1040ST. ■

"The Blitter is a complete waste of time and space. No barrel shifting means 'Don't bother using me'"

- Wayne Smithson

THE STE'S NEW I/O REGISTERS:

FF9200	controller new fire buttons
FF9202	joystick directions
FF9210 - FF9216	both paddle directions
FF9220 - FF9222	light gun/pen positions
FF8204 - FF8208	video address counter
FF820C	video address base
FF820E	offset to next video line
FF8240 - FF825E	colour palette
FF8264	horizontal bit-wise scroll
FF8900	DMA sound control
FF8902 to FF8912	frame base, counter and end addresses
FF8920	sound mode control
FF8922 - FF8924	Microwire registers

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Screen Shots from the Atari ST version AMIGA/ATARI ST £24.95

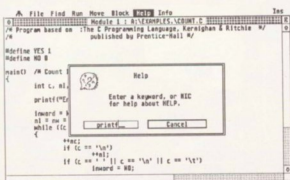
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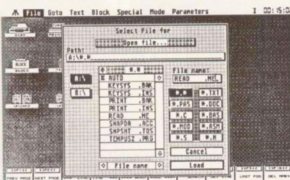


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ON THE DISK

PLUS

Side A

The ever so wonderful and scrumptious *ST Format Cover Disk* contains a whacking great 800K of demos, games and utilities. Unfortunately, however, not all 520ST owners are lucky enough to have double sided drives. So we use a special format which can be read by both types of drive.

This month we've changed the format. Everyone can access the brilliant *Interphase* demo and the other goodies on side A.

To get at side B - assuming you have a dou-

ble sided drive, of course! - just open the folder 2ND_SIDE containing the programs on the underside of the disk.

If you have a single sided drive, a box appears with the rather alarming news that there's an error on the disk.

Don't panic! The data's not damaged - it's just a consequence of the format. Click on CANCEL and everything'll be fine, phew, don't upset me like that...

INTERPHASE

BY: MIRRORSOFT

SIDE: A

MACHINE: ALL COLOUR STs

FILES: INTERPHS.TOS,
INTERPHS

Yet again we've got our hands on a demo - a fully playable demo, mind - of a *Format Gold* for our *Cover Disk*. Load and enjoy!

In the world of *Interphase* Dreamtracks are recorded dreams other people can enter and experience. They're big business, and very popular too. One of your own dreams has been recorded for public use, but just after the recording was completed you discovered the sinister truth. Your dream has been tampered with and subliminal messages have been edited into it to control and manipulate the mind of anyone who experiences the dream.



■ Driver, follow that, er... well, just follow it!

Rather than being a good little citizen, however, you decide to take your life in your hand and steal the dream back. Well, not your life as such... more your girlfriend's! The game takes off from here with you sitting at the controls of a computer. You're

guiding your girlfriend (who bears an uncanny and bizarre resemblance to a green triangle) towards the dream, and it's up to you to bypass a myriad of security systems and defenses. Fail and your girlfriend isn't going to be too pleased with you.

To run the demo just double click on the file INTERPHS.TOS and away you go. Control is with the mouse. To fire, press the left mouse button. Pushing the mouse forwards with the right button pressed sends you forwards faster, and pulling backwards (guess what) sends you backwards. Pressing the space bar toggles from control of your girlfriend to a mouse-pointer which is used to click on options at the bottom of the screen.

FIRESTORM

BY: PUBLIC DOMAIN

SIDE: A

MACHINE: ALL STs

FILES: FIRESTRM.PRG,
STORM1.DAT, STORM2.DAT

Double click on FIRESTRM.PRG to run the game.

Chris Kingsley's cracking feature on cracking (see page 93)

INTERPHASE

After last month's superb *Xenon 2*, Mirrorsoft scoop yet another *Format Gold* with a 3D spectacular: here's an exclusive, brilliant, fully playable demo. Go for it!

FIRESTORM

An excellent PD game - play it, then crack it! Just follow our complete "How to Crack" guide on page 93

MONST

A monitor/debugger - essential for exploring machine code (see "How to Crack," page 93)

FORMAT 10

Important! Back up your valuable *Cover Disk*!

Side B

GFA DEMOS

To round off our GFA Basic tutorial (page 107), here's a further selection of demos

GENESIS

A remarkably fast fractal landscape generator that produces extraordinary 3D landscapes

ANIMATE4

A PD program to show *Cyberscupt* to best advantage: Mark Pickavance tells you all you need to know on page 102

ATOMS

A challenging and intriguing game for two to four players. Can you gain domination?

CRUNCHER

Back by popular demand: save valuable disk space with the *Happy Computer Packer*

HEROKS

Solve those *Heroes of the Lance* hassles with a neat cheat

DSLIDE

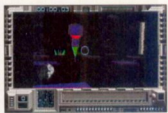
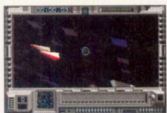
A slide show program of readers' pictures

TINYSTUF

Convert *Tiny*, *Degas* and *Neochrome* pictures from any one format to another



■ Interphase: as one door closes, another slams shut



■ You and your dream girl have much to do...

uses *Firestorm* as an example of what you can do. But why not play it first?

You're on a mission of mercy: your enemy is fire from the sky. Control your flying saucer with the mouse: press the left button when you're above people or objects to beam them up. The right button temporarily freezes the falling fire and can get you out of sticky situations. It doesn't work continuously, though, so use it with care!

MONST

BY: PUBLIC DOMAIN
SIDE: A
MACHINE: ALL STs
FILES: MONST.PRG

This month's feature on cracking games (see page 93) uses *MONST*. To run it double click on *MONST.PRG*, and when prompted for a filename type in the name of the program you want to examine, then press <Return> twice. A brief summary of commands follows:

Key	Function
G	Search memory
H	Help - show base page variables
I	Intelligent copy
L	List Labels
M	Modify memory pointer
N	Find next (after G)
O	Show other bases
P	Print disassembly to printer or screen
Q	Quick disassembly
R	Change register values
T	Temporarily update memory pointer
U	Go until
V	View other screen
W	Fill memory with
X	Examine memory
Ctrl-A	Put breakpoint after current instruction then execute it
Ctrl-B	Set/reset breakpoint
Ctrl-C	Quit <i>Monst</i>
Ctrl-K	Kill breakpoints
Ctrl-R	Resume execution after exception
Ctrl-T	Interpret call or system trap
Ctrl-X	Examine memory to printer
Ctrl-Z	Single step
0-9, AF	Enter hex dat into memory

HAVE IT ALL

Your 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 B-Side, Future Publishing, 4 Queen Street, Bath, Avon BA1 1EJ.

*	Enter ASCII string into memory
Return	Increment memory pointer by a word
-	Decrement memory pointer by a word
Tab	Update memory pointer to PC
Cursor keys	Update memory pointer variously



■ A symbol of our time: the Channel 4 logo. Watch it on the disk (press space bar to stop it); then find out how to do it for yourself in our graphics tutorial on page 102. *Brookside will never seem the same again! (Huh? - ed.)*

ANIMATE4

BY: PUBLIC DOMAIN
SIDE: B
MACHINE: ALL COLOUR STs
FILES: ANIMATE4.PRG, LOGO.SEQ

ANIMATE4 lets you see animation sequences produced with *CyberScript*, and is used to illustrate Mark Pickavance's graphics tutorial (see page 102). Double click on the file *ANIMATE4.PRG*: when it's loaded click on the box or press <Return>.

A menu screen appears: click on the box labelled .SEQ in the screen's top left corner. Use the

PROBLEM CORNER 1: ARE YOU HAVING TROUBLE READING READ.ME?

Number one in an irregular series

We've had calls from confused readers having problems with *READ.ME* files on the Cover Disk. The problem is that they sometimes develop the rather disconcerting and eye-straining habit of scrolling off the top of the screen before you've had time to read it.

The reason is that most documents are set in 80 column text and the majority of programs require low resolution, or 40 columns. The way to correct the problem is by going to the *PREFERENCES* option on the Desktop and selecting Medium or High resolution. If you now click on the document file it stops when the screen is filled. Problem solved!

Next: how to restore the ozone layer

file selector box to locate the file *LOGO.SEQ* in the folder *ANIMATE*. Click on *LOGO.SEQ* and then click on OK to run the demo. It takes a while to load before the animation begins: be patient!

To exit, press <UNDO>. Press <Space> to step you through the animation a frame at a time, and press <Return> to return to normal animation. For more information turn to page 102.

CRUNCHER

BY: PUBLIC DOMAIN
SIDE: B
MACHINE: ALL STs
FILES: CRUNCHER.PRG

We've had hundreds of requests for a file cruncher to compress programs, and here it is. Double click on the file *CRUNCHER.PRG*. Choose the program to be crunched from the file selector box - *MONST.PRG*, for example - and click on OK. You can only crunch files with the extensions .TOS, .TTP or .PRG. The file to be crunched is then loaded, and the packer takes a while (depending on the size of the original) to squash it down to

size.

When it's finished you're told the result and given an option to save. You're also asked, on occasion, if you want to save the de-packed file, which is useful if you want to get your crunched file back into an uncrunched condition.

To run a crunched program, just double click on it as normal and wait. When loaded the screen flashes for a while as the program is de-crunched, and then it runs as normal.

HEROES

BY: MARK TRIGG
SIDE: B
MACHINE: ALL STs
FILES: DD_MEDIC.TQS, README.DOC

Here's some help for the hugely successful *Heroes of the Lance*. If Goldmoon's staff has been drained, you'll recall, death is permanent. *DD_MEDIC* solves that problem by resurrecting dead members of the party. It also puts everyone back up to full hitpoints, charges both Goldmoon's and Raistlin's staffs to capacity and

SERIOUSLY, ARE YOU A BIT OF AN ARTIST?

Do you have demos you sincerely think are good enough to go on the *ST Format* Cover Disk? Good, send them to us! Use any format you wish - *Tiny*, *Degas*, *Neochrome*, *Spectrum 512* or *Quantum Paint* - but keep your pictures under 200K. And they must be in a form that can be clicked on from the desktop: don't bother sending demos that use the bootsector to run, because we won't use them.

And as if the prospect of fame weren't enough, there's a fortune on offer, too. Actually we're lying. It's not a fortune at all. But the best picture every month does earn the artist £30, which can't be bad.

Your stuff really does have to be good, though. Remember, "it's the pix we reject that makes the *ST Format* Cover Disk the best!" (Is that really the snappiest slogan you can manage? - ed)

Send your artistic achievement to: *ST Format* Cover Disk, 4 Queen St, Bath BA1 1EJ. And if you can think of a snappier slogan, chuck that in as well (tenner on offer for the funniest).

stocks Tanis up with arrows. Full instructions are in the README.DOC.

ATOMS

BY: B. HEWLETT
SIDE: B

MACHINE: ALL COLOUR STs
FILES: ATOMS.PRG

A mentally challenging game for two to four players. You take turns to place atoms on screen with the mouse pointer, and the aim is to fill every square on screen with atoms of your colour.

You can put atoms only into empty squares, or ones of your own colour. Each has a capacity that depends on its position on screen. Squares in the corners take one atom, edges hold two and all others can contain three. When that number is exceeded the square becomes unstable and the atoms are forced into adjacent squares. A chain reaction may occur if the new square is overfilled.

The game ends when you control the whole playing area. Double click on ATOMS.PRG and select the number of players.

GENESIS

BY: L.M. WITEK
SIDE: B

MACHINE: ALL COLOUR STs
FILES: GENESIS.TOS, GENESIS.DOC

This is by far the fastest fractal landscape program we've seen: it takes only a very few seconds to create an entire landscape. A 3D view of the landscape can be generated, and pictures can be saved to disk in Degas format. Full instructions in the file GENESIS.DOC.

GFA DEMOS

BY: BARRY CAPEL
SIDE: B

MACHINE: ALL STs
FILES: ALL FILES IN GFADE-MOS FOLDER

The GFA Basic tutorial (see page 107 for the tutorial and more information) comes to an end this

month with some useful operating system calls explained and demonstrated. As usual the programs must be MERGED (rather than LOADED), so don't forget to click on NEW before you MERGE one of them.

FORMAT10

BY: A. PERSON
SIDE: A

MACHINE: ALL STs
FILES: FORMAT10.TOS

Rather than the usual nine sectors, the perverse *ST Format* Cover Disk uses a special format of 80 tracks and 10 sectors, allowing us to squeeze in just that bit more stuff (it's hell, but you're worth it!).

So if you tried to copy all the files onto a normal disk you'd find they wouldn't quite fit. FORMAT10.TOS solves that problem by formatting your disk with 10 sectors. You can format drive A or B, and choose either double or single sided.

DSLIDE

BY: PUBLIC DOMAIN
SIDE: B

MACHINE: ALL STs
FILES: DSLIDE.PRG, DSLIDE.DOC

Thanks to its picture conversion feature, DSLIDE is probably the best slide show program around, even if we do say so ourselves.

If you have a mono monitor then any ordinary slide show program would be useless, but DSLIDE is no ordinary slide show program: it converts pictures from one resolution to another, so that even if you can't see it in glorious colour (that would be asking a bit much!), at least you can still see the pictures. DSLIDE can also handle pictures in Degas, Tiny and Neochrome formats.

Double click on the program DSLIDE.PRG and all pictures in the same directory are displayed. Function keys [F1] to [F10] determine how long the picture stays in view, and [Space] keeps a picture in view until it's pressed again. [Undo] returns you to the desktop.

You can also create a script

HOW TO GET YOUR BACK UP

So we can squeeze even more goodies in, the Cover Disk uses a 400K per side format rather than the normal 360K. To fit all the programs on one backup disk, therefore, you'll need the special formatting program supplied on the Cover Disk, "FORMAT10.TOS." Here's how to make a copy of the A side:

- 1) First, double click on the program "FORMAT10.TOS" and take out the Cover Disk.
- 2) Put the disk you want to format (the "target disk") into the drive and follow on the screen prompts.
- 3) Remove the target disk and put the Cover Disk back in the drive.
- 4) Double click on the Drive B icon and on the Drive A icon. If you have only one drive, put the newly formatted disk in the drive when it asks for drive A. You'll now have two windows on the desktop, a Cover Disk window and an empty one.
- 5) Now copy the files by picking them up from the Cover Disk window and dropping them in the empty window.
- 6) Finally, to copy the second side of the disk, open the folder 2ND_SIDE and repeat the process.

file which sets up DSLIDE to show pictures in a particular order, set the delay and so on. Details are in the file DSLIDE.DOC.

TINYSTUF

BY: PUBLIC DOMAIN
SIDE: B

MACHINE: ALL COLOUR STs
FILES: TINYSTUF.PRG

The pictures on the B side of the disk are in Degas, Neochrome or Tiny formats, which causes obvious problems if you want to load

them into your art package, whichever it is.

TINYSTUF solves the problem by converting pictures from any format to any other, if you see what we mean.

To convert pictures you need TINYSTUF.PRG in the same folder or directory as the pictures to be converted. You also need space on disk to store them: allow 32K per picture.

To run it, simply double click on TINYSTUF.PRG and follow the on screen prompts. ■

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We need your software - games, utilities, demos, anything good, original and preferably short. If you've written something 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: Cover Disk, *ST Format*, 4 Queen Street, Bath BA1 1EJ. Allow four weeks for a reply.

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PROGRAM TITLE _____

SIZE OF FILES IN K _____

WHAT'S SO UTTERLY 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 ■ Feed the cat

We can consider your work for the disk only if you sign the following declaration: "This program is submitted for publication in the very wonderful *ST Format*. It is wholly my own work and I agree to indemnify Future Publishing against any legal action should copyright problems arise."

Signed _____

FAULTY DISK?

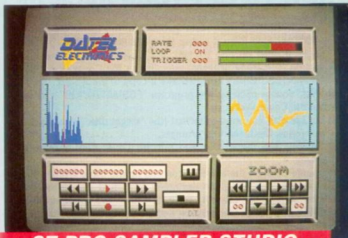
In any disk duplication run as massive as ours it's possible that a tiny percentage of disks may be faulty. If you're unlucky we apologise profusely, but you are guaranteed a fresh copy if you return the faulty one to: *ST Format* November Disk, Discopy Labs, Unit A, West March, London Road, Daventry, Northants NN11 4NA.

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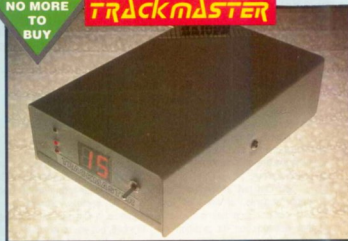
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BARRETT goes in
search of trouble –
but takes Virus
Killer (page 29)

Computer viruses – small programs that live in your ST's memory and do strange things to your disks – come in two varieties: bootsector and link. The former are the more common, so named because they lurk in the bootsector of your disks.

When you reset with a disk in, the first thing your ST does is to check the bootsector for programs, and runs any present. Once run, bootsector viruses remain in memory until you reset or switch off, depending on how resilient->



■ An excellent art package with a multitude of features, the first batch of Eigen Software's *Flair Paint* came with an unwelcome extra: a virus.

Jeff Lawson, author of the program, believes it originally came to him last September from his friend Mark Pickavance (author, incidentally, of our graphics series). Jeff's disk became infected from something Mark sent him and spread through his disk library, including the *Flair Paint* master.

Eigen re-duplicated, making sure the unwelcome visitor had not sneaked back in. Jeff also wrote a short program to kill the virus and published it in a magazine called *Popular Computing Weekly*

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AMIGA FORMAT—'FORMAT GOLD' 92%

"This game is so visually brilliant and possesses those classic addictive qualities, that once you've picked up your joystick you just won't want to put it back down again."

SMASH MAGAZINE—'GOLD MEDAL AWARD'

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the virus is.

Link viruses, on the other hand, attach themselves to files and execute before running the main program. Once executed they stay in memory like bootsector viruses.

COMMON VIRUSES

The Signum/BPL virus, the most common of them all, looks in the bootsectors for a special code that triggers it into action. As far as is known this code is not yet in circulation, and the consequences when it becomes so can only be guessed at.

The Signum/BPL virus has certainly got around. It frequently appears on disks sent in by readers for use on the Cover Disk, but it also managed to worm its way into the first batch of Database Software's Lombard RAC Rally. Database's Chris Payne believes the virus came in on the master disk from Red Rat Software, but Red Rat disclaims guilt.

Another common and relatively harmless beastie is the Ghost, or Mouse Virus as it's sometimes known. It infects five other disks and then reverses the mouse Y direction so that pushing the mouse forwards sends the pointer down.

There are said to be viruses, too, that can breed inside the ST's battery backed clock. Killing one is difficult, and removing the battery wouldn't necessarily solve the problem, since capacitors are used to store power for the clock and it could a month or more for the capacitor to run down.

WHY THE BEEB BOMBED

You can at least thank your lucky stars there's no way your ST is going to suffer the same fate as the early BBC Master computers. Though not strictly speaking a virus, it provides graphic evidence that messing with operating system calls you know nothing about can seriously damage your computer's health – and possibly even your own!

Originally the Beeb was to have a rechargeable nickel cad-



Lombard RAC Rally: the very first batch was infected with the BPL/Signum virus – now completely excommunicated, of course!

mium battery and with recharger circuitry. At the last moment plans were changed and a normal battery was used instead, but to save costs the recharger was left in.

What was not anticipated was that, if a particular operating system call was used, the recharger was switched on. An hour later the battery exploded, scattering bits of circuitry all over your bedroom.

That little "feature" was soon amended.

INDUSTRIOUS DISEASE

Viruses aren't satisfied with just tagging themselves onto one program. They want to spread and contaminate the world – or at least, as many STs as possible.

To accomplish this diabolical deed they write themselves to any disk you insert in the drive. Some viruses, however, only show themselves after they've infected a few disks: the Ghost Virus, for example, reverses the mouse pointer's up/down direction after it's infected five disks.

Link viruses can be more treacherous than the bootsector variety, since they often read the time of the internal clock and then do something nasty at a pre-determined date, a sort of time bomb effect.

They also do the dirty when they've infected a preset number of files, so that you only find out you've been "zapped" when half your disk collection is already diseased.

INFECTED! WHAT CAN YOU DO?

There you are, sitting in front of your humble ST working away, when all of a sudden your machine locks up/the mouse pointer goes haywire/you read a strange message on the screen. What do you now?

The natural instinct is to panic, which can be disastrous because you then kill every suspicious disk you encounter. The result can leave you with a collection of crippled software and no way of recovering it. Be particularly careful with games, since 95% use the bootsector.

First, switch off your machine and leave it off for 30 seconds – that kills any viruses in memory. Now switch on again with a disk you're absolutely sure is safe. If you're not convinced you have any "clean" disks, switch on with no disk in the drive and wait for 20 to 30 seconds until you get a desktop.

If you have ST format issue 3 you can use the virus killer on the Cover Disk to check for viruses, or alternatively load another virus checker (we review CRL's new enhanced version of the PD Virus Killer here).

Start by checking your most recently used disk and then work backwards through your collection. If you find something suspicious don't kill it immediately: any executable bootsector, however, will be identified as a possible virus. When you're certain you've found a virus, blow the sucker away.

PROTECT AND SURVIVE

Still, there are ways of protecting yourself from viruses. The simplest way, of course, is never to put a disk in your drive! Failing that, there are sensible precautions everyone should take. We should know, since we bear the awesome responsibility of ensuring that half a million disks every year get out to our readers without infecting

their disk drives.

The ST Format Cover Disk is plugged into the disk drives of 40,000 readers every month, so a virus would be disastrous, to put it mildly. That's why the disk is checked and rechecked thoroughly before being sent to Discopy Labs for duplication.

Because of the unusual disk format there are effectively two bootsectors, one each side. Both need to be checked. Once Discopy Labs receive the disk they're checked twice more. First the mas-

SICK MINDS

It was only about 20 minutes after AIDS first hit the headlines that computer journalists hit on the obvious parallel. "Don't die of ignorance," they warned: "computer viruses spread like AIDS." They went on to make crass comparisons between "promiscuous" disk-swappers and people whose sexual activity made them vulnerable to AIDS. Cue bad taste jokes about inserting disks in drives, disk swapping parties and condoms for disks.

The worst that can happen to you if you get passed a computer virus is you lose a few disks' worth of software. It's bloody annoying, but it's hardly life threatening.

ter disk is examined with a virus checker, and it's then transferred to optical disk, used in the duplication process.

Quality control is where the new master is tested to see that it works correctly and is virus free. A large orange sticker is then placed on it to tell everyone that the disk is safe. Master disks for other products are tested in the quality control area, and Discopy take care to eliminate the risk of cross infection from one master to another. The ST is switched off between each test to kill any memory resident viruses.

Well, that's how we protect you. But there are viruses around, and they can come from many sources. Turn the page now for our review of CRL's Virus Killer, perhaps the most sophisticated of its kind. ■

What kind of sick idiots write viruses? How do they write them? Is hanging too good for them? Is there any such thing as a "funny" or "friendly" virus?

We want to hear from perpetrators, victims, virus hunters and concerned citizens. Write to: Virus Clinic, ST Format, Future Publishing, 4 Queen St, Bath BA1 1EJ.

WHAT DO YOU WANT:

(Press HELP)

F1	Check whole partition
F2	Check files manually
F3	Set immunization
F4	Cancel

■ Virus Killer (see next page) goes hunting

VIRUSES: TAKE NO PRISONERS!

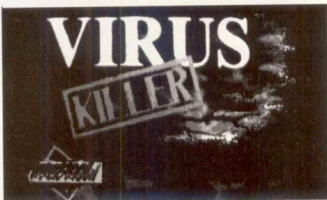
VIRUS KILLER

£9.95 ■ ALL STs
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 CARPENTERS RD,
 LONDON E15 2HD
 ■ 01 533 2918

Some viruses seriously screw your data. Others such as the Ghost Virus are little worse than a mild irritant, but either way they're an welcome addition to your collection. To counteract these villains there are virus killers.

Virus Killer first appeared in December 1987 and has undergone many enhancements to its killing power. The current version recognises 24 bootsector and five link viruses, as well as being able to identify well over 200 bootsectors from commercial products.

Using Virus Killer takes just a few seconds, and you know instantly if the news is bad, because the screen flashes for a few seconds and beeps at you. Since lots of commercial software



■ Virus Killer's loading screen - just a little lurid, perhaps?

use the boot sector to run, killing the virus also destroys the software.

That's where the Virus Killer has an advantage over other similar programs, because not only does it recognise most commercial bootsectors, it can actually repair 151 of them. All you do is look through the list of boot sec-

tors that can be repaired and if you find the one you require it can be written straight back to the original disk. Once it's re-written your software is again in pristine condition and you sit back and breathe a sigh of relief.

Link viruses take more time to track down, because every file has to be checked. It can take a few minutes to check a packed disk. There's also an option to examine the memory status. This lists some of the common operating system calls used by viruses and checks through memory for any reset proof programs. The keyboard is examined too.

If you have a hard disk you can check it for link viruses. Boot sector viruses can't be killed with this version of the Virus Killer, but later versions are expected to be capable of handling them.

The war on viruses is an ongoing campaign, and every time a new virus is discovered the Virus Killer is modified to deal with the new threat. The new version is not yet available yet, but we'll let you

know. If you own the Virus Killer you'll be able to get upgrades for about a fiver by sending your old version back.

Viruses threaten everyone from home user to major software house. It's a relief to know that the war is not one sided, people are out to smash the viruses and the foul daemons who spawn them. Virus Killer is simple to use and a safe precaution for anyone. Pirates are the people most likely to suffer from viruses, and it's difficult to feel much more than amused contempt when they get "zapped."

For the rest of us, Killer is a vital ally in the continuing war against viruses. ■

FORMAT RATINGS

Features 85%
 Recognises all known viruses - as well as lots of innocent bootsectors.

Speed 89%
 Checking for bootsectors takes about two seconds; for link viruses can take minutes.

Ease of Use 86%
 Menu/mouse driven - easy as pie.

Results 76%
 Kills all known germs dead, and can repair many virus-ravaged bootsectors.

Format Value 79%
 Works thoroughly.

The Competition

All other virus zappers are Public Domain. It's better than those, but earlier versions of Virus Killer were also PD and did the business for many of them.

AVK extensive system check...	
TDS version: 31300	Date: Not valid or not found
Turbodos on/off: Off	
Memory configuration/trap vectors:	System variable contents:
Memory configuration: ? Mb	Resvector (3428) : 8000000
Top of physical RAM : 5200000	Hdv_loit (346A) : 5FC0F44
Bottom of user RAM : 580C000	Hdv_bpb (3472) : 580CA7E
Screen memory address : 51F0000	Hdv_rv (3473) : 580C00E
BIOS trap #13 vector : 5FC07F8	Hdv_boot (3478) : 5FC1568
BIOS trap #14 vector : 5FC07F2	Hdv_mediach (3473) : 580CA9E
Floppy-hard-or-ROMdisks attached (0=not attached; 1=attached)	
<pre> ABCDEF01JKLMNP AAAAAAAAAAAAAAAA 1111100000000000 </pre>	
Suspicious system variables are printed in REVERSE	
No reset-proof programs in memory!	
No Virus in Keyboard Processor!	

THE ATARI ST VIRUS KILLER
 Version 3.66B
 Written by Richard Karsmakers

CRL Group Plc
 7D Kings Yard
 Carpenters Road
 London E15 2HD

- [F] Search for bootsector viruses
- [F] Local disks
- [F] AVK & link information
- [F] System status
- [F] Help to Operator

VIRUS TYPE SELECTION:
 Only FLOPPY disk drives allowed
 for bootsector viruses!
 Do you want to look at:

- [F] Bootsector Viruses
- [F] Link Viruses
- [F] Cancel

RED ALERT DIAGNOSIS:

This disk is infected!
 It suffers from the
 Ghost Virus (G12)....
 You should repair it immediately!

[F] REPAIR!!

■ Death of a virus: (bottom sequence) search and destroy the little mothers! (Top) That's what you want to see

ABS	CFLOAT	DPEEK	FRE	BTRN	MODQ	PRINT	SPOKE	TRACES
ABSOLUTE	CHAR	DPOKE	PSLAL_INPUT	INTOUT	MODE	PRINT AT	SEEK	TRMB
ACHAR	CHAR	DRAW	PSETDATA	KEYDEF	MONITOR	PRINT AT USING	SELECT	TROFF
ACLP	CHDR	DUMP	PSFRMT	KEYGET	MOUSE	PRINT USING	SETCOLOR	TROH
ACOS	CHDRVE	EDIT	FXEXT	KEYLOOK	MOUSEK	PRINT#	SETDRW	TROH#
ADD	CHRG	ELLIPSE	FULLW	KEYPAD	MOUSEX	PRINT# USING	SETMOUSE	TRUE
ADDQ	CIRCLE	END	FUNCTION	KEYPRESS	MOUSEY	PROCEDURE	SETTIME	TRUNC
ADDRN	CLEAR	ENDFUNC	GB	KEYTEST	MSHBRK	PSAVE	SGET	TYPE
ADDRVUT	CLEARW	ENDELECT	GCONTROL	NLL	MIL	PSET	SHL	UPPRS
AFTER	CLIP	EOF	GDOST	L-A	MILQ	PTBH	SHEL_DVHM	V:
AFTERCOHT	CLOSE	EQY	GGMOSQ	LEFTS	MURU_KCHECK	PTSDUT	SHEL_FBD	V_CLRWK
AFTERSTOP	CLDSW	EQW	GEMYS	LER	NAME AS	PTSTQ	SHEL_GET	V_CLSWWK
ALERT	CLOS	ERASE	GET	LET	NEW	PUT	SHEL_PUT	V_CLSWK
ALINE	CLS	ERR	GET#	LINE	NOT	PUT#	SHEL_READ	V_OFVWK
AND	COLOR	ERRS	GRTR	LINE INPUT	OBJC_ADD	QSORT	SHEL_WRITE	V_OFVWK
ANDQ	CONT	ERR#					SHL	V_UFVWK
APOLY	CONTRL	EVEN					SHOWM	VAL
APPL_EDIT	COS	EVEN#					SHR	VALT
APPL_FHND	CRSCOL	EVEN#					SH	VARPTR
APPL_INIT	CRSLIN	EVEN#					SINGLE	VDBASE
APPL_READ	CVD	EVEN#					SNO	VDSYS
APPL_TPLAY	CVF	EVEN#					SLPOKE	VOID
APPL_THRECORD	CVI	EVEN#					SOURC	VOT_EXTENT
APPL_WRITE	CVL	EVEN#					SPACES	VOT_NAME
ARECT	CVS	EVEN#					SPOC	VSETCOLOR
AREYFLL	DATA	EVNT_MULTI	GRAF_SHRINKBOX	LONG	ON ERROR	RECALL	SPOKE	VST_LOAD_FONTS
ARVPTR	DATES	EVNT_TIMER	GRAF_SLIDEBK	LOOP UNTIL	ON GOSUB	RECORD	SPRITE	VST_UNLOAD_FONTS
ASC	DATES+	EXEC	GRAF_WATCHBOX	LOOP WHILE	ON MENU	REELSEK	SPUT	VSYNC
ASIN	DEC	EXIT	GRAPHMODE	LPEEK	ON MENU BUTTON	REM	SGR	VTAB
ATEXT	DEFAULT	EXIT#	HARDCOPY	LPOKE	ON MENU MESSAGE	RENAME AS	SGORT	V H
ATH	DEFFILL	EXP	HEXB	LPOS	OPEN	REPEAT UNTIL	STEP	W_HAND
BASEPAGE	DEFFN	FALSE	HIDEM	LPRINT	OPENW	RESERVE	STECK	W_INDEX
BCNG	DEFLINE	FATAL	HIMEM	LSET	OPTION BASE	RESTORE	STOP	WAVE
BCLR	DEFLIST	GETDATA	HLME	MALDOC	OR	RESUME	STORE	WHILE Wend
BCET	DEFMARK	FIELDS	HTAB	MAX	ORQ	RESUMENEXT	STRS	WIND_CALC
BDS	DEFMOUSE	FILDAT	IF THEN	MENU	OUT	RETURN	STRNGQ	WIND_CLOSE
BDSQ	DEFNUM	FILES	IF THEN ELSE ENDF	MENU KILL	OUT#	RIGHTS	STRNGS	WIND_CREATE
BITBLT	DEFTXT	FILESELECT	IMP	MENU OFF	PAUSE	RMSTR	SUB	WIND_DELETE
BLOAD	DEG	FILL	IMPQ	MENU BAR	PBOX	RMDR	SUBQ	WIND_FND
BMOVE	DELAY	FX	INC	MENU_ERABLE	PCIRCLE	RND	SUCC	WIND_GET
BOUNDARY	DELETE	FLDAT	INQW	MENU_REGISTER	PEEK	RDL	SUCCQ	WIND_OPEN
BOX	DFREE	FN	INKEYS	MENU_TEXT	PELLIPSE	ROR	SWAP	WIND_SET
BPVT	DM	FOR_NEXT	INLINE	MENU_TONORMAL	PI	ROUND	SWAPQ	WIND_UPDATE
BSAVE	DMT	FORM INPUT	IP	MPREC	PLOT	RSET	SYSTEM	WINDTAB
BSET	DIR	FORM INPUTS	IMP#	MSK	POINT	RSRC_FREE	TAB	WORDQ
BTST	DRS	FORM_ALERT	IMPXKS	MISQ	POKE	RSRC_GADDR	TAK	WORK_OUTQ
BYTE	DIV	FORM_BUTTON	IMPWDS	MIN	POLYFILL	RSRC_LOAD	TEXT	WRITE
BYTQ	DIVQ	FORM_CENTER	INPUT	MKDS	POLYLINE	RSRC_OBFR	TIMES	WRITE#
C:	DO UNTIL	FORM_DAL	INPUT#	MKDR	POLYMARK	RSRC_SADDR	TIMES-	XBSQ
CALL	DO WHILE	FORM_DO	INPUTS	MKFS	POS	RUN	TIMER	XOR
CARD	DO LOOP	FORM_ERROR	INSERT	MKS	PRBOX	SAVE	TITLEW	XDRQ
CARDQ	DOUBLE	FORM_KEYBD	INSTR	MKS	PRED	SCRIP_READ	TOPW	
CASE	DOWNTQ	FRAC	INT	MKSS	PREDQ	SCRIP_WRITE	TOUCH	

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1. EA's latest car racing sim is called:

- a) And THERE goes Nigel WALKER IN THE Ferrari!
- b) Car Wars, or
- c) Ferrari Formula One

2. If you're stopped by the police going the wrong way down a one way road (the old ones are the old ones) you should say:

- a) "But officer, I was only going one way."
- b) "Arrows? I didn't even see the Indians," or
- c) "I'm sorry officer, I'll see it won't happen again, thank you and you officer, have a nice day, thank you very much, thank you very much."

3. Complete the following sentence in six words or less in an apt and amusing way:
"I would like to win ..."

(eg, this competition... because it sounds fun... to keep death off the roads).

© Not Very Good Competition Questions, 1989

Does an all expenses paid day out at Brands Hatch for you and a friend watching the racing sound like your kind of day out, your kind of competition prize?

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1. Entrants must possess a full driving licence.
2. Entries must be received on a postcard or the back of an envelope by 31 October 1989.
3. The competition is not open to employees or relatives of Future Publishing, Electronic Arts, Brands Hatch Activity Centres or anyone connected with any of these organisations.
4. The winner and a companion of his or her choice must be free to take the competition prize on a weekday of their choice. Travel expenses will be reimbursed.
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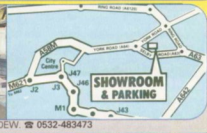
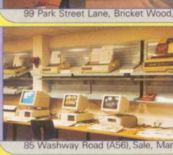
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LASH OUT WITH A LASER

The next step up from a dot-matrix or daisywheel is a laser printer – but is Atari's own offering really the best buy? SIMON WILLIAMS casts his laservision over the competition

So you want to produce decent hard copy from graphics, word processor or DTP, and your humble dot-matrix printer isn't up to it. You need higher resolution than most offer, and the density of printed output which is going to impress.

Although 24 pin printers can offer similar, and in some cases higher, resolution than lasers, they do chew the paper up in quad-

graphic mode. A laser printer, however, uses a non-impact method of depositing black powdered ink (toner) onto the paper. It gives much higher contrast and doesn't look as if you've printed on half-used blotting paper.

One contender in the laser printer stakes is Atari's own laser, the prosaicly entitled SLM804. Coming in at just under a grand, it is custom designed for use with a

1040 or Mega ST, and even shares its RAM and processing power. No other laser printer emulates this machine, so if you feel that the Atari standard is sufficient for your needs, there's only really one choice.

It's by no means the only machine you should consider, though, as there are plenty available for a hundred pounds or so more.

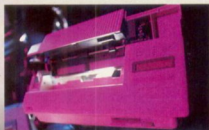
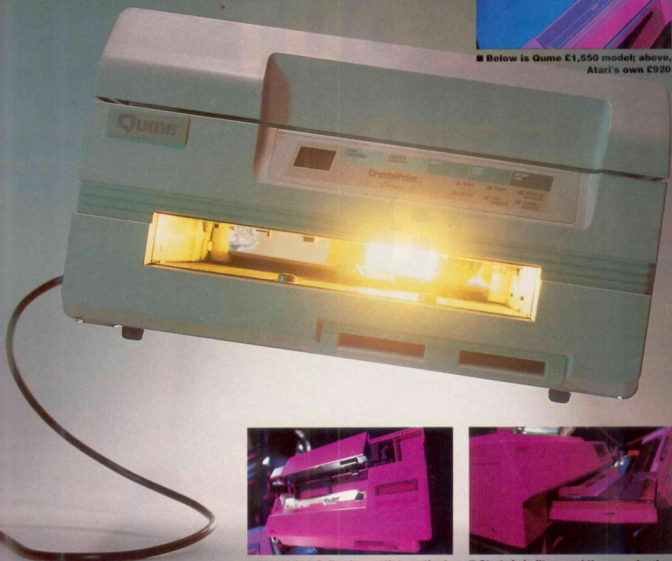
STANDARD BEARERS

Two printing standards abound in the rest of the computing world, and you need to be aware of both before you make a final decision. The first computing standard is most common in the PC jungle. Hewlett Packard was the first company into this market and their printer, the LaserJet, became a *de facto* standard for lasers.

The standard obeys a series of



■ Below is Qume £1,550 model; above, Atari's own £920



■ The £1,600 Seiksha: an "interesting" approach



■ Star's is built around the same hardware as HP's

Escape codes, sent to the printer in much the same way as codes are sent to a dot-matrix. There are just rather more of them. Fonts for an HPLJ printer are stored separately for every size and style needed. This can take up lots of disk space.

The other major laser printer standard surfaced first with the Apple Macintosh. PostScript is a "page description language" which has the enormous advantage of providing scaleable fonts. The computer only has to hold "outlines" of the fonts on disk, and these can be used by the PostScript interpreter to generate fonts of any size for printing. Although this is done mathematically, so that PostScript can be comparatively slow, the versatility it offers has made it the standard for serious DTP work.

We've chosen five laser printers for this survey, including

the Atari, Hewlett Packard and several which can be upgraded to PostScript capability.

LAST OF THE LASERS?

It may surprise you to learn, however, that not all of the machines on test here are laser printers in the strict sense at all. To understand why not, it's necessary to know how these beasts work.

In a true laser printer a low-power laser beam plays on the drum to create charge on it at all points where the final paper copy will be black. When the toner is attracted to the drum, it only sticks to the charged parts. Although all the printers in this survey are generically termed "lasers," two use other means of altering the static charge on their electrostatic drums.

Even low-power lasers are expensive items, so it wasn't long before alternative methods of charge generation were sought. An

LCS printer, like the Qume Crystal Print Series II, uses a bright halogen bulb as a light source. The light shines through a transmissive LCD array, rather like that in a back-lit lap-top computer.

In the case of the LCS printer, though, the array has 300 elements (pixels) to the inch, and need only be a tiny fraction of an inch high. The data is fed through it as the printer drum rotates, so that each part of the drum takes the right part of the page and transfers toner to the paper in the normal way.

An LED printer such as the Seiksha uses a strip of high-intensity light emitting diodes, with the same resolution, and so needs no separate light source.

In practice there is little difference in results of the three methods. LCS and LED printers do tend to be cheaper than laser printers, already, and when people

wish up to the fact that LED and LCD engines are cheaper than lasers, the differential should grow. (Note: all prices quoted in this survey exclude VAT.)

ATARI SLM804

■ £919.99 ■ ATARI

■ 0753 333444

No ordinary laser printer, this. In fact Atari's 300dpi laser printer is vastly different from others: it doesn't have its own memory, processor or built-in fonts. And it plugs into the ST's DMA (direct memory access) socket rather than the serial or parallel port. Because the SLM804 is so non-standard and only works with the ST range, it costs around £300 less than the cheapest alternative.

The SLM804 is a real monster with an almighty roar. This dreadful racket — the over-worked fan, mostly — can be eliminated by opening a hinged panel at the back

of the machine. Although this isn't recommended in the manual, it's one way of preventing headaches.

A small box acts as an intermediary between the DMA socket on the ST and the interface at the back of the laser. The box, going by the snappy moniker SLM804, is the laser's brain and determines when data can flow from computer to printer. Its only distinguishing features are a couple of LEDs signifying power and activity. A DMA port on the controller box allows daisy-chaining of other DMA devices, such as hard drives and CD ROM drives.

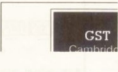
A4 paper is fed to the laser via a 250-sheet cartridge sliding in at the base of the machine. A slot just above the cartridge accepts single-sheet paper. Delving inside the printer reveals the drum and laser engine. It's all very accessible, which is handy since you'll need to change the toner (fine powdered ink used by the printer) and the printing drum after a few thousand sheets.

Because the laser has no memory of its own it uses the ST's RAM to build up images before printing them. This means your machine must be endowed with at

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Another chance to use GEM stripey tiger!

A good test for a laser printer is to see how it copes with all the text and graphic combinations possible in a PostScript document.



■ Seikosh's noisy OP-105A couldn't handle our test pages with the memory supplied: extra costs £394 per Mbyte

GDOS can output stuff to the laser.

Around a year ago many programs didn't support Atari's laser - mainly because supplies of the printer were short. But Atari didn't help matters by bundling a Diablo emulator, when an Epson would have made more sense. All software is compatible with Epson printers, but not necessarily with Diablo printers. Still, all new software supports the SLM804 - and if you do have an old bit of software that doesn't come with a Diablo driver you can purchase an Epson emulator for around £40 from Atari. Later on this year you'll be able to get a PostScript emulator.

Atari claims speeds of eight pages a minute - well, yes, but only if you're printing the same page eight times. The actual time it takes to print a page varies from seconds to minutes depending on the complexity of the page.

All things considered, the SLM804 is the best choice if you know you'll be sticking with the ST/T range.

OP-105A

■ £1,645 ■ SEIKOSHA
■ (0753) 685873

This is an unusual laser printer in three ways. For a start it uses an LED array instead of a laser beam to produce an image. Second, it is styled to look like an up-market daisywheel printer rather than the more normal "photocopier." Last but not least, it sounds more like a tank than a printer - it's only the lack of caterpillar tracks which stop it lumbering off the desk.

The OP-105A is a large rectangular box with a sloping front

face, into which is set a control panel with a more than normally active LCD display. When any error condition occurs, the panel alternates between a brief display of the problem and reminders of the buttons to press to resolve it. Once you're used to the way this works, it's very helpful and reduces references to the manual, a single, rather sketchy volume. It mixes technical information and setup instructions and would benefit from an index.

There are several other LED indicators on the front panel, including four for default paper sizes (Legal, Letter, A4 and B5). The data light, the only visible indication that the printer is working, doesn't flash as the others do. So you can't tell if an application program has hung while printing.

On top of the printer the supplied single-sheet feeder clips into two retaining notches and takes up to 150 sheets of paper in a vertically mounted hopper. A second hopper can be fitted as an optional extra (£171). This arrangement should reduce the footprint of the print as a whole, you'd have thought, but a paper-receive tray on the front of the unit projects by 24cm, meaning that the whole unit takes up quite a bit of room. The top of the case hinges up to take a single, easily fitted drum and toner cartridge, though the roller cleaner which fits under a flap in the top of the case is more fiddly. A replacement toner kit cost £119.

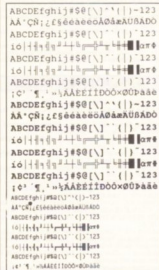
The printer is well equipped, with serial and parallel ports as standard, a single slot for a font card and five resident typefaces,

three of which come in more than one size. A total of 10 resident fonts are provided. The printer also sports .5 Mb of memory and Diablo 630, Epson FX and HP LaserJet II emulations as standard.

Extra memory is £394 per Mbyte, which is important, since the OP-105A couldn't print either of our test pages with the memory supplied. It only produced about half of the timed page. Print quality is as good as the true lasers (rather better than the Atari), and shows no ill effects of the LED mechanism. The printer is rated at 5 ppm.

Overall the Seikosh OP-105A is an interesting approach to page printer design. It is noisy when printing but offers much in terms of emulation and resident fonts. The twin bin option could be of particular value in business, with envelope or A4/A5 page printing.

One final thought: the Seikosh OP-105A produces ozone as a by-product of its printing technique. The manual recommends careful checking of the ozone filter built into its casing. And we thought the poor old shagged out Earth could do with all the ozone it could get!



■ The Star and HP share the same innards

LASER PRINTER 8

■ £1,989 STAR
■ MICRONICS
■ 01-840 1800

LASERJET II

■ £1,999
■ HEWLETT PACKARD
■ (0734) 777828

No apologies for combining these two printers. Both use the same Canon SX laser engine in the same case, and indeed the only physical differences are colour scheme and



This text is printed in 16 point font size.

This text is printed in 20 point font size.

■ Atari's odd machine: fine if you shop Atari forever

least 1Mbyte of memory - 2Mbytes of RAM are a necessity if you're going to use heavyweight software like Calamus or PageStream.

Software bundled with the laser lets you print anything displayed on screen by pressing the Alternate Help combination. Printing is extraordinarily quick: hit the keys and the laser whirrs into action immediately. Two printer fonts and a Diablo printer emulator are also supplied. Once they've been installed, any program will

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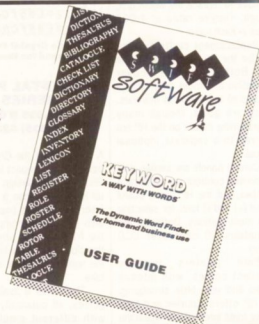
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the control panels on their fronts. The differences are more apparent in the supplied emulations and internal fonts.

Both come in fairly large cases which feed from 150 sheet paper trays which project out of the front of the machines by some 16 cm. As compensation, they do have single sheet feed guides on the top of their paper trays, useful for letterheads or envelopes.

Pull down trays at the rear allow for face up paper delivery, supplementing the standard face down collation on the top of the case. Parallel and serial ports are standard on both machines, as are alternative I/O ports which allow for specialist computer links and faster data transfer.

Extra memory can be added through a panel at the side (for one Mbyte: £239 from Star, and an eye-watering £496 from HP). Memory supplied is .5Mbyte in the HP and 1 Mbyte in the Star. Completing the line-up are two font cartridge ports at the front under the paper trays.

Inside the machines, whose tops hinge up for access, the toner and drum cartridges are one piece and simply slide in and out for replacement. This couldn't be easier, but does mean that you could run out of toner before the drum is completely spent. You'd still have to replace the whole unit, though. They're rated at 4,000 pages in each case.

Replacement cartridges are £95 for the Star and £89 for the HP. Both machines cover installation and most other things in pairs of spiral-bound manuals. These are good, though many programming details on the HP are referred to a separate, optional manual.

Control panels are similar, with the normal controls on membrane switches, but the HP has a useful pair of [=] and [] keys for selecting from menu options. Both use the ubiquitous 16 character LCD display.

Both printers produce excellent copies, with intense blacks and very little smudging. The HP offers Courier and Line Printer fonts internally, to which the Star adds Tms Roman and Prestige. Both printers produce six ppm.

The Star is marginally cheaper and offers more memory and fonts. It also offers more emulations - yet in some ways it is the HP which wins this category hands down. The HP only offers one standard (though others are available on cartridge) and this is not an emulation.

The LaserJet II is the only true HPLJ machine on the market. If you want to use software designed for this standard, you may find the emulators are not completely compatible. The HP will be. The Star offers HP LaserJet Plus (an earlier standard) and IBM Proprinter, Epson EX-800 and Diablo 630 emulations thrown in.

switches and a two-digit green LED readout. This readout provides lots of information, but you need to refer to the manual to interpret the numeric codes. It's not as easy to use as the 16 character panels on the other printers. The manual is a two part affair, spiral bound and with plenty of illustration.

Installation of the electrostatic

per Mbyte. Replacement drums, with a life of 6,000 pages, are £94; toner, with the same lifespan, is £64.

Print quality is generally good, though slightly more spread is noticeable on small characters. This may be a function of the LCS mechanism. In general the Crystal Print Series II represents good value for money, is compact and easily upgradable.

The PostScript upgrade costs £1,444, which still leaves you with one of the cheapest PS printers on the market.

LQ-LASER QUALITY?

So which of these printers do you choose? All offer good quality laser, or laser-like print, for not much more than the price of Atari's own product.

The HP offers its own standard as a main selling point. The Star offers a similar print spec, but with extra memory and emulations. The Seikosha comes with a font bonus and the Qume is compact, with an obvious upgrade path to PostScript.

Whichever you choose, remember that prices quoted in these pages are manufacturer's recommended retail prices. But you'd be daft to pay this RRP. Printers, even more than with other hardware, have a "street price" that way undervalues the manufacturer's price.

Apart from the Atari printer, which doesn't seem to be discounted much, the printers listed here are likely to be available for between £200 and £500 less than the RRP. It very definitely pays to shop around.

And when you're standing listening to the salesman's pitch, remember too that printer speeds are quoted in pages per minute (ppm). This is misleading, though, as it is only a measure of the speed at which the printer can print several copies of the same sheet, once the page has been made up.

Much more relevant is how long the printer takes to accept data for the first copy. This ranges from a few seconds to several minutes for a complex page. Try inserting this paragraph into your conversation with the pushy young salesman and see what happens!

A laser printer opens up a huge area of print possibilities. Costs are reducing all the time, and it may not be long before laser print takes over as the method of choice for all serious ST use: LQ may soon cease to stand for Letter Quality, and become Laser Quality. ■

This advertisement for the Crystal Print Series II printer features a large grid of characters and symbols at the top, demonstrating the printer's font capabilities. Below the grid are two high-quality images: a portrait of the Mona Lisa and a tiger's face. The text below the images reads: "■ Qume's Crystal Print Series II has a font size limit of 48 point - not so good for those 'GOTCHAI'-type screamer headlines!"

CRYSTAL PRINT SERIES II

■ £1,555 ■ QUME
■ (0635) 523200

A new design, the Crystal Print is based on a compact Liquid Crystal Shutter (LCS) design which takes up less space than a conventional laser printer. The paper feed tray also fits almost completely within the frame of the printer, though this does impose a limit of 50 on the number of paper sheets it can take.

The printer is available in three guises, all outwardly similar but with different emulations and internal memory. The basic model emulates a Diablo daisywheel printer and is really only suitable for correspondence. The Series II machine emulates the HP LaserJet Series II, though with a font size limit of 48 point - the HP machine can go up to 72 point. The printer is rated at 6 pages per minute.

The Crystal Print is almost cubic in shape, with a front panel consisting of five membrane

drum and toner cartridge is fiddly at best.

There are five main components: the drum, developer, fuser cleaner, waste toner bottle and toner cartridge itself. The wide-opening clamshell design of the case helps with installation and the instructions are clear, but life is by no means as easy as with the HP or Star machines.

Parallel and serial inputs are supplied as standard, and there are sockets for two fonts cards at the front of the machine. These are specific to the Qume and help boost the rather meagre Courier font, which is the only one supplied as standard with the printer. The printer has an intrusively noisy fan which runs all the time it's on.

As standard, the Series II is supplied with .5Mb of memory. It still coped with printing the test page, though, suggesting good memory management. It printed it marginally quicker than any of the other printers.

Extra memory is available in 1Mbyte units, at a cost of £495



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Re-format fast	4 seconds	Not Possible
Format IBM	65 Seconds	Not Possible
Format 10 sectors 5 1/4	33 Seconds 79816 bytes	Not Possible
Format 10 Sectors DS	65 Seconds 80736 bytes	Not Possible
Format 10 Sectors Double sided with 80 tracks	67 Seconds 81817 bytes	Not Possible
Format 10 sectors Double sided with 81 tracks	68 Seconds 82816 bytes	Not Possible
Bad read swap	Possible	Not Possible
Copy & Format in 1 pass	Possible	Not Possible
Virus detect during copy	Possible	Not Possible
Save defaults to disk	Possible	Not Possible
Verify control option	Possible	Not Possible
Select Tracks/Sectors	Possible	Not Possible
Size of program on disk	23608 bytes	Nil

All timings on Mega 2.51 with verify off on Dash. No timings include menu selection. All timings are approximate. IBM is a registered trademark of International Business Machines.

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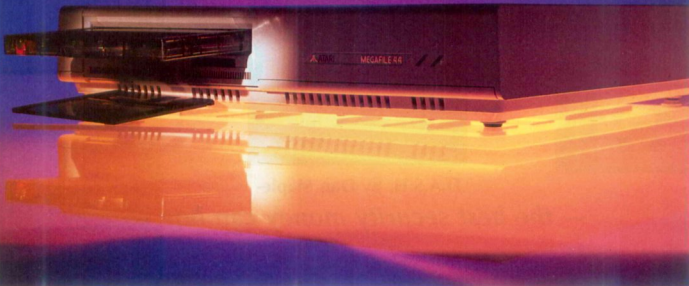


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HARD DISK - TO GO

A hard disk you can carry anywhere? RICHARD MONTEIRO takes a walk



MEGAFILE 44

- £919.99 All Ataris
- Atari/SDL, 1-4 The Mews, Hatherley Rd, Sidcup, Kent DA14 4DX
- 01 309 1111

What can you say about a hard drive? Fast... stores a lot of data... looks pretty by your ST... second only to optical media as the most reliable storage system... You know all that. But what you don't yet know is the Megafile 44.

Atari's new baby matches your ST design and colour scheme perfectly and fits squarely under a Mega ST processing unit. Brownie

points all round. But appearances are hardly a high priority when you're parting with 900 big ones for a hard drive, especially if you're going for something as radical as the 44.

So what's the deal? Well, it doesn't have a hard disk (or platter) built in. Instead a 44Mbyte cartridge can be inserted in, or removed from, the hard drive - it works in a similar manner to a floppy in a disk drive. The Megafile combines the portable convenience of a floppy and the high capacity storage of a standard hard drive.

The implications of a removable hard disk may not be obvious. So consider: you have a Megafile at home and your office has sev-

eral. You can travel from home to office and back again with 44Mbytes of data in your jacket pocket.

Data portability, then, is one aspect. The other is storage medium cost. While the initial cost of the megafile unit is expensive compared with other ST hard drives, additional 44Mbyte cartridges cost only £100. That's roughly half a meg for £2 - not far off the price of a double-sided double-density 3.5-inch floppy!

A 200Mbyte traditional hard drive costs anything from £1,500 upwards. Compare that with 200Mbytes-worth of cartridges, at around £400 (plus the cost of the Megafile, £1,300). The more cartridges, the cheaper the system.

is switched on. Access speed (time to locate data on the disk) is 40 milliseconds and data transfer rate is approximately 500K per second.

This new Atari hard drive is beyond most home users' budgets. It may be far cheaper than anything you can get for other computers, but that's precious little consolation. And for businesses it is a cheap mass storage device - even more so when ten or more cartridges are in use.

The nagging doubt about the Megafile is the storage medium. Hard disks usually rest in a partial vacuum: the cartridges don't. As you'd expect, dust in your drive means disaster. Still, our cartridge has survived a rough office life. So far so good. ■

DRIVES, HE SAID

The Megafile fits into the DMA port of any ST, but sits most comfortably under a Mega machine. With 520s and 1040s it is necessary to have the Megafile 44 sitting sideways on to the ST because the DMA cable is so short. You could try a longer lead, but data transfer reliability could become a problem.

Software provided with the system allows you to format and partition cartridges. Think of partitions as logical drives which appear on the GEM Desktop as, say, Drives C, D and E. The software also lets you install an auto-booting driver on any partition, so that you could have partition E on the hard drive boot, rather than floppy drive A, when your system

FORMAT RATINGS

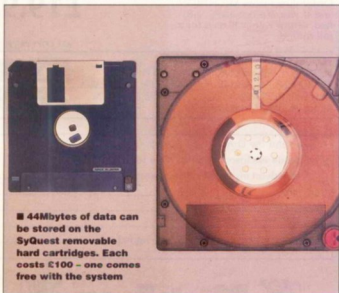
Features 80%
As effective as 'ordinary' hard drives, but with portability as well.

Speed 80%
Access speed of 40 milliseconds, and data transfer of 500K per sec.

Ease of Use 83%
Software is provided so you can partition your cartridges.

Results 100%
It stores data!

Format Value 82%
Price is initially prohibitive, but once you buy into the technology it becomes cheaper: the more cartridges you buy. Only doubt is the durability of the medium. "wait and see" is probably not very reassuring!



■ 44Mbytes of data can be stored on the SyQuest removable hard cartridges. Each costs £100 - one comes free with the system

A POWERFUL PACK OF FOUR



LIGHT

BEFORE

IK+
They called International Karate the greatest Karate beam 'em up yet! (Commodore User). And who are we to argue? But ARCHER MACLEAN has come up with a stunner: A third fighter. An amazing animated background. New moves (including double head-kick and a spectacular backflip). Re-mixed music by ROB HUBBARD. And balls!
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© 1987 System 3 Software Ltd.

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You are a K.L.I.P.T. – the latest generation of human robot engineering – an extremely sophisticated human brain in a highly manoeuvrable precision-engineered steel body. Your only mission is survival... for the human race.
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VOYAGER
In 1977 Voyager II was launched – inviting all life forms in the Universe to visit our planet. Get ready – company's coming. Luke Snayles – returning to Earth after completing a 50 year sentence of "investigative exploration" is not a man you'd wish to meet. After half a century of solitude, he's bored and hungry. On Earth the gate crashers are about to arrive – they are the ROKIZ, but Snayles has got other ideas – no-one, but NO-ONE is going to spoil his home-coming party!
© Ocean Software Ltd. 1989

R-TYPE
Deep in the cosmos, the ultimate terror – The Bardo Empire – evil, horrific, dead in the dark recesses of time and space, its terrifying creatures roam the cosmos waging war on the Planet Earth. The desperate battle has just begun. As pilot of the R-9 fighter plane, it is your mission to crush these interstellar monsters using every sophisticated weapon at your disposal. Only your skill and reactions stand between brilliant victory – and the devastation of Mankind.
At last, the arcade sensation bursts on to your home screen with several stage terrains and a compelling scroll feature: the ultimate in thrilling gameplay.
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Sony Branded
10 £10.99
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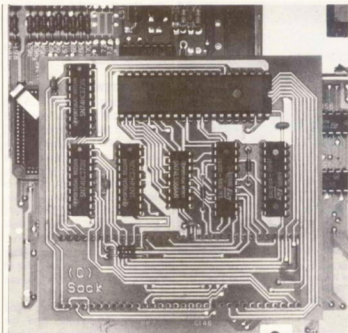
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■ PC Speed arrives on a square board that fits over the top of the 68000 processor. Unfortunately, fitting is complicated by Atari's irritating habit of moving the 68000 into the most inconvenient places. Here it is located directly under the keyboard - the ideal place

PC SPEED

■ £379 ■ All STs

■ Gasteiner

Technologies,

8 Thornaby Gardens,

Edmonton, London

N18 2EX ■ 01 803 7880

This is not just another emulator. Honest.

If you've experienced other PC emulators you'll know they're not, on the whole, much cop. So it's hardly surprising that everyone looks decidedly dubious the moment a new one is announced. Avant Garde's PC_Ditto was able to support a wide selection of PC software, but it never stacked up well against a real PC.

The truth is, software-based emulators are just too slow, they have trouble handling software and they have an infuriating tendency to bomb out when hardware calls are made.

PACKAGE DEAL

Since it's hardware-based, PC Speed is the most likely candidate to remedy all this. Enclosed in the package is a disk (looks nice and safe), a plug-in board (here come the problems) and a 10-page, photocopied installation manual (oh dear).

This is where the real problems rear their head. The manual has been translated from German, which never helps, and most of the accompanying software is in German as well. This is no hassle if you have a bog-standard ST, but Atari are notorious for moving the

68000 chip all over the place and since PC Speed fits over the top of this, installation can get tricky quick. Unfortunately the manual doesn't help out much, making only a handful of idle ruminations about how to fit it if the inside of your ST looks nothing like the diagram provided.

If you have a 520 or 1040 with a 68000 located almost underneath the floppy drive then you're in for real problems. For a start, you need to break off the plastic legs which support the floppy drive, then you insert the board - the easiest part of the process. Now you try and put the ST back together again. Seen the flaw here yet? There's nowhere to put the floppy drive and no matter how you try to support it, it's just impossible to squeeze the unit in and still get your work.

There are even worse problems if you've just bought a new Mega (and that includes the Mega 1). Atari have put a chip on top of the 68000 and this is soldered onto several pins of the processor. To install PC Speed in this instance, you need to de-solder all the connections, move this small chip and stick long wires onto the pins of it taking the wires back so that they connect onto the 68000. Now fit the board and provided you haven't melted your 68000 in the process, you should find you've acquired a PC.

Of course you might be lucky and have the 68000 located at the front of the computer and underneath the keyboard - the prime

PC SPEED: A HARD ACT TO FOLLOW

PC emulators are increasingly popular, but PC Speed is the first to be hardware based.

MARK HIGHAM blows the dust off his MS-DOS disks

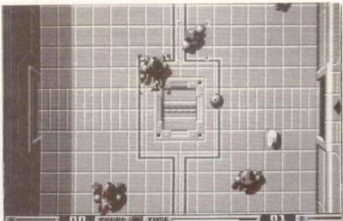
location. In this case the whole process is confined to fitting the board over the 68000 and re-assembling your machine.

UP AND RUNNING?

If you get this far - and that's by no means a certainty: we found that the board didn't work at all with some STs - then you've overcome the major hurdle. Now all you do is boot up with the disk provided, double-click on PCSPEED.PRG and suddenly you find your ST asking for an MS-DOS system disk. You'll need a friendly PC owner to make up one of these for you and you're off.

The great thing about the ST is its ability to read PC formatted disks, so there's no unusual file-transferring to get programs across to your machine. The only requirement is that the software is contained on a 3.5-inch.

This isn't too difficult since the majority of PC software is supplied in both formats. You could, of course, buy a second 5.25-inch drive and link this to your machine to get you a drive B to read 5.25 inch disks. The initial setup procedure in PC Speed makes it possible to recognise the second drive as a 5.25-inch model and this adjusts the formatting procedure



■ PC Speed running Speedball. Agonisingly, slow, animation, moves, a, frame, at, a, time, and, the, four-colour, screen, is, well, unappealing...

to accommodate it.

You can change the set-up of PC Speed using a remarkably poorly documented install program, most of it is in German. Gasteiner are planning to bring out an updated version soon, but installation's going to be tough otherwise.

To activate PC Speed you run a short program that brings up the standard MS-DOS environment. The installation program is separate from the main PC Speed software, but it saves its parameters into the main program so there's no need for an RSC file. Installation allows you to decide whether to use CGA or Hercules graphic modes. Using CGA mode prompts a further option where you can choose from three possible font styles. You also decide the various disks you want to use - whether 3.5-inch, 5.25-inch or various hard drive partitions.

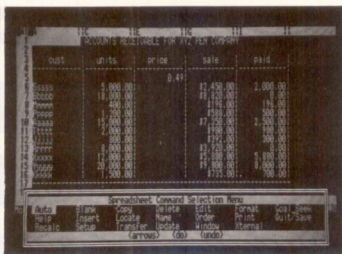
TESTING THE WATER

Assuming you've worked your way through the installation process it's time to test the software. The first thing to notice is that all PC shortcut keystrokes have been retained. The function keys recall a previously executed command and Shift + Alternate + Delete initiates a soft-reset which returns you to the PC startup screen and requires you to insert a system disk all over again. This takes some getting used to if you're used to the ST WIMP environment but at least it saves re-booting with the PC Speed disk.

Apart from CGA and Hercules graphic modes, you also have complete access to the PC's sound capabilities. Serial and parallel ports are also supported, as is the mouse. All of these make it easy to communicate with external devices, so printing from Wordstar or other commercial packages works perfectly.

WHAT'S IT GOT?

The PC Speed board runs at four times the speed of a standard 4.77MHz-rated PC-XT. But remember, an XT was always very slow



■ If you're used to a PC for serious work you'll feel at home. Here, a boring PC database struts its stuff, proving that the board will work with everything. There's support for external peripherals, so you can print out documents or even squirt them down a modem link

so even with the extra speed you're left wanting more.

The speed side of things is actually very interesting. A standard IBM XT has a Norton SI rating of 1.0, an IBM PS/2 30 has a rating of 1.8 and the new PC-Ditto is supposed to have (when it eventually appears) a Norton rating of 3.0. PC Speed beats all of these with a Norton rating of 4.0 - very impressive.

To test the board we executed Mirrorsoft's Speedball. The speed of animation was so slow that the

game just wasn't playable. On top of this, the limitations of CGA mean that you'd be far better off running games on your ST.

Fortunately the speed problems in games hamper serious software: Wordstar runs perfectly, as does Pagemaker (once we'd installed the hard drive).

The PC Speed board contains little more than a NEC V30 processor. With 1mb STs and above you're given access to 704K of memory which is 64K more than an XT. Considering the heavy

requirements useful PC software now makes in the memory department, the majority of this is needed so using it on a 520 isn't recommended.

A MATTER OF FLOPPIES

By investing in a second 5.25-inch drive you can reap the benefits of a two-drive system and access PC software held on 5.25-inch floppies. This is handy since these larger disks are, or at least were, standard for the PC. You can link in a hard drive, making life far easier. Just copy all your software onto here and you'll really start to have more of a realistic PC emulator. One partition of the hard drive must be reserved exclusively for all your PC programs, though you can read data from other partitions.

Apart from the annoying speed problems with games and the inevitable restrictions imposed by a CGA graphics card, PC Speed can effectively turn your ST into a PC. There are still the limitations of the machine - the PC keyboard is easier to use and an internal hard drive wouldn't go amiss - but at least you're getting a decent emulator. The fact that PC Speed executes games software is proof that it can handle the odd calls made by games, and if it can work with these then serious software is a cinch.

An emulator is no more and no less than an emulator, and no-one could say that an ST and PC Speed is a cheap alternative to buying a PC: it ain't. It beats the XT hands down, but nobody in their right walt purchases XTs nowadays: they're the low rent end of PC town, and you've only got to try and play a few games to see why.

However, for serious use, and particularly Wordstar, you're unlikely to notice many problems. Hardware support is a Godsend, and the fact that it makes no requirements on RAM means that you aren't left with a ridiculously low amount of memory to play with. If you've got lots of PC software and are looking for somewhere to use it then look no further than PC Speed. ■

Ist eine Harddisk angeschlossen können Sie wählen ob ein Bootswertch von Disk gestartet wird (J) oder sofort von Harddisk gebootet wird (NO-BOOT).

Harddisk	NEIN	(J)	NO-BOOT
Sie können nun den einzelnen Laufwerken unter DOS, eine Partition Ihrer Harddisk zuordnen.			
Laufwerk 0 = Part.	[C]	D	E F G H I J
Laufwerk 1 = Part.	C [D]	E	F G H I J
Laufwerk 2 = Part.	C D [E]	F	G H I J
Laufwerk 3 = Part.	C D E [F]	G	H I J
Laufwerk 4 = Part.	C D E F [G]	H	I J
Laufwerk 5 = Part.	C D E F G [H]	I	J
Laufwerk 6 = Part.	C D E F G H [I]	J	
Laufwerk 7 = Part.	C D E F G H I [J]		

Geben Sie den Typ Ihrer Harddisk Treibersoftware ein

Typ **NOHD** [ICD]

Sie können bestimmen welche Partitionen Sie benutzen wollen. Nur GEM Partitionen, oder alle Partitionen.

Partitionen [GEM] **ALLE**

■ The set up procedure. You can set PC Speed to operate with a hard drive but all the software is in German so you need to grapple with your 'Sprechen de Deutesch' first

WHY YOU SHOULD MAKE YOUR EXCUSES AND LEAVE

The emulator supports CGA (Colour Graphics Adapter) and Hercules graphic displays. CGA is one of the old PC standards but it's still the one best supported - there are few PC packages that don't work with CGA. CGA is a four-colour mode and so fairly unadventurous.

Hercules mode is a mono graphics standard offering very high resolution black and white graphics.

It's used primarily in specialised design and desktop publishing, and goes virtually

completely unsupported in other fields. Certainly the games market steers well wide of Hercules.

Compo, the Dutch company who created PC Speed, have hinted that an EGA version that would make more use of the ST's 16-colour palette may be just over the horizon.

EGA (Enhanced Graphics Adaptor) offers a 16 colour display and is thus particularly suitable for use in games. This mode requires a 350-line display - how Compo will get

around that is anyone's guess.

If you hear PC owners crowing about VGA graphics, make your polite excuses and leave quietly: VGA provides a whacking great 256 colours on screen, and so is unlikely to make its way onto the ST.

If your screen goes black and stays that way after you load software then it's probable that you're trying to use a mode other than CGA or Hercules.

Either that or you've blown your tube.

That's PC - SPEED

Official Distributors for the That's series of programs
See Review on pages 45-46

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Atari Mega 4	POA
Atari 1040STE	POA

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Phillips 8833	£229
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Atari Power Pack	£349
Atari 1040 Pro	£439
Atari PC Pack	£499

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Atari 30MB	£399
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NEC P2200	£249
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Star LC 10 colour	POA
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Other please ring!

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ACCESSORIES

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DS/DD Box of 10	£10
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Vidi ST	£95
Midi Lead	POA
Twin Joystick Extension	POA
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PUBLIC SPEAKING

You can score some excellent software cheap in the public domain.

STUART ANDERTON sorts the good from the bad and the ugly

Newcomers are often suspicious about the public domain ('PD' for short): if the stuff is so good, why want to know, how come it's so cheap?

The answer that the ST fosters a thriving bunch of programmers, many of whom don't want to put in the time and effort, not to mention cash, it takes to market the programs they've written for themselves or their families to use. So they take the altruistic option.

They simply put the programs in the public domain and allow everyone to copy them freely. Libraries catalogue the programs and, for a small handling charge, duplicate them for you.

The problem, of course, is that there's no quality control in PD. How do you sort out the First Division from the Brentford Nylon Second Division South? Easy: follow me on the trail of a couple of goodies...

PLANETARIUM (DISK MISC21) ■ SOFTVILLE PD SERVICE ■ £3

Ever been walking on a crisp clear night when the Milky Way is showing and wished you knew more constellations than just The Plough? (No - ed.) Or wondered whether the bright point of light low down in the east is a star or a planet - is that a tint of red, could it be Mars? (Absolutely not - ed.)

This disk contains a remarkable program to take the hard work out of planet watching. Entitled Planetarium, the program first asks you where in the world you live and the present year, date and time.

A pull-down menu gives you instant access to the planets and constellations. The screen reads out the azimuth, elevation and so on of the star, but the uninitiated

can simply zoom out until they find something they recognise.

The position of the heavenly bodies is continually updated to allow for the rotation of the Earth, and the spin can be exaggerated by up to 64 times to watch the stars fly past on the screen.

Clicking the right mouse button when pointing to an object produces a lengthy list of information about it. Even obscure stars have their catalogue number and magnitude included.

Unusually for an astronomy program Planetarium runs equally well in mono and colour, even a TV giving acceptably clear results. And the programmer had a sense of humour - set the elevation to -90 degrees and a pair of feet appear on the screen!

This is fascinating to play with in conjunction with that handy ST peripheral, the universe. I look forward to getting a Stacy to run Planetarium out in the open and finally find Mars for myself. ★★★★★

SMALL WORLD ■ PAGE 6 ■ £2.95

A charming little program for toddlers, TTM plays a merry little tune while cycling through a sequence of well-drawn Disney characters. All the favourites are here: Mickey, Donald, Pluto, Dumbo, Ronnie Reagan and the rest. For high-tech under 10s it even drives a MIDI instrument to augment the sound. ★★★



■ Minnie could stop the kids torturing the cat, briefly



■ Dial in your position on the map, and see the universe from your point of view!

PD INFO

Even PD can turn out expensive if what you buy is as unspeakably bad as some of the stuff we receive. Here's those essential ratings in full:

- ★★★★★ Beg, steal, borrow
- ★★★★★ Beg
- ★★★ Steal
- ★★ Borrow
- ★ Burn

Don't go software shopping without 'em!

Below we've listed a number of suppliers of good PD. But if you know of - or indeed run - a PD library that's not on this list, we'd welcome your submissions.

Send us the programs you know we'll rave about and a catalogue, giving an address and price details.

Post to:
PD, ST Format,
4 Queen Street,
Bath BA1 1EJ

ACE 2 Old Mill Close, Market Weighton, York YO4 3DU

ALPHA COMPUTING

32 Meadow Drive, Halifax, W

Yorks HX3 5JZ

BUDGIE UK 5 Minster Close,

Rayleigh, Essex S56 8SF

COMPUTER CONNECTIONS,

Ashlaw House, Exumoor Drive,

Christchurch, Wilsbeth,

Cambis PE14 9LS

ENTERTAINMENT SOFT

4 Trelawney Drive, Tilehurst,

Reading RG3 5WG

FLOPPYSHOP ST 50 Stewart

Crecent, Northfield,

Aberdeen

GOODMANS PDL 16 Conrad

Close, Meir Hay Estate,

Longton, Stoke on Trent

ST3 1SW

LITTLETON PDL

3 Blacksmiths Close, South

Littleton, Evesham, Wores

WR11 5YG

MPH 10 Chandlers Court, Eaton,

Norwich NR4 6EX

PAGE 6 PO Box 54, Stafford,

ST16 1DR

PARADISE COMPUTERS

9 Westfield Crescent, Brighton

BN1 8JB

PD LIBRARY 68 Delancey St,

London NW1 7RY

RIVERDENE PDL

63 Wintingham Way, Purley on

Thames, Berks RG8 8BH

ROUND TABLE PD

7 St Andrews Rd, Warmminster

BA12 8EP

SOFTVILLE PD Unit 5,

Stratfield Park, Waterlooville,

Hants PO7 7XN

SOUTH WEST SOFTWARE

LIBRARY PO Box 562,

Wimbome, Dorset

DT2 2ND

ST CLUB 9 Sutton Place, 49

Stoney St, Nottingham

NG1 1LX

ST UK 1 Bartholomew Road,

Bishops Stortford,

Herts CM23 3TP

THE OTHER PDL 108 Kenmare

Road, Wavertree, Liverpool

L15 3HG

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 - * FIRST BASIC and First Music Utility Software
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 - * All leads, manuals PLUS MOUSE and free mains plug!
- REMEMBER!** Many ST's do not come with BASIC - ours come with ST BASIC REV D by Metacomc.

520STFM Explorer Pack £279.00

- * Explorer Pack Includes 520STFM 512K Keyboard with built-in 1 Megabyte Disk Drive and TV Modulator
- * 1 FREE Game, ST Tutorial and METACOMCO Basic worth £25.00
- * All Leads, Manuals PLUS MOUSE and FREE Mains Plug! * Free mouse mat worth £4.95

1040STFM Ultimate Art Pack £439.00

- * Includes 1 megabyte keyboard plus Hyperdraw, Hyperpaint, Organiser Business Software, First Basic, £50 Voucher toward 3 Atari Mind Games and Metacomc Basic

1040STFM Business Pack £439.00

Business Pack includes:

- * Atari 1040STFM Keyboard with 1 meg memory and 1 meg built-in disk drive plus TV modulator.
- * £385 worth of Business Software including MICROSOFT WRITE word processor (£150), SUPERBASE PERSONAL Database (£60) and VIP PROFESSIONAL Lotus 123 Spreadsheet clone (£150). Metacomc Basic (£25.00)
- * All leads, manuals and mouse.

MEGA 1 BUSINESS PACK £529.00

Features:

- * Separate Keyboard and System Unit
 - * All the Software included with 1040 STFM Business Pack.
 - * Blitter chip installed for faster graphics
- Inc SM124 Mono Monitor.....£628.00*

ACCESSORIES

Quickshot II Turbo Joystick.....	£9.95	Branded Memorex 3.5" DS DD Disks	
Competition Pro 5000 Joystick.....	£13.95	Box of 10.....	£13.95
Competition Pro with Autofire.....	£14.95	Memorex Disk Box	
Konix Speeding Joystick.....	£11.95	For 40 3.5" Disks.....	£8.95
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Star LC24-10 24 pin incl. lead ST/Amiga.....	£259.00
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Citizen 120D including interface lead for ST/Amiga.....	£159.00

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Amiga A500 Games Pack £389.00

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- * PHOTON PAINT or SPRITZ GRAPHICS PACKAGE worth over £50.00.
- * FREE MOUSE MAT worth £4.95
- * Amiga BASIC, Amiga EXTRAS 1.3, Workbench 1.3 PLUS the Amiga Step by Step Tutorial.
- * All leads, manuals PLUS MOUSE and mains plug!

Amiga A500 StandAlone £369.00

- * Amiga A500 as above but without the £230.00 worth of Games Software

Amiga A500 Business & Games Pack £459.00

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- * includes everything in our Amiga Games Pack PLUS a Comprehensive Suite of Business Programs including, Scribble II WORDPROCESSOR, Analyze II Spreadsheet and Organise Database.

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Atari Megafile 30 Hard Disk.....	£449.00
New! Commodore A590 20 meg hard disk.....	£369.00
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Commodore Amiga A1084 Stereo colour Monitor inc lead.....	£239.00
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STATESIDE SOFTWARE

Are UK ST users losing out? ELIOT STEIN surveys the booming US software scene

Software shelves in America are groaning under the weight of titles yet to make it to the UK – some of them very highly desirable indeed. So why aren't these titles making it over to Britain?

Alas, many new American software companies simply do not have the resources or the connections to strike up contacts with UK distributors. And American software which is successful in Britain have in general taken a great deal of time to make it to the UK.

The highly successful *Timeworks*, for example, was sold in America in November 1987, and didn't reach England until the Spring of 1988. Even lengthier gaps faced *Pagestream*, *Calamus*, *Word Writer*, *Word Perfect*, *Spectre 128*, *PC Ditto*, *Turbo ST*, and many others.

Many titles lack the word-of-mouth reputations of programs like *Word Perfect* and *Spectrum 512*.

Still more don't have a famous company – like *Timeworks* or *Antic* – behind them.

MISSING OUT

The ingenious software house *Codehead* is behind a few of the best American utilities.

For example, no-one has a good word to say about the GDOS and its infamous GEM extension, but unfortunately, scores of desktop publishing, word processing and graphics packages use it. Hence *Codehead* created the splendid *G+Plus*, a GDOS replacement.

G+Plus is written in compact assembly code language, and actually increases the speed of the ST (GDOS slows it down). *G+Plus* also includes a desk accessory which completely manages the GDOS replacement. This accessory automatically loads the correct GDOS ASSIGN.SYS file to whatever software you're using. Therefore it isn't necessary to reboot every time you want to switch GDOS pro-

grams.

Flexcessory attempts to tackle the six-accessory limitation in a slightly different way. It works with standard applications rather than desk accessories, i.e. TOS programs which don't use the GEM drop-down windows. You can load, save or even re-configure applications at any time as well as install its built-in RAM disk and print spooler.

Flexcessory can take applications like *Procopay*, *ST Writer* and use them as if they were desktop



■ *G+Plus* GDOS replacement running under the *Neodesk* front end.

accessories. You can even use *Flexcessory* inside *Multidesk* and

reap the benefits of both while only using one main desk accessory slot.

Another ingenious company has tackled the ST's hopelessly inept GEM file selector. *Universal Item Selector* offers a simple environment for selecting files and changing drives, and features complete DOS functions.

Simple and intuitive, it can perform such functions as disk formatting and folder creation. It also renames, deletes, prints, write protects, moves and copies files.

The move option, not available from the standard GEM desktop, lets you move files to different folders on the same disk without having to copy then delete the original. There is even a disk scan facility, incorporating wild cards, for scouring a disk for particular folders.

USEFUL STUFF

Practical American desk accessories and utilities are plenty

BYE BYE DESKTOP AS THE WIMP COMES STORMING IN

Two American programmers have even been able to replace the GEM desktop itself.

Neodesk, from *Gribini!* software, is an almost flawless WIMP desktop for the ST. Only a full-length review could do justice to this reliable and feature-packed program. Its capabilities read like a shopping list for the ultimate desktop.

Up to seven windows can be opened at a time, there is enhanced control of TTP programs, the ability to load *Degas* or *Neochrome* pictures as background for the desktop, search templates can be used on directory windows, expanded 'show information' exists for disks and files, you have optional use of keyboard commands for all operations, and it takes up only 24K!

Icons can be individually edited with a built-in program and you can even place icons on the desktop and run programs directly. Separate icons to distinguish hard disks, floppy disks, RAM disks and the printer (that's right – a special desktop printer queue).

The advanced copying features are most

impressive. You can choose to copy disks as 'files only' (which merely drags files from the source to the destination), 'with format' (which reformats the destination to match the source) or as 'no format' (which carries out a straight copy like the GEM desktop). Disk and file copying also take as few disk swaps as possible.

The disk formatting allows 9 or 10 sectors



■ *Neodesk* offers an excellent WIMP front end for the ST

and up to 82 tracks, and also formats disks with the correct boot sectors so that they can be read by MS-DOS.

The desktop also offers the option to display files as text in multiple sizes and columns, support for batch files, hard disk partition copy at high speeds, user-definable parameters, a control panel desk accessory replacement, custom window routines and more.

Codehead have taken a completely different approach to overcoming GEM's inadequacies with *Hotwire*. The GEM desktop has been replaced by 'hotkeys' (macros). Up to 52 programs can be run this way. If you forget a particular program's hotkey the *Hotwire* menu shows you the program options. This menu also lets you save, load and alter hotkey selections, defining TTP parameters as well as a special link to its sister program *Multidesk*.

Both *Neodesk* and *Hotwire* are excellent, well-designed, programs which approach the same problem in completely different ways.

Codehead Utilities is one such collection of desirable individual programs.

One of its component parts is Art Gallery, a desk accessory or stand-alone slide show which accepts all popular formats (Neochrome, Degas, Spectrum 512, Tiny & Art Director) and also swiftly loads non-Degas pictures into Degas Elite. Auto Organiser instantly reorders your Auto folder programs, Zerodisk almost instantaneously erases a disk without formatting, and the powerful Codecopy is intended for industrial duplication.

These are accompanied by six other programs as well as a few



Maxpack includes a handy print spooler

powerful shareware and public domain goodies.

Maxpack, from SoftWorx Publishing, is a CMan/Backpack type of desk accessory which contains several different features. It includes a comprehensive Print Spooler, File printer and Printer configuration for almost any type of printer. Used together, these greatly enhance the power of your word processor.

Its macro facility is excellent. Simply press the chosen hotkey and the Enter button, followed by whichever key presses you wish to record. The macros can be saved

and loaded at any time, letting you make different macro collections for various programs.

Descart is another desk accessory collection. It boasts a calendar/diary, address book, calculator, macros, control panel and other goodies. Stored on a plug-in RAM cartridge, the program takes up virtually no precious RAM.

The excellent desk accessory Turbo ST speeds up screen redraws even quicker than the hardware blitter, and is already known to many ST users. The new version 1.4, however, fixes a few minor bugs including the program's incompatibility with Timeworks DTP. And coming soon is a sister product, Turbo Graphics, which speeds up all of the ST graphics.

Do you ever forget what your function keys do during programs? Well now you can label them with Functionz, a package which includes plastic stands that fit over the ST's functions keys. These stands contain templates printed out using the enclosed function key labelling software.

BUSINESS HEAVYWEIGHTS

The Americans also specialise in powerful business software: word processors, desk top publishers, databases and financial packages.

One American program which has yet to arrive is Ultrascript. This program turns your Epson, Atari, Hewlett Packard, IBM or NEC-compatible printer into a post script compatible machine. You can even use your Atari to print out postscript documents created by other computers.

Ultrascript is simple to use and

HOW TO MAKE A MILLION WITHOUT TRYING

Most UK distributors bring American programs over at prices comparable to those in the States. Some distributors, however, grossly inflate prices of British versions. One prime example is Calat 1 mus from Signa.

In America, Calamus retails at \$299.00 (though many US advertisers advertise it for as little as \$175). \$299.00 is roughly equal to £200 - a far cry from the £399 which Signa is asking. No wonder the US version is so well circulated around Britain!

anyone who can use the print function of a word processor will have no trouble. Its only restriction is its need for a 2 Mbyte ST and perhaps its price - \$229.95 (and \$99 for font packs).

DBASE is regarded by many as the industry standard database. Now ST users have access to this database programming language with dBMAN V, an effective dBASE clone which accepts IBM dBASE II & III, Visicalc and Lotus 1-2-3 files.

DBMAN V consists of Database Management, Report Printing and Program Development sections. Perhaps most impressive, though, is its ability to work either as a simple database for the novice or as a massive data-crunching programming language by the more seasoned user.

DAZZLING GRAPHICS

Exciting things are happening on the American graphics front in the footsteps of Spectrum 512.

Perhaps the most ambitious is the ST4096 Board from John Russell Innovations. This easily installed board expands the ST's colour palette from 512 to a phenomenal 4,096. Software comes with the board and complete compatibility with all existing ST software is retained.

Unispec is an enhancement of

Spectrum 512. You can switch between it and most other graphics packages at the click of a mouse, thus effectively allowing a flexible link with other ST programs. It combines Spectrum 512's extended range of colours with the sophisticated tools of whatever paint package you choose to use with it.

Its sister package, Digispec, works with the Computereyes video digitiser and allows you to digitise images in 512 colours.

WHAT ELSE

Tefax uses software and hardware to let the ST receive and send faxes. Spectre GGR is a hardware link which allows the ST's disk drive to read Macintosh disks (for use with Spectre 128). PC Ditto is a hardware-based PC emulator which runs IBM software faster than most IBMs. And Discovery Cartridge is reads most disk formats, copies copy-protected disks and can even run Mac disks with the Spectre 128 cartridge.

And coming soon is Deskset II, Atari's own GEM desktop publishing package using CompuGraphics fonts. Also arriving shortly is

Wordfair, a GDDOS-based word processing, desk top publishing, database and spread sheet package all in one program. ■

AVAILABLE IN THE UK: SOME PROGRAMS FROM OVER THERE

For each program we've included the sterling price and a UK supplier: contact them before ordering

- CODEHEAD UTILITIES £29.95
- FUNCTION Z £29.95
- GDOS- £34.95
- HOTWIRE £39.95
- MULTIDISK £ 29.95
- REGENT WORD II £29.95
- SPRINGZ £15.95
- UNIVERSAL ITEM SELECTOR £29.95

All are available through ISM, Grove House, Ventnor Road, Apshe Heath, Isle of Wight (0983-864674)

- CAD 3D 2.0/CYBERSTUDIO £79.95
 - CYBER PAINT £69.95
 - CYBER SCULPT £79.95
 - CYBER TEXTURE £49.95
 - NEODESK START MAGAZINE £12.95
 - TIMWORKS DATA MAN. PRO £69.95
 - TIMWORKS DTP PUBLISHER £99.00
 - TIMWORKS WORD WRITER 2.0 £79.95
- Electric Distribution, Meadow Lane, ST

Ives, Cambs PE17 4LG (0480 496666)

- TURBO ST £39.95
- TURBO GRAPHICS (coming soon)
- HiSoft, The Old School, Greenfield, Bedford MK45 5DE (0525-718181)

AVAILABLE FROM AMERICA DIRECTLY
The following programs, as far as we know, aren't available from UK suppliers: all prices in US dollars

- DBMAN V \$249.95
- VersaSoft Corp, 4340 Almaden Expressway, Suite 250, San Jose CA 95118 USA (0101-408-723 9044)
- CYBER VCR \$69.95
- MACRO MOUSE \$34.95
- The Catalog, 544 Second Street, San Francisco CA 94107, USA (0101 415-957-0886)

DESCART \$89.95
Quantum Inc, PO Box 179, Liverpool, NY 13086 (0101-315-451-7747)

DIGISPEC \$39.95
UNISPEC \$49.95
Trio Engineering, PO Box 332, Swampscott, MA 01907, USA (0101-617-964-1673)

FLEXCESSORY \$29.95
E Arthur Brown, 3404 Pawnee Drive, Alexandria, MN 56308, USA (0101-612-762-8847)

MAXPACK
Softworx Publishing, PO Box 71118, Murrey, UT 84107, USA (0101-801 272-5623)

ST4096 \$49.95
John Russell Innovations, PO Box 5277, Pittsburg, CA 94565 (0101-415-458-9577)

ULTRASCRIPT \$229.95 (with additional fonts \$ 295.00)
Imagen Corp, PO Box 58101, Santa Clara, CA 95052-8101, USA (0101-408-986-9400)

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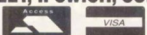
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Deluxe Paint 3	-----	59.99
Deluxe Video 3	-----	59.99
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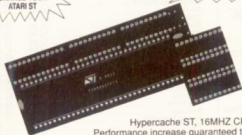
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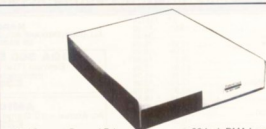
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RUN FOR YOUR LIFE

THE HOUND OF SHADOW APPROACHES

WELCOME once more to the section of *ST Format* dedicated simply and solely to entertainment. As the PC Show becomes just a memory and Christmas looms, the major software houses wheel out their big guns for the ratings war. Besides *Indiana Jones and the Last Crusade - The Graphic Adventure* (page 58), *Altered Beast* (62) and Microprose's oddball *Rainbow Warrior* (78), we take a look at three racing sims all zooming past the chequered flag at the same time (72).

Then there's the specials: the extraordinary *Interphase* (page 60), *Mirrorsoft* certainly seem to be on a roll; and an exclusive indepth preview of the mighty *Hound of Shadow* (66). Last and by no means least -

indeed, to understand the Christmas market you'll need to read it first - cast a cold eye over the marketing process, as we follow US Gold's *Moonwalker* and Entertainment International's *Team Yankee* from completion to release date. It's an eye opener, that's for certain!

Mark Higham

HOW RATINGS WORK

Graphics

The ST is capable of superb graphics and animation, so the last thing you want is crummy old 8-bit style graphics with tiny sprites and jerky movement. 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 some nifty tunes. One thing that doesn't go down well with our team of experts is the monotonous 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 boot up the game, then

it's hardly instantly playable. You need to be able to shove the disk in and play right away before it can be truly said to have instant appeal.

Long term interest

Here we measure the appeal a game has after several hours play. Combine this and the previous score to get an idea of how long a game needs working at to appreciate its finer points.

Overall

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

Look, I'm not going to kick off by reminding you that "Indy is back, and this time he's bringing his Dad." OK? Good, I'm glad we've got that straight. Now, if by any chance you've seen the film, you'll already know all about the Holy Grail, knights, Nazis and all that nonsense. But just in case you've spent the last 18 months as a hermit let's be briefly recap.

Henry Jones (Indy's father) has disappeared under mysterious circumstances in Venice while trying to locate the body of a knight. The knight's shield has an inscription which leads to the secret resting place of the Holy Grail, the cup used by Jesus at the Last Supper which is said to bestow immortality on anyone who drinks from it.

As soon as the action begins you recognise the style of game, since it employs exactly the same system as Zak McKracken. All commands are entered with a mouse click on words, and objects are selected from the menu or from the picture. Moving around from one location to another is achieved with a simple "Walk To" command.

Before you even begin your globetrotting activities, however, you need to collect an item or two, including the Grail Diary, from the university and your father's house. Without the Diary, which contains vital information, you're doomed.



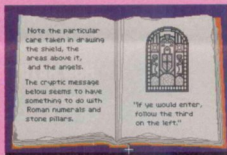
■ Searching for clues in the library in Venice



■ Inside your office at the university there's all kinds of junk - including a meteoric rock that oozes purple slime!



■ A meeting with Walter Donovan informs you of your father's disappearance

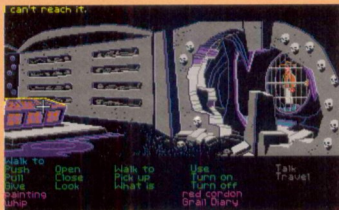


■ Vital clues are provided in the Grail Diary. This entry leads to the location of the knight's tomb

INDIANA JONES

THE GRAPHIC ADVENTURE

US GOLD - £24.95



■ The casket lies before you, but how do you get it?

The first clue is needed in Venice to find the location of the dead knight's body and his inscribed shield.

At certain points in the game the computer takes over and you're taken through a sequence of text and graphics to explain what's going on. When you leave the university, for example (through a window), you're greeted by two men and bundled into a car.

You're taken to Walter Donovan who fills you in on the background to your quest. During this sequence you find out that your father has gone missing looking for the Grail in Venice. If you've already watched the sequence or seen the movie you can quit the sequence with the right mouse button.

Occasionally you get games a little on the overweight side, but Indy, weighing in at six disks (count 'em!), is certainly the fattest to date. Since every location is loaded from disk, playing from floppies demands a good deal of patience - it takes up a whopping great 2MBytes on hard disk!

EFFECTS

All the graphics, which are in the same simplistic style as Zak McKracken, have a cartoony quality throughout which add considerably to one's enjoyment. There are references to Indy's other adventures, and even an occasional snide dig at other films such as *The Blob*.

Sound effects are fine, but the music, which bears a striking and unfortunate resemblance to the piano playing technique of the self-styled comedian Mr Lesley "Blankety Blank" Dawson, is appalling.

VERDICT

If you liked Zak you'll love Indy: the sheer size alone will occupy you for months. Six disks' worth of adventure for 25 quid is cracking value, and the large Grail Diary included in the packaging helps evoke the right atmosphere. Indiana Jones adventures may have come to an end, because the Indy films have, but they've gained immortality too - just like the hero in his last crusade.

Gary Barrett

YE OTHER LEGEND OF YE HOLY GRAILE

According to *Indiana Jones and the Last Crusade* the Holy Grail was hidden away in the middle of a desert in a secret valley (also seen in the video to *Dominion* by the Sisters of Mercy) and guarded by a thousand year old knight.

There's another possible resting place for the Grail, though it wouldn't have made such an exciting movie.

The place in question is Glastonbury Tor, not far from Bath, home of *ST Format*. The Grail is said to be buried at the foot of the Tor and a stream reputed to have healing powers exits the Tor there.

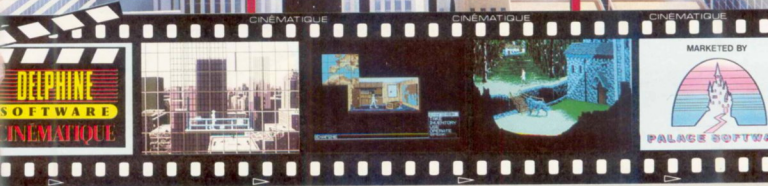
Mr Spielberg decided, however, that sending Dr Jones to Glastonbury with a bucket and spade to elbow a path through the hippies, tourists and local witches just didn't have the same impact. Arguing his way through the Local Council red tape ("ere! You wiv the 'e! You can't dig 'ere!") lacked a certain cinematic quality.

There's also the problem of trying to convince the cast that filming a movie in the wondrous English climate would be a fun thing to do.

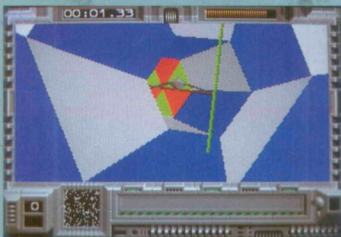
GRAPHICS	7
SOUNDTRACK	3
INTELLIGENCE	7
INSTANT APPEAL	8
LONG TERM INTEREST	8
OVERALL	77%

FUTURE WARS

TIME TRAVELLERS



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■ All levels begin with a narrow tube. Fly through this tunnel and any of the crossing data paths to get to the iris at the end. This opens to let you pass inside the computer.



■ The game is full of subtle touches. Pass under this bridge, for instance, and you get extra energy. You'll certainly need it to get anywhere.

INTERPHASE



MIRRORSOFT - £29.99

Just imagine being able to record your dreams on a CD player, so you can relive them later. Not just ordinary dreams, either, but fantastic ones in which all your senses - sight, sound, smell, touch and even taste - feature. Welcome to the world of *Interphase*.

Unfortunately things haven't worked out too brilliantly. The mega-bucks companies have caught on to the potential of these "Dreamtracks", and are seeking to use subliminal images to pollute the viewer's subconscious. The Dreamers who create these tracks are respectable types whose thoughts have been tampered with so they create politically influenced dreams. That's where you come in.

You, Chadd, are a dreamer who inadvertently created one of these dreams. Immediately afterwards you were fired, but not before you appreciated the potential of your dream. Now you're out to steal back the dreamtrack before it can be used.

Just like Max Headroom, Chadd's found a way inside the security machine, and is trying to direct his girlfriend around the building. He must clear the way for her so that she can find the Dreamtrack and escape (what kind of a coward sends his loved one to do his dirty work?). The aim is to anticipate your girlfriend's movements so she doesn't get blasted. She'll never forget you if you screw this one up: it'll make the time you forgot her birthday seem like a

pleasant memory.

To succeed you need to open doors and disable security cameras so she can get through. You're presented with a 2D map showing your girlfriend and the droids that hang menacingly around each level. A zoom option lets you close in on areas around the map - helpful for letting you know the obstacles your girlfriend is about to confront.

Objects which stand in your way are switched off by going inside the computer, and this is where you're plunged into a 3D environment. By locking onto a specific object such as a security camera, pointers direct you around. The computer internals are split into levels and you can only pass between levels by going through the coloured squares. Objects can be scattered across any levels, and when you track it down you must blast it to change its state.

Along the way there are all

sorts of aliens that bump into you and knock away your energy. If they take too much Chadd perishes and the game is over. Energy can be replenished, however, by finding an energy zone, and docking with it.

When you've blasted an object away all you're left with is a wire frame. At later points in the game you may find you need to turn the camera back on again. In this case you must locate an object generator and make a new camera. Using your tractor beam you can pick up this object and move it back into the wire frame, making the camera active again.

This isn't all there is to the game. For the girl to succeed you have to open doors and switch off cameras in the right order so that droids don't come along and kill her.

EFFECTS

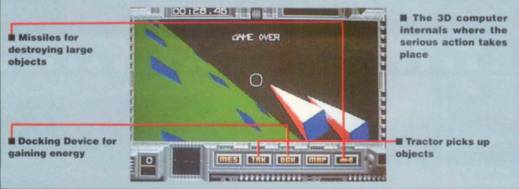
The graphics are astonishing. The zoom option works extraordinarily fast (the game's entirely mouse-

driven) and, although the 2D map might not be brilliantly drawn, zooming in and out of areas reveals convincing extra details. And the 3D section is faultless - it's very, very fast indeed and there are so many amusing enemies you'll stay intrigued for hours. It's when you see obstacles like the frog on a unicycle (I kid you not) you realise why the game has been in development for a whole year.

Sound effects accompany all sorts of moves - from blasting at annoying ships to the move between levels inside the computer. All succeed superbly in reinforcing the utterly convincing futuristic atmosphere.

VERDICT

The *Interphase* environment is complex at first, but you soon learn what you need to do. It's a game all about experience: the more you discover how to tackle problems, the more you'll love it. The hazards which trouble your



■ The 3D computer internals where the serious action takes place

■ Tractor picks up objects

MY LOVE'S A GREENIE!

The comparatively simple first level is intended to give you some idea of how Interphase works, with the objects you encounter here reappearing later in the game.

The girl, represented by a green triangle (oh very flattering), moves out of the reception area, around the level and down to the elevator. It's up to you to clear the path for her and make things safe. ▶

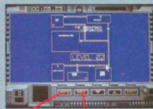
progress are often amusing, frequently intriguing and invariably damned difficult. Apply your brain power and you'll do it in the end.

Once in a while comes a game that stands apart from the rest, totally defying comparison. It last happened with the superb *Populous*, which positively raced up the 16-bit charts. Now there's *Interphase*, with just as original a concept and graphics that do it justice. There's more than just a spark of originality here; it's bursting with new ideas. Unfortunately its strategy element prevents it from having the same wide appeal as *Populous*.

That's a real pity, because some people are going to miss out on what is without doubt one of the games of '89.

Mark Higham

■ The map area is controlled by icons and shows a complete floorplan of the current level. Your girlfriend is the green triangle. You'd better keep her away from that red robot or she'll be in real trouble



■ Displays information on system centred on screen
 ■ Lock the NAVIGATIONAL Computer onto system

GRAPHICS 9

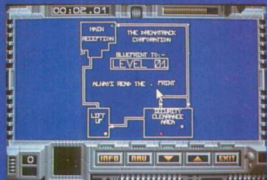
SOUNDTRACK 7

INSTANT APPEAL 5

INTELLIGENCE 9

LONG TERM INTEREST 9

OVERALL 93%



■ Click on the MAP option to get here and you're presented with a blueprint of the first level. Your girl is stuck at the first door...



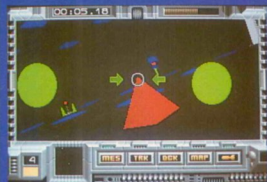
■ Zooming in you can see her plight. Your first idea is to unlock the door, and open it - but there's a security camera and the droid would be activated by it



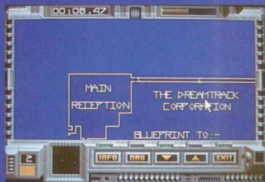
■ So instead you zoom in and lock onto the camera: turn it off. Click on EXIT to get inside the computer...



■ Now things start to get really tough. Follow the arrows which will appear until you find the security camera (a red pyramid)



■ When arrows point in like this you've tracked down your object. Click on the mouse to fire your missiles and destroy the object, deactivating the camera



■ Back to the map: now the door can be opened and your girl let out. Lock onto the door and go back inside the computer...



■ This is the object controlling the door. Blow it away and she can be off on her dangerous mission



■ There's a second camera further down which she'll activate. Don't worry though, the droid (in the Security Area) will emerge from the second door, and miss your girlfriend.

ALTERED BEAST

ACTIVISION - £19.95



■ Use a range of footkicks on the bald guys and you'll knock 'em dead

Activision's latest Sega coin-op conversion takes on the challenge of an arcade game renowned for brilliant graphics. There's been a question mark over the ST's ability to handle the same kind of effects - after all, the arcade version had enormous animated sprites that any micro would be hard pushed to emulate.

It is apparent from the very start that *Altered Beast* is a traditional beat 'em up. You need all the foot kicks and punches you can muster to defeat a bunch of bald baddies, and with all this action going on it's easy to forget the objective. The whole point of the game is that you must rescue the fair maiden being held hostage at the end of the fifth level.

Getting there wouldn't be too bad if only each level weren't littered with one enemy after another. Just to make things doubly difficult, an end of level guardian has nothing better to do

than wait for you with fists at the ready.

Tackling the mutated clones is easier if you can collect special spirit balls. Gather enough of these



■ Before the action commences there's an opening sequence. Here's part of it. Don't it look pretty?

and you transform into a superior beast possessed with devastating power and mobility - the more tokens you collect, the better the beast you become. The game starts with you playing a man and as the tokens increase, you change, first into a Strongman,

then into Werewolf, Weredragon, Bear, Weretiger and finally a deadly Golden Wolfman.

Each has its own special abilities. A Werewolf does an excellent job of ripping flesh apart, the Dragon snorts fire and the Bear's appalling bad breath knocks out even the really tough guys. Both Strongman and Golden Wolfman dish out the most powerful of punches - essential in the later levels.

The Wolfman really adds to the fun. As well as being able to launch fireballs at anyone who gets close, he can also throw himself at the enemy and lay into anyone standing before him - great if you're into body-contact sports.

There's a vast range of kicking and punching available once you've learnt how to control the joystick. Just like the popular Karate games, it takes a while to master the different combinations of fire button and stick movement, but even just wild wagging gets you somewhere!

EFFECTS

The visuals are undoubtedly some of the best ever seen on the ST. Backgrounds are clearly drawn to resemble the arcade game as much as possible, but it's the main character sprites which are really impressive: these are massive and brightly coloured.

The animation isn't as smooth as it might be, but there's no problem working out what's going on or seeing the result of your actions. Even fans of the Amiga *Sword of Sodor* will be impressed by *Altered Beast's* large sprites and great animation.

Just as much thought has gone into the sound effects. Although there are no sampled effects, the ST sound chip has been programmed well. The music which plays during the game quickly becomes monotonous, but if you can survive this then there are lots of additional effects during bouts of kicking and punching.

VERDICT

Altered Beast doesn't claim to be an imaginative game and if you're not a beat 'em up addict you won't like it. This one differs from the rest in that it boasts brilliant graphics.

The first time you set eyes on

its massive animated sprites and well-drawn backgrounds you know you're in for a treat. To an extent it delivers.

Where it falls down, though, is in the animation: there simply aren't enough frames of animation to give truly smooth, lifelike movement. Yet despite its lack of originality, *Altered Beast* has a classy feel that really makes you feel a part of the game.

Mark Higham

GRAPHICS	9
SOUNDTRACK	7
INTELLIGENCE	2
INSTANT APPEAL	7
LONG TERM INTEREST	4
OVERALL	82%



■ There's a wide range of movements available to you once you've learnt to master the controls



■ Leap onto the stones for an added advantage. But be careful...



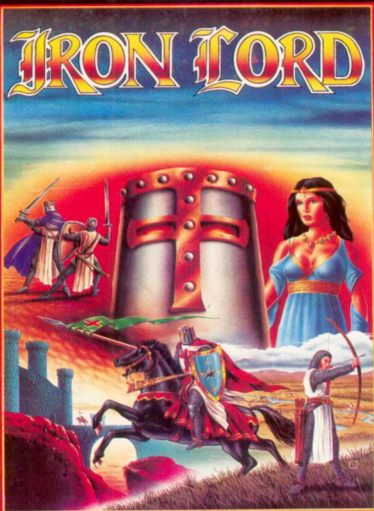
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Screenshot on C64



Screenshot on ST



Screenshot on ST



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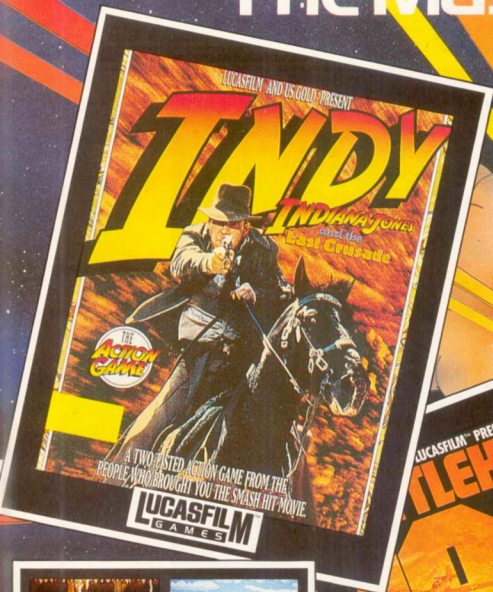
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to your small screen!

Monstrous things are afoot in the offices of Electronic Arts. People glance nervously over their shoulder and whimper at the slightest footstep. Why? Because The Hound of Shadow is upon you, and you bear his mark, that's why.

Electronic Arts have always been heavily involved in role playing games and their latest venture, *Hound of Shadow*, continues the tradition. Instead of going for a traditional fantasy role playing game, however, this time they've opted for horror.

One of the greatest of all horror writers was Howard Philip Lovecraft. His stories, written mostly in the 1920s, are concerned with the macabre and supernatural, a godless universe in which blasphemous monstrosities look down disdainfully as the pitiful human race goes about its miserable existence. As is the way of these things, a cult arose around the creatures, the Cthulhu Mythos.

As is also the way of these things, the Cthulhu Mythos spawned a role playing game. A computer game based on HP Lovecraft's stories has always been a delicious possibility, and very soon, thanks to fans Chris Elliot and Richard Edwards, you'll be able to subject your ST to the dubious delights of gothic horror.

ROLE MODEL

In role playing games, computer and otherwise, the Player Character (PC) is the one who gets to do all the work - the fighting and the exploration of the world. The PC's senses tell you what's going on and forms the link between the player and the world. Creation of the character is therefore crucial, and the process in *Hound of Shadow* looks like being the most thorough yet. It's not just a matter of throwing out some random numbers for statistics, since you also have to choose your profession and accept the resulting skills and shortcomings.

THE HOUND IS COMING!

The Hound of Shadow is almost upon us: GARY BARRETT previews a mighty role playing game, while (right) MARK HIGHAM meets the men responsible

The first stage of creating your character involves deciding sex, age, title, nationality and name. You can be male or female, virtually any age, English or American, a lord, a doctor or just plain ordinary Mr. Numbers are generated to create your physical and mental statistics - not that you ever know those numbers, however. Instead you're given a verbal description that gives you a feel for the character. A typical description might be: athletic, healthy, single minded, clumsy, beautiful, of medium height, highly intelligent and well educated (sounds like me, apart from the clumsy bit!).

JOB HUNTING

Now you've got your vital statistics it's time to find work. There are seven vocations, determining your basic characteristics: aristocrat, psychic, reporter, gentleman adventurer, novelist, private eye and scholar. (Incidentally, male characters 25 years old or more could have been called up for the Great War - you decide how many years you served. The longer you were at the front, the more skill points you have - but the lower your resistance to shocks. Anyone sneezes, you get heart failure.)

Points are awarded according to your statistics. You can "spend" them in seven areas: physical, social, investigative, academic, logical, creative and spiritual.

Physical skills cover use of weapons, riding, swimming and control of land and air vehicles. Social skills involve interaction with other people using languages, persuading them into whatever it is you want them to do.

Investigative skills are of great use when you're trying to pick locks, fix things or do a bit of research in the library. Academic abilities include archaeology, botany and languages. Skills of logic are the sciences and law, while creative skills cover stealth, photography and navigation.

Finally there are the spiritual skills of astrology and the occult. Later you'll discover spells through research and investigation which appear in the spiritual section.

After skills have been allocated you're given a thumbnail sketch of your character, with your particular skills described in sentences as part of the character.

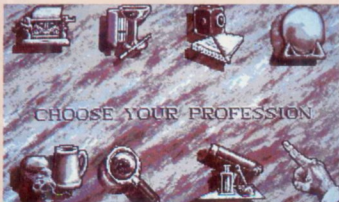
CLASSIC?

Finally you get down to playing the game. The action begins at a

seance, with the reason for your presence depending on your profession. At first it just seems to be a standard hoax seance, but later it develops more sinister overtones. The medium, Adept Karmi, speaks with a woman's voice and points at a gentleman sitting at the table, saying, "The Hound of Shadow is upon you and you bear his mark." After this people go into shock, get hysterical and so on, but things calm down after a few minutes.

From now on, as the investigation begins, you have more control of events. During your travels you visit bookshops, museums and even East Anglia, for reasons you can discover for yourself.

Hound of Shadow is a graphical adventure in appearance, but your skills as an investigator have a major effect on what happens and what you discover. Anyone can solve the mystery, but the skills that you possess make some things easy for you and others trickier. If the final, delicate touches and fine tuning that can be so crucial in turning a good game into a great one have been done to the same high standard as the bulk of it, HOS could well be a role playing classic. ■



■ Seven professions to choose from. Hmm...I think I'll be a PI



■ No sexism in this game. You can be both male and female

You expect a game that's taken some three years to have an uneven history, and *Hound of Shadow* has certainly had that. Over the months it's grown into a major affair, armed with a barrage of features that will undoubtedly appeal to RPG addicts.

The designers who came up with the original concept years ago on a train out of Nottingham are Chris Elliott and Richard Edwards, both in their mid-thirties. "We wanted to create an RPG that was truly role-playing," says Chris. "It started off as an ordinary adventure like *The Quill* - which is in fact not surprising because Trevor Thomas, one of the Ram-Jam survivors, initially created the Timeline system and wrote a series of articles which *The Quill* was based upon.

"We got together with him," Chris continues: "he had the basic system and we had the ideas. What then happened was that the system was very heavily customised to do what we wanted with the Timeline role-playing system, and this left us with the software we could write the game on." The front-end character generator



Skills are divided into seven different areas. They range from physical and social to spiritual and investigative

ing less than creating the ultimate role-playing adventure. All major role-playing games take story lines seriously, but few pay very close attention to small details. In *Hound* you can create ordinary characters, aristocrats or even Americans. If your character is an aristocrat, Henry Rawlings for example, then he's called Sir Henry throughout, whereas ordinarily a character is referred to as, say, Mr. Smith. And Americans get their own transatlantic spellings, too!

"We've been doing role-playing stuff for ten years now," says Richard, "so we've approached it from a strong role-playing back-

ground. Phobias also feature in *Hound of Shadow*, adding to the colour and realism. If you acquire bathophobia (fear of depths) during the course of the game it's quite likely to re-emerge later on: you get a nasty surprise, perhaps, when you try to use the tubes. You're not killed off, but you have to find a way round the problem.

"As a character develops," explains Richard, "you find things change and you go flakey at the edges. You're able to do more things, but the game subtly changes to reflect developments in your character.

"We want the player to create

surprise you get when a serious text suddenly shouts BOO!

HIGH TENSION

Richard and Chris both felt the occasional use of blood would do a far more effective job of upsetting you than by splattering it all over the place: use it sparingly, they argue, and you use it effectively.

The concept of the game was thought up after Chris and Richard had been to visit Games Workshop in Nottingham. They returned on the train with Lee Gibbons and came up with the plot between them.

HP Lovecraft was the author that they wanted to base the game on right from the start. "There are lots of things you can do and many hidden secrets lurking behind the door of everyday life. Usually it's just fantasy and you keep on running into the same old clichés.

"A lot of the background details are true," says Chris. "You could go to the library if you wished and find the quotes in books. We discovered Abraham Fleming's pamphlet, for example, when we were researching about black dogs. It describes attacks by a black dog in 1577 and is a ter-

AIMING TO BE BEST



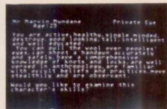
Male characters can choose war service. More points to spend, but you're "Flakier"



Investigative skills help in the finding of clues and studying of facts



Logical skills cover scientific subjects and the medical profession



A thumbnail sketch of your character showing your skills and strengths

is a totally free-standing piece of code which will be modified to work with other games.

ULTIMATE AIM

One of *Hound's* major innovations is the way a character created in one game can be used in others: skills can be expanded by experiences and transferred to another game in the series. "Timeline is a complete system," Chris points out, "and there are things buried in *Hound of Shadow* which won't be used in this game, but will be used in others. The way it's designed, things are forwardly and backwardly compatible so that for your character it's all one continuous experience."

Chris and Richard aim at noth-

ing to create a scenario, you must have this character, you must have that one." Instead, he says, "OK, what's the party? Well this guy's got this or that skill, I'll work it in." That's the way the Timeline system works."

"A good referee doesn't say to you, 'OK, this is the scenario, you must have this character, you must have that one.' Instead, he says, 'OK, what's the party? Well this guy's got this or that skill, I'll work it in.' That's the way the Timeline system works."

FLAKEY EDGES

If you're a well-known author, for instance, when you emerge from your flat someone comes rushing up demanding your autograph. But it only happens once. It's little things like this that add atmosphere.

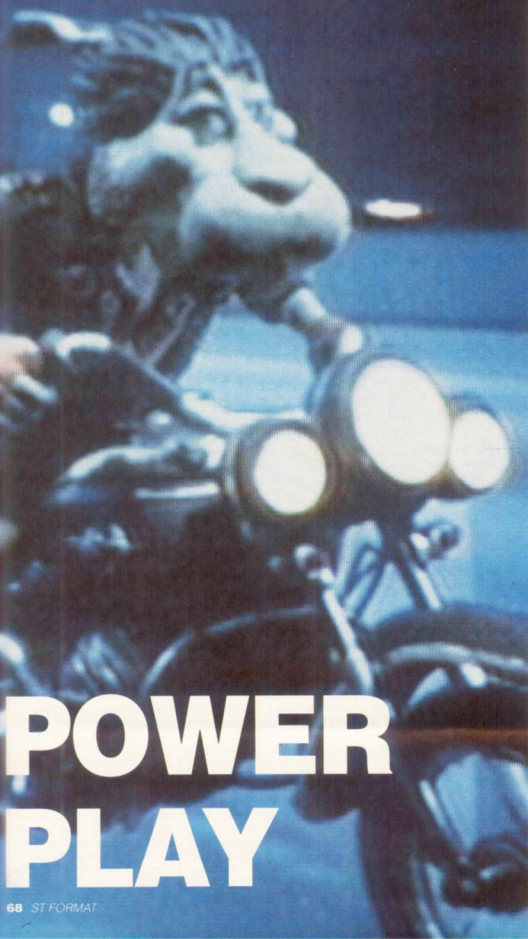
the character he or she wants to play the game with, rather than aiming for the character most likely to win. There's no reason why you shouldn't play with a hard-bitten American private eye who's going to have little academic skill and a very low history knowledge, but high handgun skills. He'll be able to bluff his way through situations and give you a more interesting game. Create the character you want and have fun with that character - that's the name of the game!

Hound was always intended to be able to scare you at two o'clock in the morning. One method of achieving this is the game's nasty habit of remembering what you've done previously. But much more bloodcurdling is the unpleasant

piece of colour that you can add in. Instead of making it up you can use the real thing."

You're guided through the early part of the game with appointments you have to keep to make progress. Later the player takes more control. Completing the game is not a linear process: you can do things out of order and still get to conclusion. There are two endings too, depending on where you are.

Richard and Chris have ideas for more Timeline games which depend on *Hound of Shadow* does well. For the time being, however, they have done their work, and now there's nothing they can do except sit back and wait for the verdict... ■



POWER PLAY

*Oh good grief,
Christmas is almost
upon us already.
MARK HIGHAM
looks at how the
companies behind
Moonwalker and
Team Yankee plan
for Yuletide*

Money, money, money. That's what Christmas is all about, especially in the software business. Bring out a success at Yuletide and you'll make a fortune, release rubbish and, well, there's always next year.

Getting to that "all important" number one slot, however, is often more a major marketing project than a miracle of modern programming. Releasing a saleable game at Christmas may be little to do with the quality of the product and a lot to do with the whole marketing process. The release of the notorious *Outrun* two years ago is proof that if you've got your act together you can sell anything, however bad.

Outrun was a hit because it appealed to people desperately searching for a decent Christmas present for Johnny and (to a much lesser extent) Joanna. "*Outrun*" cried the youngsters in unison, recalling many a happy hour spent in the arcades. Thus, on the back of a successful coin-op game US Gold notched up some serious sales and a spell at the top spot. Never mind the quality, boys, feel the width of my wad.



STRYX



- ★ **Ultra smooth 8 way scrolling**
- ★ **Designed with small fully animated characters from Garvan Corbett, the artist who brought you the classic hit Barbarian**
- ★ **Multi-directional free format weapon usage**
- ★ **Large playfield for even more action.**

You're really up against it this time. Those revolting robots have finally upped and turned their horribly powerful weapons on their kind human masters. Someone's got to stop it before it all gets out of hand. I mean, you just can't have bloodthirsty Cyborg assassins roaming the streets of Dome City and expect the citizens to put up with it. Who on earth is going to sort out the mess? You guessed - you get the job.

Fortunately, you are just a little bit on the special side. You are Stryx, the product of Project Alpha Secure, the meanest fighting, smartest thinking machine ever invented. Half-man, half-robot, you are the business, the only one who can stop those wicked Cyborgs.

You'll have to work hard, though, blasting hordes of the revolting creatures (such a sad waste of scrap metal) and rescuing the keys to the Lifeforce.

So, Stryx, you'd better get your jet pack on for some high level robot stomping through the immensely complex underground world of the Dome cities. It's a tough assignment, and time is running out.

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Screen Shots from the Atari ST Version

PSYGNOSIS
GAMES PEOPLE PLAY

LIQUID GOLD

Two years on, software houses in general are paying far more attention to the quality of the products they're releasing onto the 16-market - or at least so they claim. Even so, you can be certain that this year's top ten will be packed tighter than Sam Fox's stocking with one licence after another.

The difference between this and former years, according to the software houses, is that they'll all be bloody good games. But then, as Mandy Rice Davies - herself an expert in the entertainment industry - put it, they would say that, wouldn't they?

Of course, no-one deliberately releases poor games: the major houses, who intend to be around next Christmas, would much rather have a good reputation to build on. And US Gold does seem to have turned a corner as far as the quality of its work is concerned, at least if *Strider* and *Indie Jones' Last Crusade* (both *Format* Golds) are anything to go by.

Its next major release, *Moonwalker*, appears to constitute further evidence that they're aiming to put everything they've got into serving the 16-bit scene with good games, and pull off a good marketing deal.

Because of their massive network, US Gold's marketing potential is enormous. They're affiliated to Centresoft, a highly successful distribution company, for one thing.

Entertainment International, on the other hand, have neither the size nor plans of US Gold, but they too appreciate the crucial role of good marketing. In fact, virtually their entire crew are from marketing rather than computer entertainment backgrounds: their actual programming is contracted out to smaller individual software houses.

The first and foremost marketing strategy, if you're going for a licence, is to assess the arcade, film and book scene and find what it is that appeals to the age range you want to grab. But when you've bid successfully for the licence your task is only just beginning. The next major step is to sort out distribution to different shops and superstores.

NICE VIDEO

Boots and W H Smiths are the largest retailers of computer software, but aside from the occasional poster they tend not to promote ST games particularly well. Their attitude is that, if you see the game on the shelf and



you're interested in buying it, you don't need to be persuaded by fancy advertising. Besides, software is still a long way behind the enormous music and book markets.

With the Christmas season approaching, however, Boots has tried to do a better job of promoting ST games by showing promotional videos in certain stores. These feature ST and Amiga games for the obvious reason that advanced graphics capabilities look best.

There are about 300 major Boots and Smiths stores around the country and these take fairly large orders, often in the region of 20 copies of a single title at a time. Selling to independent stores - high street computer shops - is not so easy. Although they don't take large orders, they are just as important since there are money of them.

They need to be convinced of the quality of a game (or "product" as it's distastefully known) early on in its development. Special in-store promotions entice the consumer into buying the game and encourage the independents to support it. These inevitably include posters, and competitions are often arranged. US Gold are using various *Moonwalker* promotion material such as T-shirts and videos in these areas, while EI, who have to watch their budget more carefully, cannot afford this reckless extravagance.

Finally there are the mail order companies, who are virtually immune to the blandishments of the software houses. They go over their own sweat way, their low overheads and tight margins providing a unique environment.

ALL'S SELL

Advertising is another brick in the selling wall. US Gold and Entertainment International both target adverts at specific magazines to obtain the best coverage. Neither can afford to waste money on ads that won't sell copies of the game, so they wait until fairly close to the release dates before scheduling ads.

US Gold have arranged their advertising to begin in the November issues of the monthly magazines and slightly later for the



weeklies, while EI have yet to make a decision about *Team Yankee*.

Both companies allocate a specific budget to a game and they cannot afford to waste money on premature campaigns. If, as often happens, the programming is held up at any stage of its development, neither could afford to have adverts appearing months ahead of the game itself.

Occasionally US Gold run teaser adverts. You know the kind of thing - Ocean's recent *Batman* campaign is a prime example. These are used exclusively for widely known licences, and are a very high risk strategy, since they depend on being cryptic, and may well prove too successful at being so. Again, this money comes out of an advertising budget. With magazine ads costing well over £600 per colour page, and considerably more for those which appear on the front and back covers, ad campaigns don't come cheap. Consequently, both companies aim to combine ads with cheaper promotions.

Screenshots and press releases are issued to the computer press several months before a product appears, to build coverage. There are often arrangements with magazines to do previews of a game, a method which is very effective - provided comments are favourable.

And then there are competitions. Have you ever wondered why software houses so eagerly part with games and expensive prizes in big competitions? The answer is simple, for the costs come from the advertising budget and are regarded, quite rightly, as an effective method of spreading the word.

SELL BY DATE

Different countries have different markets so products must be targeted separately. The German gamer, for instance, loves simulation games but doesn't much go for coin-ops. *Team Yankee*, therefore, must do its best to appeal to the German scene, so a great deal of money will be put into promoting it there.

Moonwalker has a broader appeal across the world, though its audience is likely to be younger, with the consequent shift in adver-

tising focus. The ST and Amiga versions are released first, so that the first impression will be of a very visual game, helping to sell on the 8-bits later.

The release date of a game is clearly crucial, and numerous factors must be taken into consideration. A company with the clout of US Gold can release a game with the clout of *Moonwalker* and be assured that they are going to create a big impact, but smaller companies like EI have to work harder to get the timing right. They simply cannot afford to bring out *Team Yankee* on the same day as a major game is released. Both US Gold and EI have to take into consideration the effect of releasing a game on specific days of the week as well: releasing on Friday is a bad move, since it will fall flat over the weekend and its distribution will move in dribs and drabs over the next week.

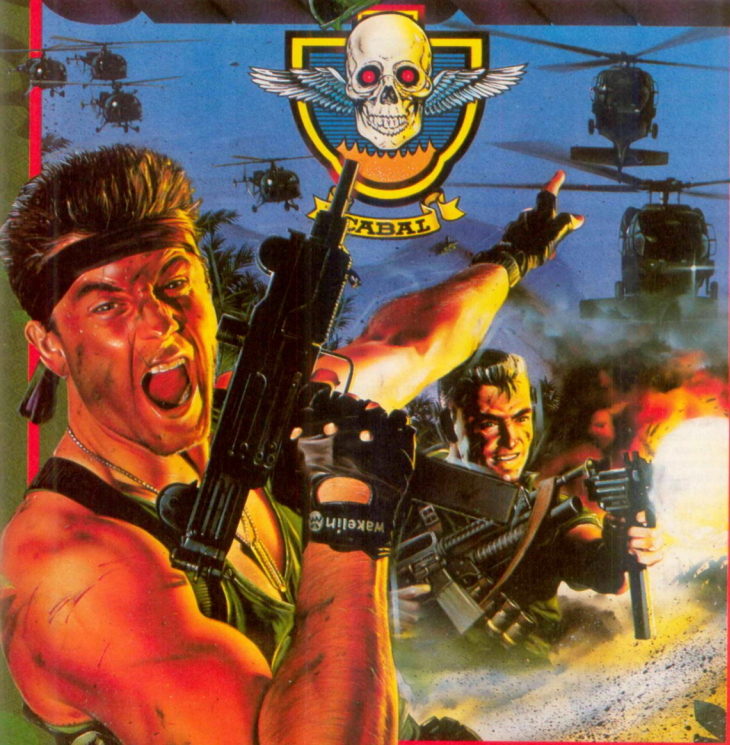
Early in the week is better, since the shops can be filled by the weekend. And software houses make sure, if they can, that magazines receive review copies of a game so that the issue containing the review will go on sale at the same time as the game.

ROUGH STUFF

Marketing is tough, and it can often make the difference between profit and loss. There have been numerous good games that have failed to sell merely because the business of selling was not done properly: Infogrames' *Purple Saturn Day* is only the latest example. It is universally acknowledged that the French company did a stunning programming job, and every games-interested magazine, *ST Format* included, rated it very highly indeed. Yet at least in this country the game didn't sell, let down by indifferent marketing and distribution. How many adverts did you see for the game? How many stores did you see it in?

If US Gold and EI have done their sums right, and if the finished games live up to the promise of the previews and their PR personnel, both *Moonwalker* and *Team Yankee* will succeed. And that's good news for everyone, particularly for the most important people of all: the customers. They get noisy advertising, quality packaging, big competitions and - what they really want - a brilliant game. £20 may seem a great deal to pay for a game, and that's because it is. With such high stakes, you can rest assured that everyone concerned is doing their very best to make sure they get their hot little hands on your notes. ■

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CAR WARS!

After years when it was commonly believed that Hollywood had done Vietnam to death, all of a sudden it gets its second wind and we are subjected to a barrage of Nam movies. We've had a field day of country films, a rash of nappy flicks and, most recently, a run of baseball tales.

Now it seems as though our computer games might be about to develop a similar craze habit. Admitted, car games have always been popular - with the punters (fast, exciting and related to the real world), with the programmers (the scenario's done already, they sell like crazy and they often appear first as arcades) and therefore with the software houses.

Continental Circus from Virgin/Mastertronic goes for the traditional Pole Position route of racing around courses at high speed with little concern for detail. Microstyle take a less conventional road, with Stunt Car Racer featuring strange cars and even stranger tracks. Finally from Electronic Arts there's Ferrari Formula One, which puts you in the hot seat of one of the world's fastest cars.

Oh, and don't miss out competition on page 33 to celebrate the launch to EA's Ferrari Formula One. We think you may find the prize to your liking.

CONTINENTAL CIRCUS

Virgin/
Mastertronic
£19.99

Way back in the dim and distant recesses of time there was a game called Pole Position. It was a racing car game with two gears, a wheel to steer with and an accelerator peddle. Many racing games in the same vein have appeared since, including the infamous Out-run. Continental Circus is the latest



Approaching a check point with seconds to spare



This month three car racing games hit the street. GARY BARRETT wonders whether the road to the charts might not be getting too congested



Brazil: the first of eight courses to complete

addition.

There are eight courses of increasing difficulty to race around: Brazil, America, France, Monaco, Germany, Spain, Mexico and Japan. Around each there are check points to be reached within a time limit. Fail and the game ends; succeed and it's on to the next stage of the race. Reach the finishing line and you can continue to the next race track.

Colliding with cars is obviously unhealthy, but you only start smoking (a disgusting habit) when you

collide. A visit to the pits gets your car fixed, but a second impact reduces you to ashes and lose you valuable time.

You have five credits to work your way through the courses, with one lost whenever you run out of time. Losing that final credit brings your game to an end.

Sound effects are better with some short but pleasant tunes. The race course moves towards you at a rapid pace and both scenery and cars are extremely colourful. There are a few nice digi-pics too and each track is shown in detail before the race commences.

One complaint. When your car has exploded after a second collision you're repositioned in the centre of the track and have to accelerate from zero. Unfortunately, there are still other cars whizzing around the track, and since you can't see what's heading for your rear until a tenth of a sec-



Approaching the pits with smoke pouring out of your engine



The pit crew come over for a bit of repair and fire control on the car



Off again with some catching up to do

ond before impact you've got a grannie's chance on the M25 of getting out of the way.

Other than that there are no problems with this fast and furious game. Once you've completed every course you'll probably only play it occasionally, but it's gonna take a long time before you master them all.

GRAPHICS	8
SOUNDTRACK	6
INTELLIGENCE	4
INSTANT APPEAL	8
LONG TERM INTEREST	6
OVERALL	83%

STUNT CAR RACER

Microstyle
£24.99

Driving around a racing course in a car is dangerous enough, but when the course is suspended some distance above the ground it gets much more risky. *Stunt Car Racer* puts you in that very situation and to make matters worse there's someone else on the track too.

The action takes place on eight different race courses – two in each division. A division contains two other drivers besides yourself, and you begin at the bottom of the fourth division. A race season has six races, with all permutations of drivers and tracks used. Points are awarded for winning a race and for



■ The race has only just begun, and your opponent is already ahead, dammit



■ Oversteer and you eat dust

the best lap time. After all races have been completed the driver with most points is promoted to the next division. Winning division one takes you into the super league.

The super league uses the same tracks, but the cars are capable of achieving double the speed. The super league has four divisions just like the normal league.

For your first few races you'll have enough problems staying on the track, never mind winning a race: working your way up through the divisions is no mean task. For-



■ Jumping Jack wins – but it ain't over yet!

tunately you can save the game for Ron (you know Later Ron, I hope).

Controlling the stunt car isn't just a matter of pushing your foot to the floor: if you do you fly off the track and need to be hoisted back on by the crane. And if you don't mind using dirty tricks you can always ram your opponent off the track.

Stunt Car Racer is in solid 3D, seen from the cockpit of your car. Your opponent is viewed as a simple car shape, which for your first few games you'll probably see only as distant dust. Sound effects are little more than engine noises and crash sounds, and there's no music.

This has to be the most unusual car game by far, and it's certainly fun to play. Racing as many as seven other cars makes it even more enjoyable and extends its life considerably. Getting to the top of the Super League is tough: there's certainly enough here to keep you occupied here for many a long, dark winter evening.

GRAPHICS	6
SOUNDTRACK	4
INTELLIGENCE	5
INSTANT APPEAL	6
LONG TERM INTEREST	8
OVERALL	74%

FERRARI FORMULA ONE

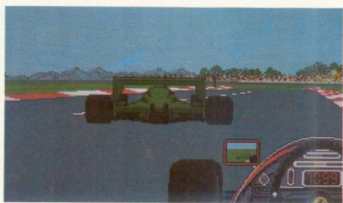
Electronic Arts
£24.99

The deafening roar of Murray Walker, and to a lesser extent Formula One motor racing, completes this round-up. In *Ferrari Formula One* six race courses wait for you in a world championship contest.

More than just a racing game, *FFO* is a simulator too. You don't simply race round a circuit as in *Continental Circus*, but you must also keep your car in tip top condition.

You begin at the Ferrari test track, Fiorano, where you can get some practice racing in and carry out your car maintenance in preparation before going onto a pitstop tour of the world.

The first race of the season takes place in Rio, and before things get under way you have to prepare the car for the ordeal. Tyres, shock absorbers and the engine must be dealt with. When everything is to your satisfaction



■ Believe it or not that's another car in front of you

click on the driver's seat and away you go.

Up to this point the game looks polished and interesting, but once you actually get to the race-track things start to go badly wrong. Formula One racing is supposed to be a fast sport, but playing *Ferrari Formula One* you'd never guess. Not only is the action appallingly slow, but it's terribly jerky too. Movement of other racing cars is even worse: they just



■ Choose a track and away you go

materialise as you catch up with them, rather than growing in size as they would in real life.

There is a tune, which although good, hardly does the ST justice. Sound effects are dismal, just screeches and engine sounds. Static graphics are good and detailed, but when they're moving



■ Race preparation in the pits: fix it and you get to go racing

things look terrible.

Ferrari Formula One could have been a really good game, but the awful moving graphics destroy it. If a little more care and attention had been paid to them this could have been a number one game, but as it stands it barely gets out of the starting grid. ■

GRAPHICS	7
SOUNDTRACK	7
INTELLIGENCE	6
INSTANT APPEAL	5
LONG TERM INTEREST	5
OVERALL	62%



TV SPORTS FOOTBALL

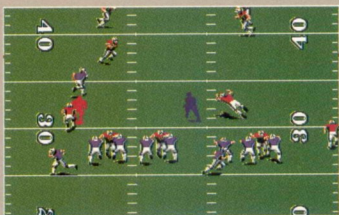
MIRRORSOFT £24.99

Grab yourself a can of Bud, a bud, two dogs on rye and let's slob down for Monday Night Football! Four hours of blood, sweat and, er... more blood, as dozens of superb athletes beat each other even more senseless than they were before they started. This is the world Mirror Soft invite you to join with TV Sports Football: the excitement of being there in your own armchair.

Grid Iron, a game of mind numbing complexity and brain rattling tackles, doesn't readily lend itself to "simulation." There are just too many people on the pitch, too many tasks to perform, too many rules to obey to make it a go project.

Cineware's solution is simple. They've taken the sport and put it in a more familiar environment. Everything now happens as if it were on Channel 4, only you've the power to take control and influence the outcome of a play. No more hollering "Look behind you!" as your running back gets drilled! Now you get to take the stick and prove you could do better.

The three methods for taking control are all joystick commands, to give you until the last possible moment to override the computer. A click on the fire button or a tap on the joystick lets the play proceed as it was planned with a hand



■ The flashing player is the ball carrier - sack him!

off/pass at the earliest opportunity. You're free to chip in at any point and take the play over, but for short yardage it's better to leave the professionals in charge. For total control of your team's destiny pull back hard on the stick and get your man in motion. The flashing player (er, as in the one with the ball) can be sent in any direction: a click on the fire button orders a hand off, keeping it pressed kicks you into pass mode.

Downfield passing is spectacular and dangerous. When the quarterback runs into the offensive pocket press the fire button and a cursor appears indicating where the ball will land. Your nearest receiver flashes and heads to the

reception point. If he gets there too early a crunching tackle's likely, too late and an incomplete pass blots your playbook. Practice is essential before you try passing in a game situation, if you want to maintain possession of the ball.

The plays themselves - the route/course of action to be followed by any specific player - are detailed in a playbook visible to both offence and defence. The teams choose which formation they line up in, then what specifically to do from that position. Should you try to block the pass, or go man-to-man on the receiver? Will a quarterback sneak or screen pass work best? Trail, error and bruises are the only way to learn.

All the usual sports sim features are here, including league and team selection from players with a range of abilities that influence performance. You can practice, play against a league of up to 27 friends, the computer or even just sit back and watch exhibition matches. You have the choice, in short, of whether you'll be sensible and watch, or get out on the turf to bang heads with Lawrence Taylor and his meathard friends.

EFFECTS

Graphically the small player sprites are visible enough to control while retaining sufficient personality to

celebrate their touchdowns. The kicking scenes, viewed from behind the kicking team's line, are particularly impressive. Players grapple and fight at the scrimmage line and heads bob up trying to block the kick. It's all composed of a few still frames, but is more than convincing as you gaze into the crowd of 20,000 people! Musically it's no great shakes either, but this is American TV we're dealing with here, so would you prefer quality or authenticity?

VERDICT

The game needs the "auto pilot mode" for you to stand any chance of playing the game at all, but the way the system has been implemented leaves everything feeling remote and vague. You want to taste the turf in your face when you get hit, not just get the general idea it may (or may not) have happened.

Still, there's more than enough football here to keep you out of your pads for a week or two. The game is complex and very long, and perhaps it's for these intrinsic reasons that it, frankly, lacks excitement. There's a sense of isolation during play, created by the very system that makes the game playable in the first place. Because there's no definite moment when you take control, it's never quite clear whether that last touchdown pass was down to your skillful reading of the situation, or just a computer fluke.

Trenton Webb

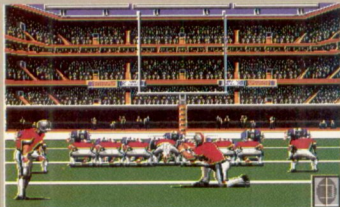


■ Six leagues to play in



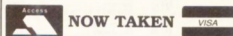
■ The offensive line make a gameplan: KILL 'EM!

GRAPHICS	9
SOUNDTRACK	6
INTELLIGENCE	9
INSTANT APPEAL	3
LONG TERM INTEREST	6
OVERALL	68%



■ The small football in the bottom righthand corner is for judging your kick's height and accuracy. Defenders can block the attempt, but it's tough: sometimes it's hard to be a meathard

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■ The Rainbow Warrior, a symbol of hope

Who'd have thought things could get this bad? The world grows more polluted by the day, while the politicians get greener. So what should Greenpeace, the world's foremost conservation group, do? If *Rainbow Warrior* – the world's first green game – is anything to go by (it may not be, of course), the answer would appear to be that universal panacea, get into marketing.

In seven different scenarios the forces of industrial progress are confronted head on. You've a choice of the order in which you attempt the tasks, but to save the world they must all be completed. Each incident recreates an episode from Greenpeace's history, with the hard facts exhaustively documented in the manual. That's sadly where fact and fiction separate, as the good ship *Rainbow Warrior* sails off its charter course and heads for disaster.

The problems you face – modelled on the real crises actually being fought by Greenpeace – are nuclear power and radioactive waste, dumping at sea, whale hunting, acid rain, ozone depletion, seal culling and, finally, safeguarding the spirit of the *Rainbow Warrior* itself. In real life their volunteers endure hardship, risk life and limb and fly in the face of enormous legislative and political opposition. In real life, it ain't no game.

But in *Rainbow Warrior* the

RAINBOW WARRIOR

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game, where the facts are never allowed to get in the way of a scenario, problems are exaggerated and trivialised – for all the world as if the imminent destruction of our world were not a dramatic enough basis for a game! There's something very cringe-making and patronising about the plots, such as they are: try to stop the depletion of the ozone layer in the Antarctic and you have to throw snowballs to stop aerosol cans marching towards the skyline. As the protective shield decays, beams of UV sunlight burst through, transforming exposed penguins into killers!

Mutant sharks harangue poor little brave Greenpeace divers and their sweet dolphin guides (oh please). And if you succeed in stopping those cute little seal cubs getting their heads smashed, a nuclear submarine comes into the picture and starts test firing missiles around them. I really do think I'm going to be sick.

The ridiculous plot aside, the game – or games, for this is little more than a compilation – is badly short on gameplay. There's little scope for action, and the fiddly controls frustrate play badly. So you can't kill anyone/thing in a Greenpeace game, but that shouldn't mean it has to descend into farce. After all, Thunderbirds seemed to manage well enough with non-violent scenarios.

EFFECTS

Graphically the game is reasonably accomplished, with sprites drawn almost, but not quite, as caricature. The action scenes are stilted, however, with little onscreen movement, the most interesting being the peripheral background detail in fixed routines. The sonic side is underused, leaving the graphics to struggle like a beached whale (oops). There are various themes that run throughout the game, fostering a sense of identity and conti-

nunity. The problem is that the identity established has exploitative undertones.

VERDICT

A themed compilation, *Rainbow Warrior* is unlikely to win awards for graphics, sounds or game design.

The aim is to interest and inform, and entertain it does, to a limited extent. But it does not educate in any way other than the historical data in the manual. The games lack any basis in fact other than the general theme. Why on earth have radioactive penguins savaging workers at the pole? What's that all about?

Greenpeace Warrior is an original and strong licence idea that has evolved into something of a white elephant, if you'll pardon the expression. It may be the right time to develop ideologically and environmentally sound software, but the game, it seems, is there only to fill the box with the hip 'n' trendy name on it.

Sorry, but there's something just too "right on" about Microprose adopting Greenpeace, and just not enough that's right about the game.

Trenton Webb

RAMBO WARRIOR: FIGHTING FOR A BETTER WORLD?

Just roll it around your tongue a little. Greenpeace and Microprose... The leading lights in the international protest movement join forces with the company who are proud to boast *Gunship*, *Airborne Ranger* and *F 19 Stealth Bomber* among their catalogue. No, sorry, can't get my head around that one at all.

Greenpeace were more than willing to join the venture, seeing it as a chance to "proliferate information to a whole new, and generally younger audience." They liked the idea so much, in fact,

that they let the launch take place on board *Rainbow Warrior* II.

The big guns were out in force to help give the game a good start, UK Admin Director Johnathan Smales and International Head honcho Doug Faulkner's presence proving the extent of Greenpeace's commitment to the project. While the licence gives Microstyle the kind of image they're looking for – intelligent, mature and still able to have fun without screwing up the world – Greenpeace too do well out of it, with more exposure, inci-

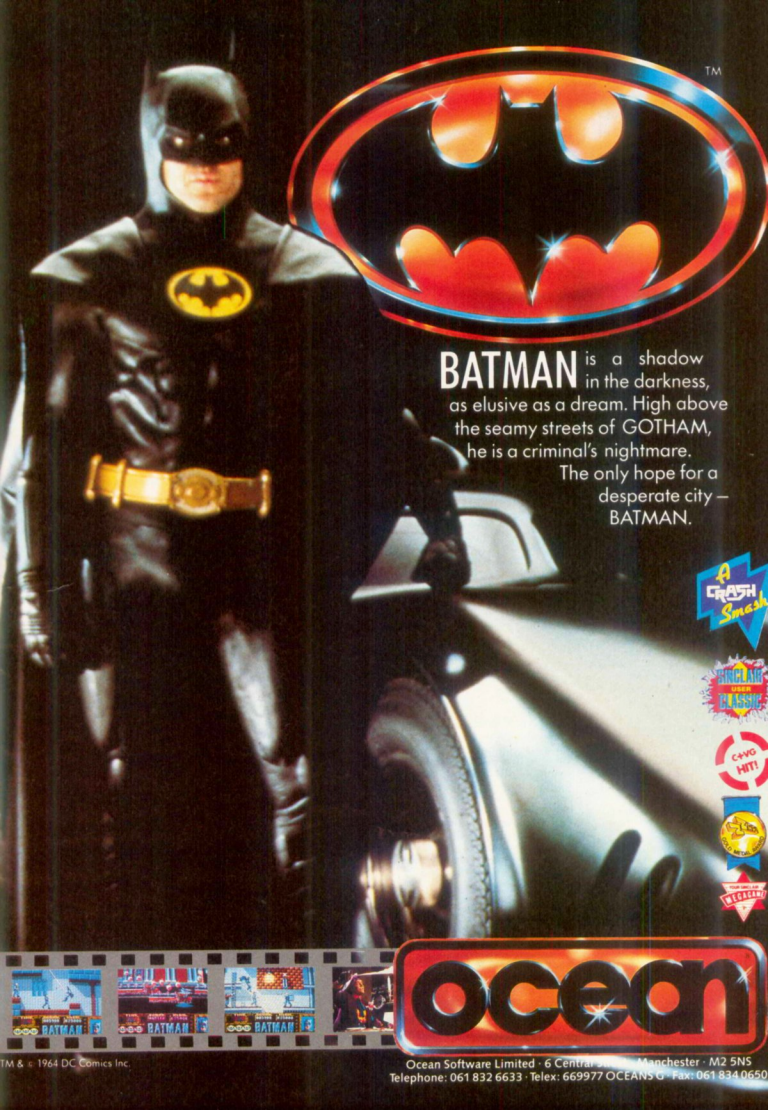
dental publicity and a break into the entertainment market. It's just a pity the game has not been thought out well enough.

Can this be the start of a new trend of tie-ups between software houses and good causes, perhaps? Dr Barnardo's Pro Orphan Simulator? The Viewers and Listeners Association Strip Poker Game? Operation National Health Service? The possibilities are endless...

For more information about Greenpeace contact:

Greenpeace UK
30-31 Islington Green
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GRAPHICS	8
SOUNDTRACK	8
INTELLIGENCE	3
INSTANT APPEAL	4
LONG TERM INTEREST	1
OVERALL	47%



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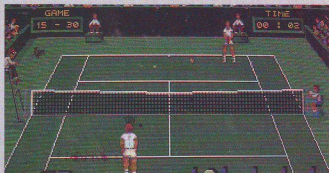


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■ A dark castle, sinister happenings and Elvira all come together, over, in Tynesoft's latest release on the Horrorsoft label. *Elvira, Mistress of the Dark* is in trouble and has given you a call: an aged relative is causing trouble, which is a bit funny since they buried her decades ago. Apparently Ms Elvira is "very big in the States," whatever that may mean



■ UBI Soft proudly unveil a tennis sim called *Pro Tennis Tour*. You're a prospective champion battling your way to the top. This 3D action is in direct head-to-head competition with *Passing Shot* by Imageworks (a game that invites printer's gremlins if ever there was one). It could be an interesting contest. Our money, for what it's worth (about £1.37) is on UBI Soft

COMING SOON

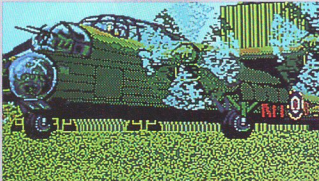


■ Just when you thought it was safe to go back into space, *Damocles*, sequel to the intergalactic hit *Mercenary*, is about to drop in. A large comet, christened *Damocles* by an astronomer with an impoverished imagination, is about to make instant mashed potato of planet Eris. Your mission, Jim, should you choose to accept it, is to stop it (oh really?)



■ *Red Storm Rising*, based on Tom Clancy's novel, is a nuclear sub sim set in WWII – just like Mikhail, perestroika, glasnost and that Boris bloke with the ponytail who got Dave Stewart to produce his album never happened. Interesting to see Microprose/style/status, after the ideological aberration of *Greenpeace*, getting back to doing what they do best: upsetting liberal pinko lefties

The PC Show's history: next stop Christmas!
The team takes a look at some early bids for that "all important" number one spot



■ *Lancaster*, from CRL's Actual Screenshots (no, seriously), puts you at the controls of an Avro Lancaster bomber during WWII. You play tail gunner Pennington, among others, working your way through 30 missions before you can retire a hero. (You can get invalidated out if you're insane; but if you apply to be sent home you're clearly sane, so tough luck and get your goggles on.) Three difficulty levels – depending on which pilot you choose to identify with – and a great multitude of options allow you to customise away to your heart's content. We've seen it, and it's a surprisingly promising – and ever so playable – flight sim. If you have trouble landing in *Falcon* this could be your kind of game. If you can land *Falcon*, bully for you and don't be so flipping smug

■ *Tower of Babel* from Microprose has nothing to do with sticking fish in your ears, probably. Unfortunately we can't tell you what it is to do with, because we they explained it to us very simply and we still didn't understand. Look out for the review next month when all is revealed – if we've grasped the idea by then. Now, one more time chaps...



THE ALSO-RANS

Two games that fail to cut the mustard. Read 'em and weep



■ *Future Sports* from CRL's Actual Screenshots label is an uninspired four level shoot-'em-up that offers you a choice between staying in prison or risking your life in a deadly arena. We'll take our chances in the cells, if it's all the same to you guys



■ *Daily Double Horse Racing* from CDS is another game that chronically underuses the capabilities of the ST. It has pretty graphics, but a gambling game on the ST is a losing bet. Odds on this won't be occupying the "all important" number one spot when mummy's snogging with Santa

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ST MUSIC MATRIX

Another Disk Magazine? Yes - but with a difference - This Diskmag is dedicated to the MIDI user on the ST. It is educational by design, and covers every aspect of the MIDI and MUSIC data available for the ST computer.

N.B. YOU MUST HAVE A MIDI SYSTEM TO USE THE MATRIX

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GAMEBUSTERS



FORGOTTEN WORLDS

US Gold's macho antics get a going over with a wee tip (a tiptette?) from good old boy **Damian Graham of Burnley**. When the game is loaded and the title screen appears, hold down the shift key and type **ARC**. Release the shift key and type **<Help>** to start the game. From now on pressing **<S>** advances you to the shop and **<N>** takes you to the next level.

POWERPLAY

Those divine beings causing you problems again? Asking awkward questions? Never fear, help is here! **London's own John Michaelides** has a sneaky way to cheat. Simply take *Powerplay* disk two out of the drive and replace it with a blank disk. The game then keeps asking you the same question again and again. It's so stupid it's... well, stupid. But it works!

THUNDERBIRDS

If your *Thunderbirds* just aren't thundering you need help from **Londoner John Michaelides**, who recommends you type in **RECOVERY** as the password for level two and **ALOYSIUS** for level

Life's a bitch, and then you die. Unless you know the pokes and cheats, that is: the Format brigade come to the rescue

three. If you want to be a little wacky and left field you can type **GNU** and **ANT**.

But that won't get you to the next level.

DOUBLE DRAGON

Inflicting a bit of the old martial arts on punks is always popular, but some players are better than others. If like us you're one of the others you'll find **High Wycombe resident K.P.Ware-Lane's** tips useful. On the high score table type in the following:

LEVEL ONE PLEASE
LEVEL TWO PLEASE
LEVEL THREE PLEASE
LEVEL FOUR PLEASE
LAST LEVEL PLEASE
I DO NOT WANT TO DIE
GIVE ME MORE HEALTH PLEASE
GIVE ME LOADS OF TIME PLEASE

DRAGONSCAPE

While we're on the subject of dragons, that same **K.P.Ware-Lane** has come up with a tip for *Software Horizons' Dragonscape*.

Load the game as normal and start to play it. Press **<Tab>** and **<2>** during the first level and you're transported to Technocy.

Repeat the process and you end up in Iceland, though why anyone... oh never mind.

GIGANOID

That thar **K.P.Ware-Lane** (a person or a place, I wonder?) has 100 lives' worth of a tip for *Microdeal's Giganoid*. Just press the **<Capslock>** key on the player select screen and a message appears. Start the game, and lo and behold, more lives than 11 cats.



LED STORM

K.P.Ware-Lane must have lots of free time on his hands, judging by the number of tips he's sent in. *LED Storm* from **US Gold** gets the treatment: type in **DAVID BROADHURST WANTS TO CHEAT** and things start to happen.

SDI

Our mate **Ronald**, ex-acting president, and his ridiculous and unworkable Strategic "Defense" Initiative get a good going over from,

you - you guessed it, **K.P.Ware-Lane**. All you do is shoot down all the swirling pods on the high score table and type in **ALERIC**. The cheat is activated and you can use the function keys to select any level. Easy peasy, Nancy!



RICK DANGEROUS

P. Fletcher from **Leeds** has a little tip for the little Indy character. Type in **POOKY** on the high score table after you've completed the first level. You can now continue play from the furthest level that you've reached.

TIPS ON DISK

This month there's a useful little program on the B side of the ever so beautiful and scrumptious *Cover Disk*. It's a party repair kit for **US Gold's** rather splendid *Heroes of the Lance*. A prize is winging its way towards **MARK TRIGO** even as you read this, probably.

■ For more information on the program see page 21.

A PLEA FOR HELP

Many games are released every month and the majority have a cheat built into them somewhere. If you have tips or cheats for any of the following games then send them to us now and we'll see about sending you a prize for your work. Write to: **Gamebusters, ST Format, 4 Queen Street, Bath, Avon BA1 1EJ**

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LICENCE TO KILL

A mysterious and unnamed spy last seen in Banbury has sent in this classified information concerning 007's mission against Sanchez.

Scene 1

Part 1: Shoot all gun emplacements for the first few screens and don't bother about the jeep. Fly over the road at full speed once you're inside the helicopter. Pull back bit by bit to gain height and eventually you'll be flying at full speed and maximum altitude.

Part 2: At the start let the man on the left run away. Do this by running forward and then running back again repeatedly. Position your gun so that you can shoot the jeep side on. It takes eight shots to destroy it.

Reposition your sight to shoot the two men by the side of the building. Kill them and then continue forwards killing as you go,

but using the cover of buildings. Shoot barrels four times to make them explode and kill any men next to them.

Part 3: Try and follow Sanchez's plane, but keep pressing fire when you're near it.

Scene 2

Part 1: Try and stay underwater as boats pass you etc. Kill a man, but don't use the harpoon. Wait until the sea plane appears, move forwards and aim for the left float. Fire!

Part 2: Keep moving left and right while pushing forwards to get to the sea plane. Don't stay still.

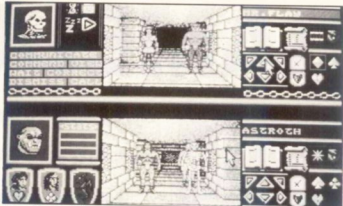
Scene 3

Fly the plane over the first truck until you see a target over the truck and then press fire. You'll then have control of the truck. Stay on the right hand side of the road and ram any other vehicles. Keep ramming the trucks until the cab blows up. Watch out for rockets from the jeeps.

BLOODWYCH

A.M. Blake from Bath has been delving into Mirrorsoft's and has come up with a cunning plan. When you're gathering your bunch of brave adventurers contact all of them and persuade them to join you.

Once they have taken all of their money, food and objects. Dismiss them again unless you want to keep that particular character.



Doing this you'll be able to build up a large horde of money, food, keys and some spare weapons. Find somewhere safe to store all of this equipment.

When you find the shop you'll be able to buy chainmail and a buckler for everyone to help keep them alive.

Trade your useless items like staffs and daggers for food or money. Save the extra cash for

buying spells.

To encourage characters to join you use the following approach. If the first response is "What be thy business/trade?" then just identify yourself and they should be willing to join.

If they respond with "What are you doing here?" or "Why don't you leave me alone?" then tell them your name and occupation and praise then three or four times. ■

AND THE WINNER IS...

We've saved a lorra, lorra lives, luvvies (*That's enough Cilla - ed*), but still there are people out there waiting to be saved.

So come on, don't be mean, share your wisdom with those poor helpless souls by sending in your TIPS, POKES and PLAYING GUIDES. In return we'll send you a little something: the best tip of the month wins the brave soul a prize.

Send your tips and pokes to: Gamebusters, ST Format, 4 Queen Street, Bath, Avon BA1 1EJ.

This month's prize goes to KP WARE-LANE from High Wycombe - who else? - for a ridiculous number of excellent tips. How can one person know so much, and still not be able to afford a Christian name?

SLEEPING GODS LIE

KINGDOM ONE

We've managed to sweet-talk those charming folks at Entertainment International to send us a playing guide for *Sleeping Gods Lie*, and here it is. Well, some of it anyway.

■ Before you leave the hut, pick up the pebble and the bowl and then head through the north door. Shoot any bandits that get in the way and pick up anything they leave behind. Find the old man to the north and listen to his wisdom. In places you'll find trees with red berries on them which are healthy to eat.

■ Go to the eastern exit and enter pass through it to eastern Cailla. Head south and you find a mole hill which contains the back door key to your house. Go back to southern Cailla and fill the bowl with water. Re-enter eastern Cailla and head south towards a pair of closely spaced trees. They let you through if you have water.

■ Northern Taira can now be entered. In the north west corner you'll find the bandit leader. Shoot him and pick up the map he was

carrying. Go to the east exit of northern Taira and you enter western Cailla. You find the peasant's hut, containing some useful items - including a mouldy old lump of cheese. This can be used to distract the mousey creatures and they'll let you through the exits they guard.



■ Chances are you'll have fought a good few bandits by now and picked up extra weapons. A staff sling is needed to kill the two headed at the north of western Cailla. It drops a circlet of concentration when deceased. Return to the old man and he rewards you with a potion to find the hidden pass in the south east corner of northern Taira. It's represented by two closely spaced stones. Once you're into southern Taira you have only to find the magic tree at the centre and you're taken to the next kingdom.

■ When you arrive you meet Prince Gregor.

KINGDOM TWO

Travel east or south to another landscape and the entrance to the dwarven caves at the southern extreme of both landscapes. You need a lantern to climb down, dropped by a dwarf when you shoot near to the entrance.

■ Enter the caverns and head south. You find the spider's lair in the second cave: pick up a rope to allow escape from the caves. Go to the throne room of the dwarf king, to the side of the next southern cave. Kill him and grab the prince's crown. Go back and give the crown to the prince who's waiting at the cave entrance. As a reward you are given some gold.

■ Return to the caves and head for the southern exit. There's a another molehill in the landscape which contains a belt of lung capacity.

Combined with the poison darts and blow pipe, which you're bound to have come across by now, these make a very lethal weapon. Travel south and you encounter a fountain in southern Sylvar. Verily, this takes you unto landscape numero three.

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BLADE WARRIOR



The beast was present in the land and from tower to tower the sorcerers voice called upon him. As night encroached and set the sun to flight, his legions made ready to conceal the tablets that would see daylight banished forever.



So, as the same last bloody light drained from east to west, the valiant came forth, ready to do battle against the legions of the night, using all his might and skill in this tale of swords and sorcery.



Screenshots from Amiga version

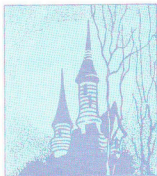


Atari ST, Amiga, IBM PC and compatibles.

THE COUNT

All the very latest news and gossip on the adventuring scene with the tall, handsome and mysterious COUNT

SIERRA NIRVANA



As if by magic, a batch of new Sierra titles has appeared on The Count's doormat (and you didn't think Counts had them, did you?). Apart from *Space Quest III* (reviewed over the page), coming up soon we have, in no particular order:

■ **Manhunter: San**

San Francisco is the sequel to the popular *Manhunter: New York*, promises more Stateside mayhem.

■ **Hoyle's Book of Games** is a little out of the ordinary. It relies on a famous 50 year-old set of game rules (cards, cribbage, etc) and while playing you can interact with your on-screen opponents (three at a time out of a choice of 20-30). If you take too long with your turn the characters get a little impatient and "give you dirty looks and say something to you." I can hardly contain my excitement.

■ **The Colonel's Bequest**, a murder mystery set in 1920s New Orleans, has as lead character a



■ **Yo! Larry's leisure suit** gets a third airing real soon, girls!

college lass who goes away for the weekend with her best friend to an old mansion in the middle of a swamp. Murder, inevitably, follows...

■ **Codename: Ice Man** is an adventure/simulation from Jim Police Quest Walls. You play a US Navy SEAL (a counter-terrorist, special operations group) and must travel by Nuclear submarine (the simulation part) to North Africa to rescue an American ambassador.

■ **Nerd fans** will be pleased to hear that *Leisure Suit Larry III* is on the way. Larry splits up with his wife and decides to become a serious bachelor - getting a new tan, working out and checking out the girls. But he runs into a lady who may be his equal - *Passionate Patty!* The idea is you get the graphics and music of the second game with the, er, humour of the first.

■ **Hero's Quest** sees Sierra getting into RPG for the first time since *Ultima II*. Sierra has also picked up a Japanese licence called *Sorcerian*, which my sources indicate is a heavyweight RPG.

■ Finally, *Conquest of Camelot* is an Arthurian adventure centering on the search for that oh-so-elusive Holy Grail.

All the above should appear before Santa. What on earth, though, will the world make of the bizarre *Hoyle's Book of Games*, I wonder?

INFOCOM: "WE'RE OPTING OUT!"

Infocom's General Manager Rob Sears has recently been quoted as saying that from now on Infocom will not be choosing which games to convert to the ST. That decision will henceforth be made by Activision UK.

The message is clear: if you want to see *Shogun*, *Zork Zero*, *Journey* and the rest of the goodies on your ST, write this minute to Activision. Even better, deliver an earful on the phone (0734 311666) - tell 'em The Count sent you.

It seems the ST's continuing alleged "lacklustre reception" in the States (don't believe it for a moment) is to blame. Come on Atari US, get your finger out, or we'll want to know the reason why!

SUB GAME SURFACES

● Microprose have announced the release of the long-awaited *Red Storm Rising*. Based on Tom Clancy's blockbuster novel, *Red Storm's* interesting aspect is its wargame feature, which acts as a campaign scenario and includes, among other things, television news reports.



■ **Prose:** brewing up a storm

LUCASFILM FLY HIGH

Lucasfilm are keeping themselves pretty busy right now, which is nice to know.

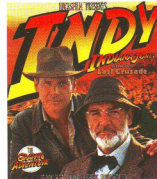
Apart from the adventure version of *Indiana Jones*, out now and covered elsewhere in your super soaraway in your *ST Format*, there's the sequel to *Battlehawks*, *Their Finest Hour*.

Based on the *Battle of Britain*, *TFH* features camera "films." Missions can be saved as separate files and passed

among your friends or through bulletin boards.

Last (as they say) but not least, *Loom* is a graphic adventure which includes an audio tape with a full Lucasfilm audio production (orchestra, actors, sound effects, cash registers, etc). You'll be able to get the CD version free from Lucasfilm.

■ **Indy - a six disk special from US Gold!**



GOING FOR A SONG

Meanwhile, on the home front, Titan Games have released two adventures at a mere £7.99 each.

Shards of Time has you saving the world - if you can recover three crystal shards, that is; while *Blackscar Mountain* sees the rising

of a demon from the mountain.

Titan also have a couple of US scenarios:

■ **Roman Wars I** (Zama 202 BC, Invasion of Britain 53 BC, Carrae 53 BC);

■ **Roman Wars II** (Teutoburger Wald 9 AD, Hadrianopolis 378 AD,

Taginae 552 AD);

■ **and Battles Through The Ages** (Kadesh 1286 BC, Agincourt 1415, Isandhlwana 1879).

All are available immediately at the tempting price of £7.99 each from Titan Games, 45 Windmill Lane, Worksop, Notts S80 2SQ.

BATTLETECH

INFOCOM PRICE £24.99

Is this the most significant Infocom release ever? After all, it does finally show that despite all the rumours Infocom has not given up the ST as a bad job.

The game, subtitled *The Crescent Hawk's Inception*, lets you control the huge, futuristic, Mech Warriors made famous by the Japanimation cartoons and toys of FASA's invention. As Jason, son of Jeremiah Youngblood, who vanished while taking part in a secret mission, you join Mech school at the beginning of your training.

Acclimatisation to the Mech environment is eased by a variety of missions within the compound. Gradually, you learn how to control your Mech and how to handle him in battle. In between missions you acquire armour, weapons and a range of skills, all of which improve as time goes by and your experience grows.

Money arrives as an allowance which you can invest on the stock market for greater profit. And



provided you invest wisely you are then able to afford a better class of weapon, armour and so on.

A surprise attack on the citadel where you are based, however, forces you to flee for Starport and safety. At Starport you can fight for hard cash in the Arena against other Mechs. Starport is also the place where you can recruit up to six other members to your party. All the crew can be sent to school to

learn new skills which strengthen the whole team.

BattleTech is rather linear in its storyline, freedom of action being confined principally to the combat scenes. Combat sequences are well done, allowing reasonable levels of tactics.

The graphics are excellent, with nice touches such as close-up cameo portraits adding to the atmosphere.

BattleTech is really aimed more

at newcomers to the field of RPGs. Younger players should enjoy the combat, which tends to dominate the game anyway.

Infocom has all the ingredients of an excellent system here. If it continues to be developed, with added complexity, greater storyline and more refined combat areas, BattleTech could be heading for a big success.

RPG RATINGS	
COMBAT	84
ENCOUNTER	40
ATMOSPHERE	72
PRESENTATION	85
ATTRIBUTES	80
RATING	72

Poor interaction lets BattleTech down. However, the overall system shows a great deal of potential

SPACE QUEST III

SIERRA ON-LINE PRICE £29.99

Subtitled *Pirates of Pestulon*, *Space Quest III* sees the return of good of Roger Wilco, the man who brought the janitor into the space age. After facing the Sarians in the original and foiling the deadly Insurance Salesman scheme in part two, Roger is out to rescue "The Two Guys From Andromeda" (alias the game's authors, seen in cameo parts later in the game), kidnapped by the selfsame pesky Pirates.

SQ3 follows the now classic Sierra humorous adventure style. The introductory sequence is outstanding, with Sierra's improved graphic system shining through to give even smoother animation and extra detail. Treatment of shadows, changing perspective and facial expressions is highly

effective.

One criticism of the earlier Sierra releases was the difficulty in recognising many of the objects - objects which needed to be manipulated to

solve puzzles. Improved graphics help matters considerably here. Sound too is greatly improved.

The game is rather easier to complete than the other Quests, puzzles never proving more than moderately difficult. The numbers of objects are low, so red herrings don't confuse matters too much.

While the parser has been improved, most inputs are still formed by verb/noun combinations. It can be frustrating looking for the right two-word combination.

Arcade-type sequences have always featured in Sierra's games, and SQ3 is no exception. The best has you in charge of your cyber-warrior's fight against the foe. The action needs strategic input too, far more so than the usual reflex action efforts.

SQ3 is a polished, humorous game with well-integrated action sequences. It's only a pity it's so short, ending just as you're getting into the swing of things. Nonetheless you'll find it a worthy addition to your adventure collection.



ADVENTURE RATINGS	
SYSTEM	87
ENCOUNTER	68
ATMOSPHERE	88
PRESENTATION	90
RATING	83

While quality graphics and sound do not hide the parser's deficiencies, SQ3 is well designed and fun to play

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- Edits:
- Pilot's Name
 - Score
 - Status
 - Rank
 - Decorations (medals etc)
 - Reprimands

So you're missing in action or just plain dead? Show God a thing or two and resurrect yourself! Wanna show your gangs to the ladies! (oo-er)! Here, have a congressional medal or two... Want some more stripes on your sleeve? Certainly - Colonel! Wipe those nasty reprimands? Yeah, go ahead!

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- Edits:
- Rangers Name
 - Score
 - Status
 - Rank
 - Campaign Duty
 - Decorations

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- Edits:
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 - Legal Status
 - Credits
 - Equipment
 - Cargo
 - Weaponry
 - Next mission to be played and countdown to it
 - Planet
 - Galaxy

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I was fortunate recently to chat with Lord British himself, otherwise and more soberly known as Richard Garriott, founder and Vice-President of Origin Systems, on the subject of Origin's forthcoming releases.

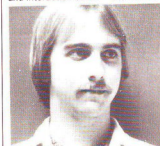
Tell me about Knights of Legend. What's so special about it?

Well, it takes a different approach from *Ultima*, which is a detailed, whole world simulation, while *Knights* is more like a storybook. It's more picture orientated, with large, full-screen graphics.

Characters you meet have personal prejudices against different races, for instance, and their conversations change depending on upon who, in your party, they're talking to.

In combat you can say whether you want to chop or slash or jab, high, middle or low. Do you jump to the side or are you going to duck? This also depends on your opponent, of course. It is a much more strategic combat, in that sense.

It's not fast, like an arcade game, but a detailed Role-Playing game. It's detailed in a personality and interaction sense – the number



■ Lord British, alias Richard Garriott

of factors going into interactions and the subtleties to those interactions.

Does *Knights* have an *Ultima*, look-down approach or a first person perspective?

It's a hybrid! There's world travel and city travel modes. It's like *Ultima* but not on the same scale. In city travel you don't go into individual buildings. You kind of see each building and then walk up to the doorstep. When you walk into a building it brings up a picture of the front of the building, a detailed face portrait of the shopkeeper and then into that detailed conversation I was talking about. It's a combination of the *Ultima* look, but on a different scale and then a slide show presentation of special events and occurrences.

ORIGIN NEW RELEASES

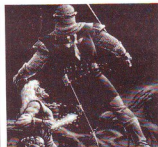
What else do you have coming up?

Well, *Space Rogue* I'm particularly looking forward to. It was developed by the people who did *Chuck Yeager's Flight Trainer*. Imagine something with that visual detail turned into space flight, and then with a full-blown role-playing game, where your planet surfaces are more in the *Ultima* direction... It's a powerful combination. The planet surfaces and stations are not the focus of an *Ultima*. That was not the focus of the game – the focus is the space parts.

What's the plot then?

You're a salvage businessman and you come across a derelict space ship. You jump into it and that starts the game. There are two political factions in the Universe. There's the humanoid-type creatures and there's the Manchy, more ant-like creatures. As the game goes on the tension builds between you and them. The world you are in is pretty prejudiced against the Manchy.

There's a little arcade game you can play within the game world, completely divorced from the main storyline. Essentially, you go stomp on the ants! The arcade is a sequence where you drop on a planet surface, little ant-mounds



■ *Ultima* – big, big, big!

come popping up out of the ground, the ants come crawling out and you try to shoot all of the ants while dropping pieces of dynamite down the mounds to blow-up the entrance!

The arcade game is included to re-enforce that prejudice against these ants.

Gradually you realise the conflict between the humanoids and the ants is instigated by a third party, so you really have a common foe. Eventually, you unite against this common foe.

There's rumours of a tank simulation coming from Origin called, I believe, *TANC*. What's the story?

Yes, it is coming out, but it's actually going to be called *Omega*. It'll be interesting to see how it goes. It's very polished, and we're all very

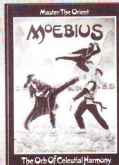
curious to see what the public thinks of it.

You work for a military contractor, designing and constructing huge cybernetic super-tanks. You are assigned a limited budget, as a new employee, to get used to putting these together. You physically construct the tanks, with the weaponry, armory and defences and also, develop their own artificial intelligence. You can do that through a number of vehicles.

If you're a programmer, that's great, you have control over the simulation. But even if you're not, we have another programming method where we have already constructed "capsule" routines you can link together, to do what you want such as, 'Find and shoot the enemy, run away if you're hit and self-destruct if you're about to die.' That's all it takes to write a program.

The language is a natural English programming language with only a few commands. Once you create these tanks you pit them against other tanks, there's a number of them on the disk.

And of course, as you beat better tanks, your clearance level goes up within the company and you get more money to build bigger and better ones. ■



■ *Moebius*: mixed reception, at best

Windwalker [the subtitle of *Moebius II*] is to take the elements of his game to their logical conclusion. The graphics are far superior.

He's used the same vantage point, but he's worked out the graphics now. The physical world is much smaller than an *Ultima*. Characters you meet and talk to don't necessarily do the same kind of things each day. Each one of the 30-60 people included in the game is highly developed.

Moebius II is a much better told story. Combat is still slightly arcade-like, but with more frames, more detail and more colour.

Moebius received a mixed reception, didn't it? What changes have been made for the sequel?

The author, Greg Malone, has done a very good job, I believe. I think the game's strengths before were the flavour of the oriental world which he carefully researched when he put it together. The combat was a good idea but it wasn't as smooth or as detailed as it needed to be.

The graphics were a clever concept, but they were muddy and difficult to see. So I can understand this mixed reaction because the execution was not as good as the concept. What Greg has done with his game is to take the elements of his game to their logical conclusion. The graphics are far superior.

He's used the same vantage point, but he's worked out the graphics now. The physical world is much smaller than an *Ultima*. Characters you meet and talk to don't necessarily do the same kind of things each day. Each one of the 30-60 people included in the game is highly developed.

Moebius II is a much better told story. Combat is still slightly arcade-like, but with more frames, more detail and more colour.

THE ADVENTURE BEGINS...

Every month *ST Format* features a section devoted entirely to Adventures, RPGs and Strategy.

Reviews are a major element, but we don't mean solely commercial releases – we want to see all kinds of homegrown products too, including those written with *STAC* and *Talespin*.

Most important of all, we want to hear from you. We want your opinions, views, likes and dislikes. Do you have any hints and tips? Views on graphics and artificial intelligence in strategy games? Is there too much hacking 'n' slashing in RPGs? Is the text adventure dead?

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Software cracking is a hot topic right now, what with the recent introduction of the new anti-piracy laws and the continuing heated debate between software producers and pirates.

Enough (perhaps too much) has already been said concerning the pros and cons of piracy – it's not good for the industry, but it exists and for the moment at least little can be done about it. But what is all the fuss about? Why do so many people crack into games?

Well for many, cracking into games is more fun than actually playing them. Delving into the inner workings of a program, especially one written in assembler with no helpful variables, can be quite a mental challenge – something

```

00:00000007 30 0002 0002 0002 30 00:00025C3C 0000 0000 204F 0000
01:0000204F 00 0000 0000 0000 00 01:00025C3E 204F 277C 0003 2376
02:01700070 00 0000 0000 0000 00 02:00025C3E 0000 0000 0000 0000
03:00025C3E 0002 070C 001F 0000 03:00025C3E 602E 0102 00FF 0020
04:0000007F 00 0000 0000 0000 00 04:001F0070 0000 0000 0000 0000
05:00000000 602E 0102 00FF 0020 05:00025C36 0002 2706 001F 0000
06:00000000 602E 0102 00FF 0020 06:00025C36 0000 0170 0000 0000
07:00000000 30 0002 0002 0002 30 07:001F7770 0000 0000 0002 073C
08:00025C3C 5810300 0 07:00025C3A 0101 0000 0000 0000
PC:00025C3C 5810300 0

```

```

Base page:00025C3C
Text area:00025C34 000000CC
Data area:00025C34 00001007
BSS area:00025C36 000000FF

```

```

00025C3C MOVES.L #0, A7
00025C3E MOVES.L #00025C3F, A7
00025C41 MOVES.L #0004(CR3), A3
00025C46 MOVES.L #000C(CR3), D6

```

```

GEN MonST Disassembler/Debugger 1.21 (C) HiSoft 1986 - Author A.Penne!

```

■ **Monst – it helps get you inside**

It is not unknown, too, for programmers to delve into other people's code to keep an eye on the competition. Most, though, simply

tains many kilobytes of source code, and he wants it as structured and easy to read as possible so that debugging is easy.

BREAKING AND ENTERING

Like it or loathe it, you can't ignore it: cracking's here to stay. Using our Cover Disk PD game Firestorm as an example, CHRIS KINGSLEY demonstrates exactly how it's done

which can't always be said of the games themselves. Picking your way through 300K of assembler is not easy. Indeed, unless you know what to look for it can be almost impossible.

And some games are too difficult to play in their standard form. *Powerdrome* would be improved no end if the controls were less sensitive. In *Carrier Command* it can take an hour to get from one island to another, while the enemy carrier is faster than even your fastest aircraft and able to sail through land!

By altering just a few bytes of the set course code it is possible to allow your carrier to be instantaneously transported anywhere. The game is much more playable as a result.

Cracking into a game also shows up any cheat modes. Look for those strange messages – people being rude to hackers, sending loving messages to their girlfriends and so forth. The cheat mode for *Starglider 2* is clearly visible once you have decrypted the code: "we're on a mission from God." Someone knows their *Blue Brothers*!

find that cracking helps them learn more about their computer and how practical code is written.

SAFE HEX

Budding crackers should heed a few words of warning first. The most important thing to remember is never write to an original disk. Always use a backup copy, otherwise any mistake will be an expensive one. PD games are good for practicing on – although many of these have been written in C or Pascal etc – as are demos.

But why oh why (as they say on *Points of View*) don't programmers make life more difficult for the cracker? The answer is the way a programmer works. He writes a program in assembler which con-

verts the truth is, a programmer never tries to write a program so it is difficult for someone to hack into, since that would just be making life much more difficult for himself. Anyway, it's the job of the copy protection boys to defeat the crackers – if they can!

TOOLING UP

Every craftsman needs the right tools. For cracking into 68000 programs you really do need a good disassembler, because the raw code is not very meaningful. The right program can save you hours. *MonST2*, the debugger from *Devpac ST 2*, has all sorts of useful features.

Other good programs include *ST Doctor*, a desk accessory with

too, and you must familiarise yourself with the Motorola MC68000 CPU, the ST's driving force. *ST Format's* recent series on machine code is an excellent starting point, but a good book on machine code will give more detail and provide a handy source of reference.

Right, that's scared off all the dabblers. I think we're alone now, so let's get cracking!

When breaking into code the most important instructions to look out for are as follows:

```

move.b/w load
register/memory location
subq.b/w #1 subtract
one from byte/word
beq branch if equal
bne branch if not equal
bmi branch if minus
bra branch always
lea load effective
address
nop no op
The last instruction, NOP, is a 'do nothing' instruction, yet it's probably the most useful command in the cracker's arsenal. Use it to replace any other instruction and prevent it functioning.

```

To use these commands you need to know how instructions are

THEY DON'T CALL YOU CRACKERS FOR NOTHING!

This isn't one of those how-to-do-it articles where you just sit back and read, without actually doing anything. Load up the Cover Disk and try it out for yourself: we've put on it a rather neat PD game, *Firestorm*, as well as the debugger *MonST* from *Devpac2*. So as you follow Chris's explanations you can try it out for yourself!

Once you've given yourself infinite lives, see what else you can do to *Firestorm*. Let us know how you get on...

stored in memory. All opcodes take up at least one word (two bytes) and are word aligned (they start at even addresses).

The nop instruction has the opcode \$4E71 (the dollar symbol represents numbers expressed in hexadecimal notation), and the opcode MOVE.W#\$0005,\$000205B6 takes up 4 words in memory and looks like 33FC 0005 0002 05B6. So to stop an opcode like the last one you need to replace it with exactly four NOP opcodes, otherwise the program may crash.

You need to be familiar with the inner workings of your ST, and in this respect a reference book such as *Atari ST Internals* is essential. You don't need to know everything off by heart, but you should at least know where to look things up, so that you know how to find out more information about the hardware registers, operating system calls and exceptions.

For example, if you come across a command like MOVE.W#\$700,\$FF8240, it could be very useful to know that this meant load colour register 1 with red, so you can play around with the colour palette.

You do not have to be able to understand all of a program to be able to crack it. In fact providing you can recognise the most important commands, you need hardly know anything.

PLAY TIME

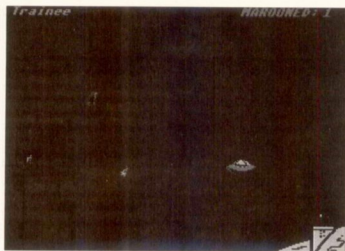
The first thing to do with any game is to play it. Get to know how things work, how it behaves in different circumstances. How many lives you have been given? What about shields, number of missiles etc?

Look for little messages telling you what has happened. When you fire a missile, does the screen announce it with a "Missile Launched" message? When your lives finally run out, what is the message, is it "Tough Luck Sucker" or just a plain "Game Over"? Look also for strange, unaccountable messages - these could be the password for accessing a cheat mode.

Write all these things down, preferably in a notebook so that you don't lose them. This saves lots of time later when you start delving deeper into the program.

THE CRUNCH

Now it's time for you to get in there and have a go. On this month's Cover Disk is a PD game called *Firestorm*. The game itself is fun, so actually playing it is no great hardship. At the same time, note down anything that looks like



■ *Firestorm* as it looks from the outside...

```

0002E85C MOVEA.L A7, A5
0002E85E MOVEA.L #500033F6, A7
0002E864 MOVEA.L #0004(A5), A5
0002E868 MOVE.L #000C(A5), D0
0002E86C ADD.L #0014(A5), D0
0002E870 ADD.L #001C(A5), D0
0002E874 ADD.L #00000100, D0
0002E87A MOVE.L D0, -(A7)
0002E87C MOVE.L A5, -(A7)
0002E880 MOVE.W D0, -(A7)
0002E88E MOVE.W #5004A, -(A7)
0002E894 TRAP #501
0002E898 ADDA.L #0000000C, A7
0002E89C BCLR D6, #0002E8A6
0002E89E MOVE.L #00000000, -(A7)
0002E898 TRAP #501
0002E89A MOVE.L #0004(A7), D1
0002E89E MOVE.W #500C8, D0
0002E8A2 TRAP #502
0002E8A4 RTS
0002E8A6 LINK A6, # -50004
0002E8AA JSR #00031166
    
```

GEN MonST Disassembler/Debugger 1.21 (C)

■ ...and from the inside

it might be useful.

The easiest and first job is to look through the game for strings - normally unencrypted. Strings in both assembler and C are normally stored in the same way, as alphanumeric characters terminated with a zero byte.

So in the case of *Firestorm*, first load MonST when in Low Resolution (either prg or TOS version) and when prompted for a filename type FIRESTRM.PRG (see panel for full instructions) and press Return. When you're prompted for a command line just press Return twice. The debugger screen should now be visible.

INTERESTING STRINGS

Note down in your book where the program starts, indicated by a > (greater than). You do of course already know the length of all the important files relating to FIRESTRM.PRG.

Program	Length (bytes)
FIRESTRM.PRG	19753 \$4D29
STORM1.DAT	37562 \$92BA
STORM2.DAT	32556 \$7E00

When I loaded FIRESTRM.PRG it started at memory location \$1CD04. In your case it may be different, but all subsequent refer-

ences take this as the starting point of the program.

To look through the program for ASCII strings, press X: the screen fills with hexadecimal and ASCII characters. Scroll through the program by pressing any key other than Esc, and note down any interesting phrases which appear amongst the apparently meaningless jumble.

It may take a while to look through a program but you almost always find something of interest. In the case of *Firestorm*, the first interesting strings appears at about \$1FB04 onwards and looks something like this:

Good luck, drone pilot

Promotion granted. We're hoping for you
Use caution:
Senator on board...

Following these strings are a succession of others, including details on the type of starcraft you can fly and a short discourse on the graphic capabilities of the ST.

Incidentally, try looking in the ST ROM around location \$FCF3C8. Dave who?

ALL RIGHT, TRACE?

Now let's find out about the number of lives available and where they are stored. There are two ways to do this: forwards- and backwards-trace.

In the forwards-trace you find where the number of lives is first set at the beginning of the program, and continue from there to find other references and narrow down the possibilities.

In the backwards-trace you look for a handle on the number of lives by finding where the program performs an output relating to this number. For example, when the lives are displayed or when the program lets you know that you have no more lives, the (almost) inevitable Game Over message appears. With *Firestorm* let's try the forwards-trace.

Now, from playing the game we know that there are five lives available, so it is a sensible bet to look for a command which resembles MOVE.W #5, \$address. Trial and error is always involved, and you should think awhile before rushing into anything.

Lives are normally stored as byte or word variables and not as longwords (two words), which are unnecessary. MonST's very flexible search function is extremely useful in this respect because it allows you to look for bytes, words, longwords, strings and assembler mnemonics. The latter is the most useful, as you can search for all or part of a mnemonic such as MOVE.W D0, (A5).

The search function is selected with the G key, followed by pressing T for text search. If for instruction, which is the one we will use. In this case we are looking for something along the lines of MOVE.W #55, \$addr but the actual mnemonic depends on the syntax of the debugger.

We can search for just a part of this string, as we are unsure of the exact form of the instruction we're interested in. An initial search for 5, does produce a large number of possibilities, but it also shows what the command syntax is. A more careful search for MOVE.W #0005, can now be done and produces the following:
1CFDC MOVE.W #0005, #000205B6
1D074 MOVE.W #0005, (A7)
1E8DB MOVE.W #0005, (A7)
1EB30 MOVE.W #0005, #00020044
1EB76 MOVE.W #0005, #00020044
1F090 MOVE.W #0005, -(A7)
1F362 MOVE.W #0005, -(A7)
1F7B2 MOVE.W #0005, #0002C532
1F7E4 MOVE.W #0005, #0002C532

No byte operations turned up in the first search, so we can for-

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get about those.

FIVE: GO ADVENTURING!

Now we need to think again, briefly, to narrow down the search. We are looking for a command which sets a memory location with the value of five, so we can reject any references to the stack pointer, register A7.

Of the remaining choices only the first one at \$1CFC looks a likely candidate – the others appear twice, and further investigation shows that they occur a large number of times (try a search for 2C532, for example).

It would be sensible to confirm our suspicions regarding \$205B6, so a search of further occurrences is sensible. There are only three references to this location, and they include subsequent segments of code:

```
1CFC MOVE.W #0005,000205B6
1E624 SUBQ.W #001,000205B6
1E624 BNE.S #0001E634
```

```
1F1E0 ADDQ.W #00004,000205B6
1F1E6 ADDQ.B #004,00020598
1F1EC CMPI.W #00009,00020586
1F1F4 BLE.S #0001F206
1F1F6 MOVE.W #00009,000205B6
1F1FE MOVE.B #039,00020598
1F206 ...
```

In the first, the value at location \$205B6 is set at five. In the second, one is subtracted from this value and is tested to see if the number is equal to zero.

If this is not the case (that is, if the number is not zero), a branch is carried out to somewhere in memory.

ODD CHARACTER

In the third reference, the number is increased by four and tested to see if it is less than or equal to nine. If it is not (i.e. it is greater than nine) it is set to nine.

All these references are entirely consistent with \$205B6 being the location of the number of lives. The only slightly puzzling thing is the reference to \$20598, which seems to have the same things done to it as the number of lives.

A quick look at an ASCII table reveals that \$39 is the character '9', and it must be this which is printed on the screen rather than the actual number of lives! This is a rather strange way to do things, indicating perhaps that this program was written by someone not too experienced at assembly.

All that remains is to try out our hypothesis – that location \$2054B6 contains the number of lives. This calls for a bit of playing around.

GET THEE TO A MONST

To hack into Firestorm you'll be needing a monitor/editor program: ever mindful of your comfort and convenience, we've taken the trouble to supply one especially for you on the Cover Disk. For more information please would you turn to page 21.

Thank you for buying ST Format and, hey... have a nice day!

RELOCATION INFORMATION

As explained earlier, some people, when loading up the program using Load executable file, may find the start of the program is not \$1CFC4 but some other value instead.

This is because 68000 program files are supposed to be relocatable (i.e. they can be placed anywhere in memory) and references to absolute memory addresses are discouraged. So why does this program have them, and why are they different if it is the same program loaded each time?

The answer is relocation information. At the end of each program file stored on disk there is a relocation table. When the program is loaded into memory as an executable file using the EXEC function, this table is used to calculate the new values of these addresses, which are relative to the start of

the program. Looking at FIRE-STRM.PRGM with a disk editor reveals that all references to \$000205B6 would be 0000 37F2 (\$1CFC4 + \$37F2 = \$205B6).

There are two alternatives: alter the file once it has been loaded into memory, or create a new altered program file to disk (being careful not to upset any values affected by the relocation process).

Either way is fine – the former for trying out small things, the latter for larger and more permanent changes. Let's try the former, as it's the easiest method given the tools we are using. The instructions we are interested in changing are located at around \$1E624 and should look like:

```
$0001E624 5379 0002 05B6
SUBQ.W #01,$1ives
$0001E62A 6608
BNE.S $somewhere else
```

We have two choices: to stop the

subtraction of one from the number of lives, or to make sure the program never branches to the end-of-game routine.

IMMORTALITY BECKONS

The first option involves replacing each of the three words of the SUBQ instruction with \$4E71 (good old nop!). Care is needed when operating on a disk file because we would have to find an instruction which behaved like the SUBQ.W as far as the relocation process is concerned. So we would substitute an ADDQ.W #01 in its place (5279 instead of 5379), so that every time the ship gets hit an extra life is gained!

The second option involves replacing the BNE.S with a BRAS.S (branch always). All branch instructions appear in memory as either 6xxx (nn=branch offset) for short branches, or 6x00 nnnn for longer branches.

To insert the BRAS.S we should put in a 6008 in the place of the 6608 (the BNE.S). Either way, be very careful when changing anything as MonST inserts any hexadecimal number typed at the command prompt into the memory location pointed to by the > symbol.

Having done this, all you need to do is to run the game by pressing CTRL-R, and the program will access the disk drive to load in the two accompanying files. The program should behave normally – except you have infinite lives! If the program bombs out you have made a mistake at some stage and you should try again.

Notice that the number of lives actually displayed on the screen decreases, although the internal number of lives does not. See the references to \$20598.

You have now cracked Firestorm! It's easy when you know how.

PERFECT PRACTICE MAKES PERFECT

Now you have been shown the basic method to crack games it's up to you to keep trying for yourself. As with any skill, you need to practice to improve, so don't just stick to the easy games.

There's not enough space here to go into any depth on the subtleties involved in cracking, but keep experimenting and trying new angles and you'll pick them up for yourself. ■

There's more to Firestorm than meets the eye, as you've already seen. Tell us what else you find – write to: Firestorm Cracking, ST Format, 4 Queen St, Bath BA1 1EJ.

WHAT ON EARTH IS THE MAN TALKING ABOUT?

ASSEMBLER A program in which machine code mnemonics are typed and edited, and then translated into machine code instructions

SOURCE CODE The assembly language mnemonics which are translated by the assembler into the machine code

DEBUGGING The process of discovering and eliminating errors from a programs

HEXADECEIMAL A number system for people with 16 fingers: often used in assembly language programming

MACHINE CODE The only language that computers understand. All other languages, including assembly, are translated into this before the stupid computer can deal with them

OPCODE An assembly language instruction in the source code

HARDWARE REGISTER Holds numbers and addresses which the ST's processor unit can access: variables the ST can access

OPERATING SYSTEM CALL The operating system is inside the ST's ROM and consists of many useful machine code routines such as: sound, disk, screen and keyboard processing. Operating system calls use these routines to carry out the more common tasks which keep the machine going

STRINGS A series of ASCII characters in a row making up words we humans understand: usually terminated with zero

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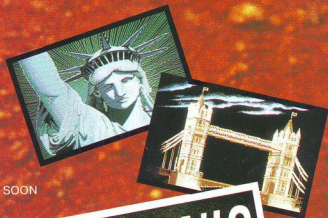


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DEPARTMENT

QUANTUM PAINT VERSION 2

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Given the success of the original *Quantum Paint* it should hardly come as a complete surprise that Eidersoft have released a second version.

The original, like *GFA Raytrace* (reviewed last month), was a "special" mode art package that gives the user a choice of 4096 colours with many more than 16 at any time. Together with *Spectrum 512* it extended the 16 colour limit beyond all reasonable expectation. For a paltry £19.95 it sported operation in all three standard screen modes, *Super Palette* modes, animation and the ability to import neo and degas formas images.

Now, a year and a half later, comes version 2. If you were expecting a major rethink, however, you'd be disappointed. The only enhancements, apart from the removal of some of the original's bugs, are two new features.

First, if you have access to an Amiga (scuse my language) then you can take IFF or HAM images across to *Quantum Paint* and edit them using all the features available on the original *Quantum Paint*. Second, there is "Full-screen image processing" (discussed below).

US INTERVENTION

That, at least, was the theory. I like to think all my scribbles have nice



■ Going up: *Quantum Paint*

graphics to support them, so I was naturally eager to move some impressive Amiga pictures over to the ST and show you just what could be done. But things proved less than straightforward...

Firstly the IFF file from the AMIGA had to be 320x200. But the

That man MARK PICKAVANCE kicks off a course on the Cyber series (overleaf) and delivers his verdict (p. 104) on the graphics potential of the TT and the STE. But first, a long hard look at Quantum Paint 2

UK AMIGA has a standard low resolution of 320 x 256. So I had to force my AMIGA 2000 to boot as an American AMIGA. After convincing my AMIGA it was a colonial cousin I set about producing and finding some suitable pictures to port across.

The pictures I transferred fell into two distinct groups: IFF and HAM ("Hold And Modify"), created with *Paint* software dedicated to these formats. *Deluxe Paint III* produced the IFF and *Photon Paint* the HAM images.

(Incidentally, the transfer from Amiga to ST is significantly eased by a utility called "Dos to Dos" which enables the Amiga to read/write to ST disks (or PC format). My sources tell me that a new version of this software is soon to be launched which offers the same facility - but with MAC disks)

END OF AN ERROR

I had no problems with the IFF format pictures, which looked smashing on the ST - some arguably even better than on the Amiga. The "Gorilla" and "Quantum Paint V2" are examples of these files, both in 32 colours. I also attempted to load a 64 colour (which is called "Extra Half Brite" mode) image, resulting in two bombs and a reset. I'd prefer that calamities of this nature were trapped - even if I did know that only 32 and 16 colour IFFs were supported. These images show what you can do with *Deluxe Paint 3* on the AMIGA and what it can look like on *Quantum Paint V.2* on the ST.

The HAM images were more of a problem. The software I most wanted to use was *Sculpt 4D* - which refused to go into NTSC resolution, despite my best

efforts. *Photon Paint* proved more adaptable, allowing me to set up a 320 x 200 HAM screen. I was about to start drawing when I found that some of the example images on the ART disk were in American resolution: I promptly ported them over. They would not load. The error message "Can't find bit map header" was repeated on all files.

This should actually read, "Programmer doesn't fully understand IFF format when used for HAM." I couldn't get any other HAM producing package to work in 320 x 200. After several hair-tearing hours I abandoned the attempt.

Later that day I happened to stumble across a *Sculpt 3D* produced graphic in the correct resolution. It loaded! I can only assume that *Quantum Paint* understands *Sculpt's* version of HAM data format.

FLIPPING HALF MEASURES

In addition to the patchy IFF loading, *Quantum Paint 2* also offers "Full-screen image processing." An "IMG PROC" button on the menu screen enables you to access one of 12 possible effects - which operate on the whole screen. These include:

- H-Flip: flips the whole screen left to right
- V-Flip: flips the whole screen up/down
- H-Squash: halves the horizontal scale
- V-Squash: halves the vertical scale
- H-Expand: doubles the horizontal scale
- V-Expand: doubles the vertical scale
- Smooth: antialiases the image
- Thresh1: 50% Threshold

transformation

- Thresh2: 70% Threshold transformation
- NoColour: turns colours into grey
- ScaleInvert: colour inverse transformation.

To demonstrate these effects I transformed some of my imported screens. I liked some of the options, but would prefer greater control over the extent of the changes.

One definite bonus is the use of a standard GEM requester for file operations. This is not very imaginative, admittedly, but it does enable you to use third party file selectors such as *Universal File Selector II*, which is brilliant (no, I'm not being paid to say that!).

In summary, *Quantum Paint version 2* is no great advance. Rough edges have been smoothed, extra features have been added.

The criticisms I made about *GFA Raytrace* last month apply here too: the only end product is a pretty screen. You can print from *Quantum Paint*, admittedly, but few of us have colour printers, and even fewer have ones that can do justice to the colour range.

With no IFF or IMG export, *Quantum Paint* cannot be used in conjunction with any DTP package - an absurd and crippling limitation.

FORMAT RATINGS

Features 75%
HAM and IFF pictures can be imported.

Speed 67%
Fast unless you're manipulating large chunks of screen

Ease of Use 86%
All menu and mouse driven for simplicity.

Results 73%
Produces pictures as good as an Amiga.

Format Value 79%
An improvement on *Quantum Paint*, but not a major one.

The Competition

The competition are programs like *Flair Paint* and *Spectrum 512*. Both are more sophisticated, but at £15 *Quantum Paint 2* is a real bargain. Most games cost more.

TAKE CONTROL WITH CYBER

Without any doubt, Electric Distribution's *Cyber* series has to be judged one of the most comprehensive three dimensional animation systems around – and that includes those for mainframes and mini computers! If you're a CAD 2.0 owner, begin here and get more from your package.

To follow the practical elements of this tutorial you need a minimum of CAD 2.0. If you have *Cyber Sculpt* and *Cyber Control* you may be able to add more accurate objects and smoother action to your animation. (By the way, *Cyber Sculpt* costs £79.95 and *Cyber Control* £59.95. Both are available from Electric Distribution on 0480 496789.)

TV TIMINGS

Cyber Control is a Basic-like language which takes over all CAD's functions and moves all the cameras, lighting and objects under your software control. If you're serious about ST computer animation, buy it. It works only in conjunction with CAD 2.0 – so you need both.

OK, let's make a start with the

The Cyber series is a superb 3D animation system. Make the most of it by following MARK PICKAVANCE'S new tutorial series right from the start

old Channel Four logo. (I say "old," because when I went to make a video tape copy I discovered they have lots of new ones and rarely show the original one any more. I don't know, these TV types...) After looking back through some old videos I eventually found the one I wanted: a three dimensional figure 4 which breaks up and then reforms. Perfect – now all we need to do is duplicate it!

My start point, to get the general layout and design, was a pencil sketch from a video "freeze frame": I needed a 2D CAD design to determine precise geometric shape. Pickavance's Law: *time spent in preparation always translates into quality of finished*

graphic or animation. From the sketch I produced a schematic on Easydraw which gave me a better idea of the scale and shape of the object group (figure 1).

Satisfied with the 4 logo, I added a colour key and a label for each element – a valuable reference when I came to colour and animate the objects. It would have been great to have been able to port the .GEM metafile to CAD and produce the 3D object that way.

Instead I was forced to copy the design within CAD and then refine it in *Cyber Sculpt* (figure 2). All this primary work was done using the mono monitor, the precise positioning of elements

being the most important factor at this stage.

From *Cyber Sculpt* I moved the group (made up of nine objects) into CAD (in colour) and coloured them correctly. The logo is in five colours: yellow, red, blue, green and purple (just like my favourite tie!).

LOOPING THE LOOP

Using the "Customise" colour option and "re-colour" I re-defined the colours and "colour sets" to three shades of each colour and a background colour (using up my total 16). Any less than three colours per object and you reduce the 3D effect.

In an ideal world, of course, one would have preferred six or even eight shades per colour, but for that we must await a TT version of CAD or, failing that, a utility to plot CAD graphics in the Spectrum 512 graphics mode.

Most CAD users should be able to get this far, even without *Cyber Sculpt*. I suggest using the "Extrude" tool with the "Snap" and "Grid" set both on. Make object names relate to those labels in my drawing (a – i) so that you can

TELLING IT LIKE IT AIN'T: ART AND THE ILLUSION OF REALITY

The aim of all animation is not, as you might suppose, to simulate reality, but to give an impression of it. You don't think there's a difference? *Voyager II's* recent encounter with Neptune was a unique opportunity for computer graphics buffs, for the "Voyager Mission" computer graphics still rate among the finest ever produced. It also reminded me of something extraordinary its creator said.

This famous and beautiful piece of work was done at Utah Tech in the project's early days by Computer Graphics expert Jim Blinn (Dr James Blinn, actually – but what the hell, I don't reckon he'll read this).

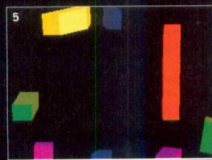
When he modelled the solar system and the voyager craft he discovered a fascinating insight into the nature of visual reality and our perception: *people don't want truth.*

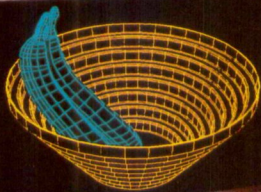
"Graphic artists are working on trying to make things realistic," he observed, "yet in a specific image it is not always clear what makes it look less than real."

"It doesn't really matter. Movies don't portray reality. You wouldn't want to portray a spaceship as it really is in space, with no fill light, no ambient light. It would look funny."

Literary types will recall Tom Stoppard's *Rosencrantz and Guildenstern are Dead*, in which the leader of a troupe of travelling players tells of staging a hanging by executing a real prisoner. The man didn't behave as he was expected to, and the audience booed him off. It wasn't "realistic" enough for them.

■ Right: what the finished sequence should look like. It's on the Cover Disk, but why not ("excuse the pun) do it 4 yourself!





NOW TT'S WHAT I CALL GRAPHICS!

It's the STE everyone has been talking about, almost certainly because we all realise that it's tomorrow's ST. But for the graphics buff the TT is much more interesting. In fact, it's probably the ST for the day after tomorrow.

In contrast to the STE, the TT boasts a vastly improved graphics system. Cynics might even go so far as to speculate that the STE spec was reduced to make the TT a more attractive upgrade. At the heart of the TT is Motorola's big brother to the 68000, the 68030. It sports a full 32 bit architecture and memory addressing as well as on-chip memory management. The clock rate is a reasonable 16 Mhz - twice the standard speed of the ST's 68000.

We are looking at a real fourfold increase in the speed of number crunching operations - and depending on the instruction and data cache the exact factor of speed increase may be even better. This system implies high speed looping.

If the instruction sequence is less than 256 bytes long, if you want even more "go," look forward to third party turbo cards using 25Mhz versions, perhaps even clocked at 32Mhz.

Three totally new modes are available: 320 x 480 with 256 colours from 4096; 640 x 480 with 16 colours from 4096; and 1280 x 960 monochrome. These

We've already covered the STE in some depth (see page 15). But MARK PICKAVANCE finds the TT much more exciting

all have the same 150K memory requirement for a single screen. The TT's 26 Meg memory potential seems quite adequate for producing 256 colour animation sequences (177 screens).

Using a Cyber Paint-style compression technique this number could be increased dramatically. If you're prepared to use the 32K modes we are all know and love you could have a possible 832 uncompressed screens in memory; this would run into minutes of animated graphics if decompressed in real-time.

I've already experienced painting pictures in 256 colours as an Archimedes owner. It is hard to say exactly what difference there is painting in 256 colours as opposed to 16 or 32 colour system. You're no longer frustrated by needing "that extra colour," certainly, or trying to make smooth colour transitions.

On the other hand you can become frustrated by your own inability to draw pictures on a computer!

To maintain compatibility most

of the TT's peripheral hardware is identical to the STE. Most GEM applications, I'd guess, will work on it without much (if any) modification. Paint packages will need partial re-writes to use the new modes. Some games may not work at all, and those that do may be too fast to play. Perhaps a best selling utility for the TT could be a "slowmo" to make it run at a reduced speed?

Certainly, with the ultra-high resolution monochrome display and a socket for the 68111/2 floating point coprocessor, this is the perfect hardware for DTP applications like Calamus.

STE? IT'S NOT SO GRAND!

As for the much-trumpeted STE, enhanced is too big a word for it! As far as graphics are concerned the STE is not the brave new world some Atari executives led us to believe.

The "Enhanced" ST is just a variation on a theme, the changes being best described as cosmetic; the only genuine graphics-related improvement is the increase in

color palette from 512 to 4,096. And it might as well be admitted at once that the chance of "new" palette exploiting routines being implemented in currently available graphics software is pretty remote.

IT'S A MYSTERY TO ME

Hardware scrolling, as you'll know from the full report beginning on page 15 of this issue, is also supported. This is all very well, but the Blitter, fitted as standard, could be used for smooth scrolling. Atari must know that no-one is going to write games to exploit a hardware facility only available on a few STs.

On the other hand the STE does have useful inclusions the new user may actually use, such as the ability to phase-lock the system clock for GENLOCK. If the ST is in sync with another generator of video signals it's possible to combine the ST and the video source. The merged video signal can be directed to a target device, either the monitor and/or a video machine.

In fact, the ST's video chips have always had this capability; the snag was getting access to it. The accepted method was to modify the ST (usually a Mega) internally; in the STE the mono detect on the monitor socket can be used to inject an external sync pulse. Why this wasn't implemented on the ST originally is one of the great mysteries of the world.

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This month, before we bid a fond adieu, we take a look at pull down menus, calling TOS routines, using machine code in your Basic program and those peculiar and not at all illegal activities known as PEEKing and POKEing.

Why, first of all, should anyone want to call a Bios routine? Well, there are times when you need to use the operating system of your machine. If you've written a game that only works in low resolution, for instance, you'd want to be able to detect the resolution the ST is in, so you can tell the user to switch from mono to colour.

It is not my intention to explain at length the meanings of Bios, Xbios (Extended BIOS), and Gemdos, but rather to show how these can be called from Basic. (The book *GFA Basic Advanced Programming Guide* gives a good guide to the internals of the ST, together with listings of the Bios, Xbios and Gemdos; most other guides tend to concentrate on C rather than Basic.)

ROUTINE: AN ENQUIRY

Essentially, the Bios, Xbios and Gemdos are routines built into the operating system of your ST which can be called, sometimes with different parameters, to return a result.

Take the example of resolution determination mentioned above:

Rez=Xbios(4)

This calls the XBIOS routine number 4, (`_GETREZ`):

on return from the routine a result is passed back, and placed in the variable Rez. In this case the value is the resolution (0 for Low; 1 for Medium; 2 for High). No parameters are passed on to the routine, as none is required.

A more complex call would pass parameters to, and receive parameters back from, a call to the Operating System. A good example would be the Xbios 10 call, (`_FLOPFMT`), which formats a disk. It might be used something like this:

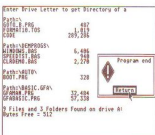
```
A=Xbios(10,L:Buf,L:0,W:dev
,W:spt,W:trk,W:side,W:inte
r,L:magic,W:v)
```

Here the parameters are separated by commas—those starting with L: mean a long word, and W: a word. A list for the parameters to be used can be found in any book on the ST operating system, and the parameters in GFA Basic are put onto the stack in the reverse order. The equivalent to the above command in machine code is:

```
move.w v,-(sp)
move.l magic,-(sp)
move.w inter,-(sp)
```

FIDDLING ABOUT

Rounding off their GFA Basic series, W T Smith and B J Capel move on to more advanced commands



■ A deep directory of the disk showing all files for inspection

```
move.w side,-(sp)
move.w trk,-(sp)
move.w spt,-(sp)
move.w dev,-(sp)
clr.l -(sp)
move.l buf,-(sp)
move.w #10,-(sp)
trap #14
```

Note how the parameters are passed in reverse order. It's not necessary to put the W: in front of a number or variable, since this is the default size passed to the stack. And in this example you get a return from the call, in the variable A, which tells you whether an error occurred.

VOID COMMANDS

Some routines don't return a result, so all you need is to do a VOID command. Void Xbios(20) does a screen dump with no returned result. The command Void is used when you wish to do something in Basic, but ignore the result. Void Inp(2) waits for you to press a key, but ignores the result of the keypress.

Another useful one is to turn the CAPS LOCK on and off:

```
Void Bios(11,Bios(11,-1)OR
#H10) Turn CAPS LOCK ON
Void Bios(11,Bios(11,-1)AND
#HEF) Turn CAPS LOCK OFF
```

To load a Degas picture straight to the screen, by the way,



■ Windows couldn't be easier to use from GFA Basic

it must be in uncompressed format (a .PIF file). Use the following to load, and then set up the colours:

```
Bload "DEGAS.PIF",Xbios(3)-
34 ! load picture
Void Xbios(6,L:Xbios(3)-32)
! set up colours
```

PEEK AND POKE

There's a common and to be frank somewhat snobby argument that direct access using PEEK and POKE is nothing more than an unnecessary hangover from the days of 8-bit computers. Never mind: if you want to access the memory directly, you can, and you pay no heed to those snobby people.

You have available three commands, PEEK, DPEEK and LPEEK, which read a byte, a word or a long word respectively from the memory location specified. Pre-fings also apply to Poke: so, Lpoke and so on.

If you place an S in front (ie. Spoke), you can write to memory, which normally bombs your machine. If you want to insert a vertical blank routine, for example, you first need the number of routines already set. Use:

```
N=vblanks=Dpeek(#H454)
Then increase that number by one:
```

```
Sdpoke #H454,N+vblanks+1
```



■ A disk drive selection box - more buttons than your 501s

Even if you don't want to mess around with the "insides" of your ST, there are other uses for POKEing - to call the AES/VDI to do functions, for instance. If you want to draw an expanding box (which is what happens when you double click on a program to run it) you'd use the AES function Graf_growbox, as follows:

```
Procedure Graf_growbox
Dpoke Gintin,Gr_gstx% !
start x position
Dpoke Gintin+2,Gr_gsty% !
start y pos.
Dpoke Gintin+4,Gr_gstwidth% !
start width
Dpoke Gintin+6,Gr_gstheight% !
start height
Dpoke Gintin+8,Gr_gfinx% !
end x pos.
Dpoke Gintin+10,Gr_gfiny% !
end y pos.
Dpoke Gintin+12,Gr_gfinwidth% !
end width
Dpoke Gintin+14,Gr_gfinheight% !
end height
Gemsys 73
```

Return

This draws an expanding box from x,y with the width and height defined, to x1,y1 with a new width and height.

Here's a little example of SPOKE affecting the hardware of your ST, turning the keyclick off:

```
Spoke #H484,Peek(#H484) AND
```

NOT 1
and back on:
Spoke 6H484, Peek (6H484) OR 1.

MACHINE CODE

Calling machine code (or a compiled C program), is surprisingly easy. First you need to have the code in memory, either by using DATA statements or – a more flexible method – by loading from disk.

Suppose you have a file called FRED.BIN, 1234 bytes long. Load it in with:

```
Dim Code_buffer%(1234/4)
Bload
"Fred.BIN", Varptr(Code_buffer
%(0))
```

Now, to call the program, assuming no parameters are to be passed and no return values are required:

```
Me% = Varptr(Code_buffer%(0))
Void C:Me%()
You could, if you wish, load into strings, but since they move around in memory you need to be careful. Arrays don't move, so use them whenever possible.
```

THE CALL OF THE C

To pass parameters to your machine code, just put them in the brackets, so the above call becomes:

```
Void C:Me%(L:12,W:A%)
Once again the L: and W: stand for long word, and word respectively. Your machine code now picks these parameters up from the stack. The first long word on the stack is the return address to Basic; then comes what you have passed on.
```

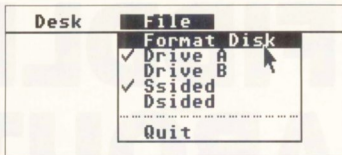
So to get the above long word into A0 and the word into A1 your machine code is:

```
MOVE.L 4(SP), A0
MOVE.W 8(SP), A1
```

To return back to Basic your machine code must finish with an RTS instruction: don't use one of the terminate commands. There is also the Call instruction, which doesn't return any parameters, in which you pass the address of a parameter list to the machine code:

```
Call Test (parameter_address) .
The 'C:' instruction is more flexible and easier to use. The return value from it is the value of register D0, so if you need to pass back a result to Basic, put it into D0 and then do an RTS. This machine code program adds two numbers:
```

```
move.l 4(sp), d0 ; the first
long word passed by Basic
move.l 8(sp), d1 ; the second
add.l d1, d0 ; add them
together, result into d0
```



Using the format program from a pull down menu

```
rts ; back to Basic
Your Basic program:
Dim A%(12/4) ! file
length is 12 bytes
Bload "ADD.BIN", Varptr(A%(0))
! load file
Me% = Varptr(A%(0))
Result = C:Me%(L:3, L:8) ! add
3 to 8
Both this program and the machine code are on the Cover Disk for you to try in the comfort of your own home at no extra charge: there is no obligation.
```

MENUS

Drop down menus are easy in GFA Basic. There's no need for a resource construction program: simply put the Menu items into a string array. To allow for changes to your program, it is better to have these menu entries as a Data table, and read them into the array:

```
Dim Strip$(50) enough space
to allow changes and add-
itions
While A$ < "****" read Data
until ** is encountered
Read A$
Strip$(I%) = A$
Inc I%
Wend
Data "Desk, About Me, ---",
1, 2, 3, 4, 5, 6, ""
```

This sets up the first entry of a menu entry, where normally you get information about who wrote the program, and where the accessories are located.

Each drop down menu is terminated by a null string, hence the "" to finish defining the menu entry called Desk. The row of minus signs separates menu entries, and the 1,2 and so on reserve space to allow up to six accessories to be selectable if they're loaded when the computer is first switched on.

Each further menu has the following format:

1. Heading of the menu;
2. List of the entries; and
3. An empty string which marks the end of the menu.

After the last menu, a further empty string marks the end of the entire pull down menu.

STRIP AND STRING

To put the menu on the screen, use the command Menu string\$(0), so in our example it's Menu Strip\$(0). To use the menu the command ON MENU GOSUB PROCEDURE is used. This only checks the menu once, so you have to put this in a loop. The program therefore looks like:

```
Menu Strip$
On Menu Gosub Evaluate_menu
Do
On Menu
Loop
! Rest of program
Procedure Evaluate_menu
'
Return
```

Each time a menu item is chosen the program goes to the procedure, where you can act on the command chosen from the drop down menu bar.

Entries in the menu can have a tick placed in front of them to indicate that this is a default condition. They can be in lightened text, meaning that you can't choose that entry.

SOMETHING FROM THE MENU

When you move the mouse onto a menu the top entry (the main item) turns black and the menu drops down. To turn the title white while you process the command, use Menu Off. To deactivate the menu (turn off the On Menu Gosub options) use the command Menu Kill. This command does not remove the menu from the screen, however. Finding out which menu item was chosen can be done in two ways.

The item number is returned in Menu(0), so you can select to look at this number:

```
selected% = Menu(0)
Then if you know which menu entry is which you can go to the correct routine. In our example above, "About Me" is entry number 1, so if you choose this item, Menu(0) is 1, and you write:
If Menu(0) = 1
Gosub Tell_me
```

all_about_who_wrote_the_program

Alternatively, if you can't remember which entries are which, you can check the entry strings against the menu list. So again if you select 'About Me' you write:

```
If Strip$(Menu(0)) = "About Me"
Gosub Tell_me
all_about_who_wrote_the_program
```

PROGRAMS ON DISK

On the disk there are the following files:

```
ADD.BIN
ADD.LST
BOXMOUSE.LST
DIR.LST FORMAT.LST
RSC_DEMO.LST
ST_FORM.RSC (.I and .RSD)
WINDOW.LST
WINDOW1.LST
```

ADD.LST is a demo of how to call machine code from Basic – ADD.BIN is the code called;

BOXMOUSE.LST neatly demonstrates how the mouse can be made to stay within a pre-defined area;

DIR.LST gives a full directory of any drive;

FORMAT.LST is a simple menu driven program that formats a disk in either drive A or B, single or double sided; it proves how easy it is to set up and use a menu bar from GFA Basic;

RSC.LST and its associated files demonstrate the use of Resource files from Basic;

WINDOW.LST is a text file showing the commands and default windows available;

finally, WINDOW1.LST displays a string array containing text to a window. It can be moved, sized, re-sized or closed, showing the programming steps involved in using these advanced techniques.

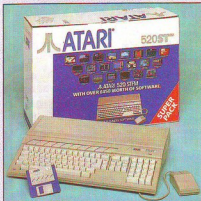
These programs have been saved as ASCII, so you lucky people with GFA V3 can also follow the listings and programming. To load: load GFA Basic and select MERGE from the menu bar. All work in colour or mono, on all STs. ■

YOU AIN'T SEEN NOTHING YET!

That concludes this short series on GFA Basic. We hope you've enjoyed it, and learnt something of the power and flexibility of this mighty language.

Look out soon in ST Format for more tutorial assistance with your programming.

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*Special launch price - limited supply

FM Melody Maker

- All Atari STs
- £69.95
- Hybrid Arts UK
- 01-444 9126

Your initial reaction is one of scepticism, naturally: so was mine. But the fact is that this really is the essential ST add-on for musicians on a budget – and what's more it's good enough to appeal to more advanced musicians too.

Hybrid Arts are best known for pro-standard software sequencers and hardware samplers, but the *FM Melody Maker* package is firmly aimed at the budget end of the market, and it's remarkable that so much has been packed into it.

Like the system released a couple of years ago for the C64, it consists of a complete FM synthesiser on a chip housed in a standard cartridge, together with driving software on disk.

SOUND CITY!

Plug in the cartridge and connect either or both of the stereo audio outputs to your hi-fi, mixer, or suitably equipped monitor. Boot the software and you're into the main display, designed to get you using FM sounds and arranging your own music as soon as possible.

78 preset FM sounds are available, and, since they're identical to those of a four-operator Yamaha FM synth like the DX100, you know the quality is great; twangy basses, swooshy strings, sharp brass and weird synth effects.

For a quick demo, pull down the File menu, load up a song and hit the Play button. You'll hear a funky multi-part composition complete with percussive backing churning out of your speakers.

The GEM-based *Melody Maker* software works using a standard musical stave. You compose by selecting the correct lengths of note and rest from the part boxes, and dragging them onto the stave: it's as easy as that!

BREAK THE SOUND BARRIER

A polyphonic stereo MIDI synthesiser with recording, sequencing and automatic musical arranging software – for £70!

CHRIS JENKINS can't believe his luck

INSTANT MASTERY

As you slide the note up and down the stave you'll hear it sound and see its value displayed; there are also sliders for changing the octave. When you have the right pitch, click to place it. The next note or rest automatically positions itself correctly according to the length of the last one: just click on the trash can to delete a note. You can jump back and forth using the scroll bars below the stave.

When you've completed your melody, you can add chords. Click on the Chord box and you move to a display showing 14 different types from simple majors and minors to complicated sevenths and diminished chords. Choose the key and click on Exit to return to the main display, then place the chord on the stave below any note. You won't see the separate notes of the chord on the stave, but a label appears to show where it is.

The cleverest aspect of the software is that from the melody and chords you enter, the software generates all the accompaniment

parts in a number of different styles: rock, pop, disco, reggae, bluegrass, r'n'b – a total of 16 in all, using appropriate rhythms, chord patterns and breaks.

Taking your notes, the key and time signature you've chosen, the software creates an orchestrated piece which makes you sound like a master musician – play it back and be amazed!

Click on the mixer icon and you can use graphic sliders to alter the balance between the melody line, the four accompaniment voices and the FM-generated percussion sounds, bass, snare, hi-hat, cymbal and tom.

RHYTHM METHOD

You can compose 20 16-beat rhythm patterns using the Drum Pattern grid, and arrange them into songs of up to 40 bars. And if you're unhappy with the sounds, the Instrument Select page lets you choose new ones from the 78 presets – this alone is enough fun to keep you occupied for weeks!

For more complicated compositions the Bar Repeat inserts loops and repeats in the tune. The whole can be saved as a Song file.

For more advanced users the *FM Melody Maker* package also has some MIDI facilities. You can switch on the MIDI Output option and assign *Melody Maker* voices to any MIDI channel and velocity. You can also assign Rhythm voices to appropriate MIDI note values.

So, on a multi-timbral MIDI synth with drum sounds, such as the Roland D10 or Kawai K1 II, you can play even more amazing compositions from your ST, and play along on the keyboard too.

The one disappointing aspect of the *Melody Maker* package is that, although it has a simple MIDI performance recorder, which records and replays long and complicated keyboard performances and save them as REC files, you cannot then use these performances in the Arranger section.

Still, we're promised more software for the system, including more sophisticated sequencing, scorewriting and FM sound editing packages, so that's something to look forward to.

When you take full account of what *FM Melody Maker* can do, and if you're operating on a budget, you can't afford to ignore it! ■

FORMAT RATINGS

Features 79%
Remarkable range for such a budget package – including MIDI facilities.

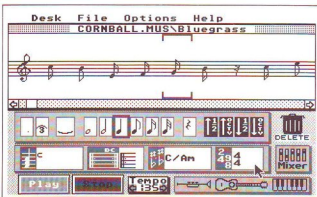
Speed 79%
No complaints.

Ease of Use 70%
The main display is intended to get you using FM sounds almost instantly.

Results 83%
Excellent – except that the MIDI performance recorder can't transfer to the Arranger section.

Format Value 82%
If you want to get into the ST's musical ability and you're operating on a tight budget, this is the one for you!

The Competition
Evenlo's *Stenberg 12* (£129, 0993 89228) is the only serious competitor.



■ *Melody Maker* in action, Bluegrass style

Rob Meek's Projects UK took ten years to create. Beginning life as an Arts Centre, it has undergone numerous name and venue changes, finally crystallising into a community aided media centre in the North East.

Its principal aim is to give both beginners and advanced musicians access to new technology they would never otherwise get to use.

Based around the Atari 1040 and Steinberg Pro 24 software, Projects UK has developed a large programming and recording set-up. The programming suite also contains a 1040 and Pro 24, as well as a Roland D50 linear synthesiser and two Roland S550 digital samplers. This very adequate package can be used either as a pre-production suite or as a teaching tool.

The studio, also based around Pro 24 and the Allan and Heath Sabre desk, masters either on analogue or DAT. Containing the same set-up as the programming suite, the studio also has lots of outboard gear and effects.

Plans for the future include a 'composer package,' which will contain a 1040, software and a sampler, all in a big flight case, for the budding home composer.

Mal Eltringham told me more.

Mal, you're a freelance sound engineer based here. Tell me, what is Project UK all about?

Well, what we do here is to run training courses. When it was first started Rob Meek - the boss - felt that music technology was just very cliquy. He really wanted to be able to make the technology available to everyone.

But it's not just about training courses. There are some interesting spin-offs. For example, when people have learned how to use the equipment on a course, they often come back and hire the suite. As with all computers, it can get to be a bit obsessive!

Why did you choose the ST rather than the Amiga, the PC or the Mac?

At the time we got our STs they were an industry standard. Before that we'd been using Commodores with Steinberg Pro-16.

Most of the software we were using then was geared to the ST, and so it seemed the obvious step to take. We use it with Pro-24. It's especially useful with analogue because with it you can mute the channels [cut off the channels when they're not in use].

Why Pro 24?

There's no particular reason, but Steinberg has been good in the past with supplying updates and

things like that. We'll probably be moving to the Cubase system soon, which is compatible with what we have now.

Who comes here?

Well, there's definitely more guys than girls, but I'd say that's true about music in general. We do, however, run introductory courses for anyone who wants to come - and that includes special women-only courses. With age, I'd say the sky's the limit, but in general I'd say teens-twenties.

Have people who come in been influenced by particular bands?

Yes, a lot of them have. Bands like Erasure and the Pet Shop Boys have a lot to answer for!

Was the studio designed with MIDI in mind, or did it just happen that way?

A lot of the MIDI-compatible equipment here is stuff we've been after for a few years. Whenever we upgrade anything we always bear in mind the needs and direction of the people using it, rather than just getting the newest technology. Before we get anything new we always consider what the users are looking for.

Do newcomers find the software easy to pick up?

Sometimes we get complete novices who haven't got a clue. However, if they've been, say, playing the guitar for years, then they will soon be able to see links with the computer-aided music.

In the same way, people come in who've perhaps used other software and can see comparisons with the STs and they'll be able to get into it in this way.

Other times, people just come in with a result in mind, but wanting someone else to operate the technology.

Do you have links with ST users around the country?

We're hoping to get a modem installed and to try to get into a music network to make sounds available. By going on-line, people would be able to phone up for sounds or we'd be able to get hold of sounds ourselves.

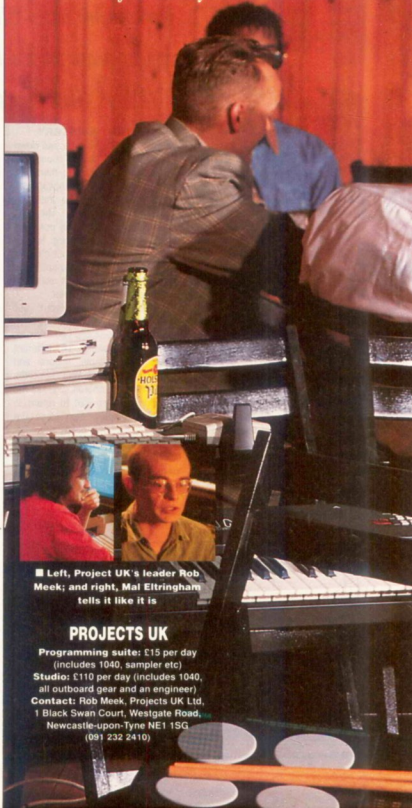
Is computer-manipulated digital music the future, or will people still use traditional analogue methods?

Well, considering the price of digital gear, and also the scarcity of digital studios, something which is incidentally more apparent in the North, analogue is still very much in demand. It's still very 50-50.

The congenial, non-stuffy atmosphere of Projects UK offers budding musicians the perfect atmosphere to work. ■

PROJECT LEADERS

Projects UK is a community-aided media centre for budding computer musicians. We sent JANE STANTON to find the key to musical success



■ Left, Project UK's leader Rob Meek; and right, Mal Eltringham tells it like it is

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Programming suite: £15 per day (includes 1040, sampler etc)
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MIDI MOUSE

MIDMOUSE

- £65 ■ MIDMOUSE SOFTWARE
- c/o HYBRID ARTS
- 01 444 9126

There's more to playing music than just bashing at a keyboard until it sounds right. Understanding chords, scales and music theory really contributes to your music. The problem is that it's difficult to teach yourself without any feedback from someone who knows where you're going right and wrong.

Due the MIDMouse series of educational software packages for the ST. These straightforward and light-hearted educational packages are more fun than teaching yourself, because they can tell you where you're going wrong by analysing what you play on your MIDI keyboard, and actually play you examples using the synth's sounds.

The packages run on any ST in

mono or colour, and there are three packages in the series so far: *Note Wizard*, *Chord Magic* and *Scale Master*. Taken together they give you a solid grounding in music theory and performance. The three packages have a common structure; GEM-based, they allow you to work through a series of exercises at your own pace, setting the type and difficulty from the drop-down menus.

RASPBERRY JAM

The program sets you an exercise such as playing a scale or chord, waits until you've made an attempt then points out your mistakes. In *Scale Master* you work your way through major, minor, harmonic, melodic and blues scales scales in all twelve keys; there are six levels featuring either one or two octave exercises running up or down the keyboard, and six stages per level, so you can start off on the easiest and work your way up.

The program grades you as

you go along according to how many mistakes you make and how long it takes you to play the scale; the keyboard graphic display lights up to indicate which note you played and tells you where you went wrong, before giving you the option to carry on or return to the main menu.

The entertaining part is that if you get an exercise right, the program plays a triumphant fanfare on your MIDI instrument, but if you get it wrong you get the musical equivalent of a raspberry. *Scale Master* includes several tutorial sections, including one on the Circle of Fifths which teaches you the relationship between different key signatures.

EAR BASHING

Chord Magic carries the principle further by offering you six levels of complexity such as Root Inversions, First inversions and Sevenths. The display challenges you to play a particular chord, and the notes you play appear in music notation and on the graphic keyboard. Five different tutorial routines run through the principles of forming chords and allow you to practice what you've learned by playing the keyboard and seeing the results displayed on the staff.

There's also an Ear Training routine where the program plays the chords and you have to play them back - excellent practice.

The third package, *Note Wizard*, is designed to help you recognise individual notes on the staff. There are five levels with nine stages per level, with up to six notes per problem.

The problems cover both the bass and treble clef, and there are exercises for the left, right, and both hands. As with the other programs you are graded on how quickly and accurately you play the notes displayed.

All three programs feature a simple 1200 note polyphonic real-time MIDI performance recorder. After recording a performance you can play it back at a different tempo or different key in order to use it as a practice template. Mind you, you could do that with any sequencer software.

At £65 each the MIDMouse packages aren't casual purchases, but if you're serious about your music they would probably work out cheaper than a series of music lessons - and a great deal more fun too!

GEAR CORNER

AKAI US TRACKMAN STUDIO

■ Akai UK - 01 897 6388
Powerful though ST sequencers are, there comes a time when you have to put your finished piece on tape if you want anyone else to hear it!

The revolution in "portastudio"-style mixer/recorders has made home multitracking affordable, but the AKAI US TRACKMAN STUDIO takes things to their logical conclusion - the pocket multitrack.

Weighing about half a kilo with batteries, the £199 US works like other cassette multitrackers by using all four tracks of a standard cassette - Side A left/right, and Side B left/right - at the same time.

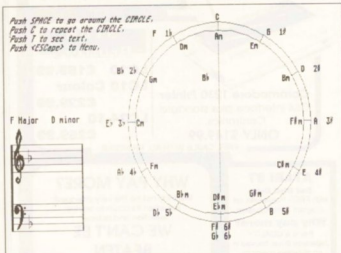
You can't actually record each track separately. Instead, you record one pair of tracks first (say, your backing music controlled by your sequencer); then you can overlay another two tracks simultaneously - such as vocals and guitar, or a keyboard solo.

Apart from the usual STOP/PLAY/RECORD controls, the US has a wealth of inputs and outputs, allowing you to plug in guitars, mikes or keyboards, headphones, other cassette decks, amplifiers and effects units. There's even a built-in effects unit which can add Echo, Chorus, and distortion to your instrument sounds. The distortion is particularly good for heavy metal mayhem!

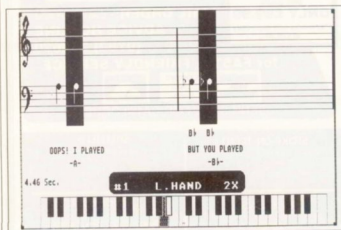
While the US isn't a substitute or a conventional multi-track portastudio or open-reel recorder, it's incredibly handy for bashing down musical ideas, and allows you, for instance, to try out different vocals or melodies over the same backing without resorting to expensive studio time. You can even use the US as a conventional personal hi-fi if you want to show off!



■ Akai's neat and portable US - want one!

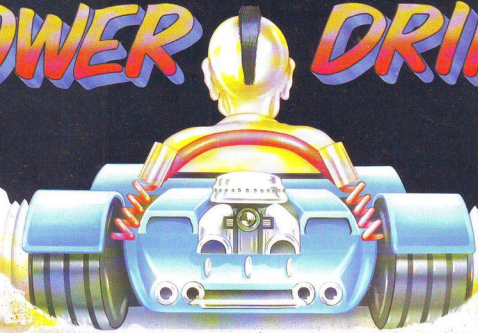


■ *Scale Master*: the Circle of Fifths shows the relationship between different scales



■ *Note Wizard* patiently puts you right (again)

POWER DRIFT



IN POLE POSITION...

SEGA  ACTIVISION

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USING SEQUENCERS

Now that we've covered the principles of entering music data into Tracks, either in real-time or step time, we need to build up the next level of information – the sequencer Pattern.

A pattern is a grouping of tracks which can then be treated as a section of a complete piece (known as a Song); for instance the verse, chorus or middle eight. Practically all music uses repeating

Part 3 of Chris Jenkins' regular tutorial

sections, so the Pattern system saves you having to record the same music over and over again.

Our example sequencer, C-Lab Pattern, has sixteen tracks for each of its 99 patterns. (Actually you can link together groups of tracks to use up to 64 tracks per pattern, but not all sequencers can do this). Let's assume that you're

using a multi-timbral synth, or a number of different synths, all connected to your ST sequencer. How do we go about building up a Pattern?

On track 1 of pattern 1, try recording a series of chords in real time, using the sequencer's metronome as a time guide. Go into Play and set this series of chords to loop on MIDI channel 1; on Creator, you can do this either by setting the LOOP length in the track parameter column, or by defining start and end locators and selecting CYCLE.

BIRTH OF A SONG

You should now hear the series of chords playing over and over again; select the next track and record a bassline which fits in with the chords. To play the bassline back using a different synth sound, change its MIDI channel to 2 and set your synths to a suitable sound. Set the same length of LOOP for the bassline as you used for the chords.

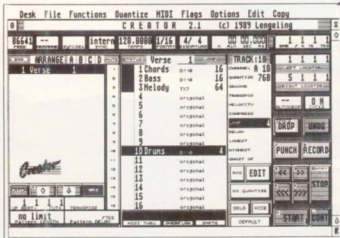
You now have the basis of a song, and by recording a melody

line on track 3, set to a different synth sound on MIDI channel 3, you can record a solo over the top of the repeating sequence. The length of the melody needn't be the same as the chord/bass loop, so you can play on as long as you like.

The same applies to a drum pattern; record a simple series of beats using track 10, set to MIDI channel 10 (a convention which seems to have stuck for no apparent reason). You can then set a very short loop, say 4 beats, for a repetitive rhythm backing.

You now have a Pattern, the length of which is determined by the length of the longest LOOP set. Let's call this the Verse of your song. You can now move to Pattern 2 and, using the same sounds and MIDI channels, record a new set of tunes for your Chorus; then to Pattern 3 and so on for your middle eight, intro, outro or whatever. Creator allows you to label each pattern, so as well as referring to them by number you can give them an appropriate name. ■

Next month we discuss chaining these Patterns together to form Songs, and how the sequencer allows you to experiment with different song structures.



■ Building a sequencer pattern: different MIDI channels and loop lengths set for the Chords, Bass, Melody and Drums of the Verse, pattern 1

MUSIC THEORY

More sound notes with CHRIS JENKINS

Last month we looked at the way standard music notation deals with note lengths – this month we're looking at expression.

It's all very well indicating the pitch and length of a note, but "real" musical instruments can be played in many different ways; the scrape of a violin bow or the muting of a guitar string can give a different overall sound, and many modern synthesizers are designed to imitate these effects. One of the most common is the Slur. This means that two or more notes are

to be played smoothly, without separation. As you can see from the diagram, this is indicated by a curved line around the notes to be played in this way.

The Slur line is not to be confused with a Tie, which connects two notes of the same value with no other notes in between. A Tie can be used to link notes which carry on into the following bar. Joining two notes together in this way obviously adds together their lengths too; so a Tie can also be used to show a particularly long note.

Another factor affecting the sound of a performance is the time signature, which determines the number of beats per bar. The time signature usually appears at the beginning of the staff, and consists of two numbers. The upper one shows the number of beats per bar, the lower one the value of the beats; 2 for half-notes, 4 for quarter-notes and so on. The most common time signature for pop music is 4:4 - that is, four quarter-note beats in each

bar (it doesn't matter what combination of notes and rests is used to fill up the bar). Four-four time rapidly becomes boring; try experimenting with different time signatures to give your music an unusual feel.

Since the first beat of each bar is usually played slightly louder, the time signature also gives expression to the music; for instance 4:4 time is played ONE-two-three-four-ONE-two-three-four, while 3:4 (waltz time) is played ONE-two-three-ONE-two-three. There's nothing to say that waltz time and other more exotic time signatures cannot be used for pop music; listen to something like Golden Brown by the Stranglers, or to progressive jazz music, for some ideas. ■

Time signatures

Number of beats per bar
Length of note

■ Time signatures

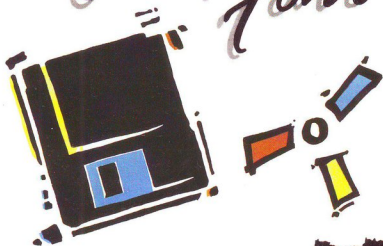
A TIE line joins two notes of the same pitch...

...while a SLUR line indicates notes to be played smoothly

■ The difference between a tie and a slur

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Playing *Xenon II* is one thing; writing it is quite another. What do you do, in other words, if you want to create your own masterpiece – but you haven't a clue what 68000 machine code is all about? SEUCK it, that's what.

At the beginning of the year Palace released the Amiga SEUCK, and ever since then we ST shoot-'em-up addicts have been marking off the days until our very own version arrived. Now the wait is over.

Unlike SEUCK, previous game creators relied on some sort of keyboard input and at least some knowledge of programming. STOS, for example, lets you design your own shoot-'em-up, but first you must digest a lengthy manual and tackle the intricacies of a whole new language.

What makes the SEUCK environment so easy to use is that it's entirely menu driven, so you can write your shoot 'em up without ever having to touch your keyboard. SEUCK lets you load up one of the three shoot-'em-ups provided on disk and gradually edit it, until just about every parameter has been changed and you've created your own game.



Alternatively, you could start from scratch. Because of the way SEUCK is structured you could begin from any point in the game design, though running through the menu options in turn is the best approach. There are disadvantages, of course, the main one being that SEUCK only lets you create vertically-scrolling shoot-'em-ups. Sounds limiting? The three types of games on the program disk prove that it isn't. One selection box after another lets you change options so you can choose the type of scrolling, speed of gameplay, sound effects and the look of all sprites. The combinations give each game unique flavour and appeal.

SEUCK IT AND SEE!

Unless you're an absolutely first class programmer you have no chance of creating a fast, furious and addictive game. Now the Shoot-'Em-Up Construction Kit is set to change all that.

MARK HIGHAM finds out what the fuss is about

THE LOOK

Creating sprites has never been easier. Selecting the Edit Sprite menu option presents a dialog box with a blow-up work area of a 24x24 pixel sprite. Eight colours from the ST's palette of 512 are used to fill in the squares of the sprite, with one colour treated as an invisible element so the background shows through.

The finished sprite can be flipped across four planes – vital if you want an enemy to move in more than one direction. And by copying this sprite to separate locations, and making modifications which make up the different frames, you can achieve limited animation. This is essential to create explosion effects, brought together in the Object Edit option.

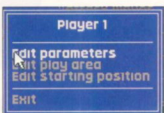
This in turn invokes another dialog box where several sprites can be grouped together to form animation. Up to 18 frames can be grouped together with 10 speeds of animation. There is an alternative DIRECTION option letting you define sprites to be used when an alien is moving in four directions. This feature allows you to create a walking enemy who always looks straight ahead.

SEUCK enables you to make each game unique by allowing you to change the way enemies react. You can decide the number of hits necessary to destroy the alien (a large number and you've got the impossible to beat end of level guardian); the direction in which they fire; the speed and number of bullets they shoot; and even sound effects accompanying explosions and bullets. All are defined from another menu option which makes up the last stage in deciding how each alien looks and responds.

BACK TO BASICS

Once the enemy has been created, the next step is to draw the backgrounds that accompany play. These are created in the same way as aliens, except that a 32x32 pixel block is provided for you to edit, several of which are pasted jigsaw-wise across each level. Again you have eight colours from a possible 512, but this time a different eight.

The idea here is to define a main background sprite to be repeated across the entire level. A handful of extra sprites may be positioned among these to add interesting landmarks such as



walls or even enemy ammo dumps from which the aliens emerge.

Using the edit level option you decide how each level moves and the speed of scrolling (0-4). Selecting 0 results in a stationary screen, so you can if you wish create a game like Loricief's *Albedo*.

SOUNDS AMAZING

The major difference between the Amiga and ST versions of SEUCK is the latter's sound editor. A sophisticated sound creation routine lets you generate all sorts of special effects for rapid firing or enemy deaths.

Unfortunately, however, there's no way you can have sampled music playing during the game, which leaves you rather stuck with the ST sound chip. Sound is split into three sections – attack, sustain and decay. The attack rate goes up, sustain is the main sound



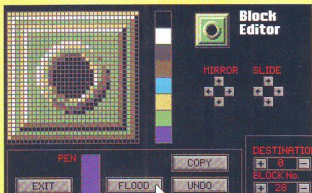
■ The **SOUND EDITOR** lets you create effects to be used in explosions and collisions



■ **EDITING SPRITES** summons an editor box with a blow-up view of a 24x24 sprite. Eight colours can be used from a palette of 512



■ Up to 18 frames of animation show an alien animated or exploding in glorious technicolour. The **ANIMATE** box at the bottom shows the action



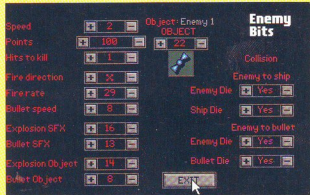
■ **BACKGROUNDS** are edited like sprites – except for a different set of eight colours and a 32x32 sprite size. The image can be mirrored to make it easy to create variations



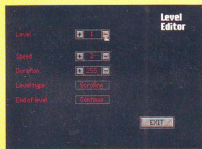
■ Now, onto the level's screen, paste several background blocks together to form a map over which the playing will take place. Here, five different background sprites have been used



■ The route aliens take is drawn out with the joystick. Several aliens can be linked onto this same path to make one large alien or several small ones moving in the same direction



■ Edit **ENEMY BITS** to change the way that the enemies react. Here, you can adjust the number of blasts it takes to destroy an alien so you could create an end-of-level guardian



■ Here you decide how each level is to react: Push Scroll, Scroll or Still



■ **PLAYER BITS** sets the number of lives and the speed of your craft and bullets: these and the sprite editor shape the game



■ The final game sees everything coming together to make the ultimate shoot-'em-up, well, almost

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SON OF SEUCK?

When Palace released the Amiga version of *SEUCK* at the beginning of the year users were asked to submit ideas for extras they would like to see implemented in subsequent versions. When the time came to write the *ST* version, Palace decided to write a straight conversion and not implement the changes. These would have to wait for *SEUCK II*.

Apart from its greater user-friendliness, the only way in which the *ST SEUCK* differs from the Amiga version is the addition by Palace's music maestro Richard Joseph of a sophisticated sound editor. Joseph has used his own sound generator for most of Palace's releases, but claims to be so impressed by the features of this new editor that he intends using it for future games.

Until recently *SEUCK II* was only an idea bandied around the Palace offices, but it's now certain to happen. It's likely to include many new features, including horizontal and vertical scrolling options.

and decay comes back down to silence. Within these, pitch and frequency rates are edited.

The sound system uses all three channels in the sound chip and although it's the most complicated area of *SEUCK* to use, it's worth mastering. 50 different sound effects can be created within a game and the more variety, the better.

GOING LIMITED

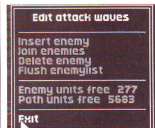
Player limitations come next on the menu. Here you choose the number of lives that the player will have, and the number and direction of bullets fired. On top of this you can decide the playing area available in the game, outside which the player's craft cannot move. You could, for example, decide to use



just a small square of the screen for playing. Alternatively, if you want to make it a push-scrolling game then the top of the playing area must be brought down so you're not pushing up from the screen top. (Imagine - you'd never see the aliens coming until they were on top of you!)

ATTACK! ATTACK!

Attack waves, where you can use the joystick to draw the exact path an alien takes once it appears on



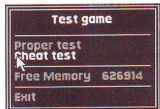
screen, are the most exciting aspect of *SEUCK*. An option to join several sprites together, all running at the same speed, lets you link several enemy sprites and thus create one enormous guardian creature. Unfortunately the sprites are killed separately.

By joining several sprites together, but making each run at different speeds, you can end up with the aliens looking as if they're virtually following their own path. This is important because each attack path you define takes up a lot of memory.

With all of these defined, it's time to test out your game. *SEUCK* provides two testing options: one lets you play the game as if you'd loaded it straight from disk, while the other gives

you a cheat option providing infinite lives and the chance to go to any level you want.

Once you've made sure it's possible to get all the way through without meeting an invincible band of aliens, you can save the program onto a new disk as an auto-booting game. In theory you could



market it as a budget game, but Palace intend it to be used more as a fun way of tailoring your own shoot-'em-ups.

Nobody is going to claim that *SEUCK* gives you the power to create another *Xenon II*, though it might be possible to write something that could be marketed as a budget game. What it does most definitely do, and do very well, is to let you create a fast and furious shoot-'em-up. Although you're restricted to vertically scrolling games, within these limitations it's possible to design and combine enough ideas to make sure you end up with an original concept.

Shoot-'em-ups are still addictive, and they still continue to dominate the games charts. *SEUCK* exploits that addictive quality and combines it with a superbly documented manual and a brilliantly simple menu system. In no time at all the only restriction on your games writing ability will be your own imagination. ■

FORMAT RATINGS

Features 74%

Can create only vertically scrolling shoot-'em-ups, but wide range of options give great variety.

Speed 79%

Very fast indeed; playable games can be written without losing speed.

Ease of Use 92%

Thorough, step-by-step manual and easy to grasp menu system. Sound editing can be complex.

Results 82%

You won't write *Xenon II* - but you could get on the *ST Format* disk.

Format Value 86%

Brilliant for the non-programmer, even if only one kind of game is possible.

The Competition

STOS II is a programming language, and therefore more versatile; but *SEUCK* requires no programming knowledge whatsoever.

THE ROUTE TO SUCCESS

There are two ways to create a game with *SEUCK*. The easy approach is to take one of the games on hand and edit it until so many parameters have been changed that it looks completely different. Alternatively you can start from scratch, a much harder method but one which is ultimately far more rewarding.

In the case of the latter it's best to sit down with a pen and paper first and work out exactly what you want to do. Repeat after me: *an hour's preparation is worth a day's experimentation*.

By far the most successful method is to allocate a page to each level, and briefly describe its type and purpose. You could, for example, create a vertically scrolling first level where the objective is to tackle the minions.

This could then progress into a stationary screen where you take on a handful of particularly abusive beasts. Level three might be an intermediate level where bonus points are awarded for shooting skills. Here you might be confined to a small playing square where the objective is to fire at all the aliens scattered about, none of which fires back at you.

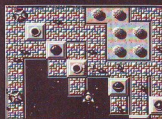
Next, draw a rough portrait of each alien and write alongside this exactly how it responds when it appears. Should it fire back at you? How many hits will it take to destroy it? Will it die if you touch it?

Set up some indestructible landmarks, such as a brick wall. *SEUCK* requires you to define it as an alien which can't fire and doesn't move. By setting the number of hits that it takes to destroy it as one, it can be blasted out of the way when you draw close.

Alternatively, you could set this number way up high so you have to squeeze through a gap in the wall to proceed. The paths of aliens can then be drawn so that they come down through the gaps in the walls. A list of obstacles like these should also be written down for each level.

The next step is to decide how many frames of animation will be used when an alien explodes. You'll also want to work out whether the alien's movement should be animated - remember, the more sprites you design, the less memory you have left.

Using this information you can now go ahead and use *SEUCK* to write your very own shoot-'em-up. Not only will you write the game faster, but when it comes to testing you'll know exactly which aliens are where so that you can have a fairly good idea how things should run. If things don't work out right, it's much easier to go back to the edit menus and change things around.



■ Not *Xenon II*, but it's yours!

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OK, let's see what you can do. We've decided that the very best game written using *SEUCK* will feature in full on our cover disk, where it faces the ultimate test: *ST Format's* readers! That's right, your games writing could earn you a ton and make you a nationally known star. You'd better get used to supermarkets, pal, 'cos you're going to be opening 'em every Saturday!

Get your *SEUCK* masterpiece to the team here at *ST Format Coverdisk*, Future Publishing, 4 Queen St, Bath BA1 1EJ before Christmas and we'll do the rest.

And if it's not nearly as good as you think it is, we reserve the right to laugh ourselves sick.

DESKTOP

SPOTTING AND SWATTING BUGS IN STOS V2.3

Gerald Kellett, this month's £30 winner, has spotted several bugs in STOS (version 2.3) which become a problem when creating your own game. (Future versions of STOS have remedied a number of these, but if you know of any problems in other STOS versions then write and let us know.)

■ One of the nastiest is the way the computer locks up if you try and dimension an array with more than 20,000 elements. Instead of getting an Out of Memory error you get an address error followed by a repeated printing of OK.

■ Another annoying bug is the way STOS keywords cannot form a part of a variable name. The manual claims that only particular STOS keywords cannot be used, but in fact you cannot start a variable name with any sequence of letters that forms a keyword – and this goes for shortcuts as well. The result of this bug turns a statement like REM REMOVE into REM REM OVE.

■ The SET PATTERN does not work. If a user-defined pattern is selected for filling then you get the Atari symbol used in the fill pattern instead.

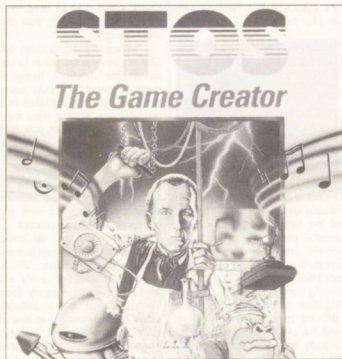
■ Follow doesn't work with programs which employ menus. It aborts the program with a Bus Error.

■ There's an unusual bug regarding the use of ZONES. After a file select window has been used, only Zone 11 can be detected, even if you have not set up this zone.

■ Another oddity appears when ICONS are used as selections in

*Our section on technical tips and queries,
chaired by MARK HIGHAM.*

This month we concentrate on STOS



MENU. When text options are used the menus occasionally drop down when the mouse is on the line below the menu bar, while at other times it behaves quite normally. Presumably STOS is getting confused, sometimes believing the text in the menu bar to be icons.

■ STOS hangs up if you try opening a window with negative size. Although there's no use

creating a window this size, it may happen that you create one using a negative variable. A "Window too small" error should result.

■ The manual makes no mention of the KEY ON/OFF commands, insane considering how useful they are. These turn the function key window on and off.

■ The manual also fails to tell you that the SET LINE command

rounds down to the nearest odd number with a maximum thickness of 39 and that dotted lines only work with a thickness of 1.

There are also some undocumented restrictions on the use of functions.

■ If FLASH is not turned off before SHIFT is used, SHIFT doesn't work correctly after the first cycle and this gives odd colours.

■ RESUME and RESUME NEXT are supposed to allow recovery and continuation from errors. Whereas Gosub Nesting is retained, continuation of FOR-NEXT, REPEAT-UNTIL and WHILE-WEND loops are not. Use of the POP within subroutines in any of these loops causes the same problems.

■ A further oddity with error handling is that ERRL returns the value 258 when on error has occurred and not 0 as is supposed to happen.

In addition there are some mistakes in the manual as well. For a start, there is no such command such as STOP NOISE. Instead, it should be NOISE OFF. SHIFT does not rotate the entire 512 possible colours through the 16 palette colours but instead only rotates the 16 palette colours or those equal to, and above, the start colour, if it's quoted.

■ In chapter 10 the file types should read for bit 0 set, no bits set and all subsequent specified bits reduced by one. Fill has to be from start to end-4. If not, then it fills the word after the end with the result that the following bank or, much worse, the program in the next slot gets its first word LOKED.

■ This means that the bank will not be recognised for what it is, since the identity word has been zapped, or, even more horrendous, the program in the next slot has been lost.

MAKING THE MOST OF STOS

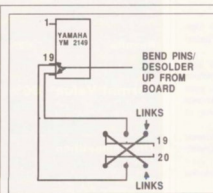
There's lots of little tricks and tips to make the most of STOS, as Michael Buck of Cheshire points out.

When you run a program from within STOS you cannot, according to the manual, get rid of the

SPREAD THE WORD!

Having trouble with your ST? Or perhaps you've discovered something well worth passing on? Problems or solutions, send them immediately to: Desktop, ST Format, 4 Queen Street, Bath, BA1 1EJ.

Each month we give away £30 for our favourite tip. Lincolnshire's famous son Gerald Kellett wins this month's coveted prize for his STOS advice.



■ Not for the squeamish: how to make your ST boot from the B-drive. Note: if you're not frightened of doing this kind of thing, you shouldn't be doing it. And we can't take any responsibility whatsoever if you make a complete hash of it and wreck your machine



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function key window at the top of the screen. The only way it can be made to vanish, says the documentation, is by clearing the screen.

Unfortunately, it returns when you push, shift or update another window. To banish this screen properly and free up the space which it uses, all you have to do is type:

KEY OFF

To bring this back again type any one of the following commands: DEFAULT, RESET, KEY ON, or you can press Undo twice.

When you want to print some information to the screen and wish to include special text effects such as inverse, shaded or underlined then you have to enter a line like this:

```
PRINT "HELLO";:INVERSE
ON-PRINT "THERE";:OFF
But this can be done much simpler with:
```

```
PRINT "HELLO";:CHRS(21)
:"THERE";:CHRS(18)
```

This line is also slightly faster.

Various other writing effects can be achieved by adjusting the CHRS() values. The table below lists the value and effect of each code. By combining several codes together you can achieve special effects.

For example, 15 and 16 make the text appear in an unreadable format until the backspace key is pressed at the beginning of a line.

One useful combination are the codes 4 and 5. These scroll the screen up and down one line starting at the position of the cursor. If the cursor is on line 5 and CHRS(4) is printed to the screen then all the lines above line 4 move up and the top line disappears. You'll need to experiment with other codes but it can be great fun.

CODE COMMAND

10	CDOWN
11	CUP
12	CLS
13	(not used)
17	CURS ON
18	INVERSE OFF
19	SHADE OFF
20	CURS OFF
21	INVERSE OFF
22	SHADE ON
24	SCROLL ON
25	SCROLL OFF
29	UNDERLINE OFF
31	UNDERLINE ON

DASH IT

Using GEM to copy disks on the ST has never been easy. Problems with GEM's definition of the "correct disk" prompted Bristolian David Brown to ask whether it's possible to buy a professional disk

copier that does a better job.

There are several on the market. The most famous are Procopy and CopyIST, both are in the Public Domain (I'd be grateful for the names of suppliers who definitely have it).

Commercially, Microdeal are about to release a new copier/formatter called DASH. Formatting is its forte, but copying looks impressive too. Although it won't handle any protected disks it can replace blocks of corrupted data with spaces, so that instead of losing an entire file because of one block of damaged disk space, you only lose 128 bytes of data and retain the rest. Microdeal, on 0726 68020, are selling DASH for £20.



We've had a desperate plea about Viruses this month from **Bill Johnson of Handsworth in Birmingham**. He's found himself well and truly infected, and is worried that his machine has been permanently virused. The problem, however, is not that the machine has been infected but that the disk he is booting up with contains a virus.

This immediately copies itself into the memory of the machine and then subsequently copies itself back out to all disks placed in the drive unit. The way around this is first to get hold of a PD virus killer or, better still, CRL's excellent Virus Killer.

Switch on the ST without placing any disk in the drive. It takes a while but the machine eventually comes up with a Desktop. Insert the virus killer in the drive and double-click on the main program. Now use this to wipe the viruses inevitably contained on all disks. CRL can be contacted on 01-533 2918 and the Virus Killer costs £9.95.

■ See our virus feature on page 27 for more information and a full review of Virus Killer.

BOOT UP THE B-DRIVE

It's great to have a second drive, but booting from it is impossible without nifty manipulation of the memory addresses. By writing the following program in FAST Basic, naming it B-BOOT.PRG, copying it

into an AUTO folder and then resetting the machine, it's possible to boot automatically from a second drive:

```
RESERVE CODE$, $100
PATHS="A:\AUTO\"
ON ERROR CLOSE #FILE:END
FILE=OPENOUT "BOOT_B.PRG"
FOR PASS=1 TO 2
[
OPT PASS,"D+H+L-",FILE
ORG CODE$
PEA BOOT_B(PC)
MOVE #38,-(A7)
TRAP #14
boot_b
MOVE #1,$446
MOVE.L #4F2,-(A7)
RCS
]
NEXT PASS$
CLOSE #FILE$
```

Carl Leach from Rugby has tried this method but finds it doesn't work with some packages. The reason is that copy-protected software makes hardware calls directly to Drive A, so it's not possible to change things around as easily as that.

There is a hardware modification, but don't attempt it unless you know what you're doing: it involves opening the machine, thereby invalidating the guarantee. Format can accept no liability for machines wrecked using this tip. You have been warned!

To allow the ST to boot from the B-drive, remove the motherboard casing and from the circuit board desolder pins 19 and 20 of the Yamaha YM2149 sound chip. Connect the pins to a double pole, double throw switch as shown in the diagram: the links make the computer act as though your external drive is A.

HOW LOW CAN YOU GO?

Running GFA Basic 2 in low-res mode is fine when you're out of the editor, but if you try using the mouse you can't move it more than halfway across the screen. John Carter of London has the answer: edit the two bytes at 9958/9959 so that they equal 639 while you're editing and 319 during program execution. You can do this in the following way:

```
DPOKE (9958),319
ON BREAK ENDPROC
```

```
-- your program --
```

```
PROCEDURE ENDPROC
DPOKE (9958),639
RETURN
```

Before beginning a program the values are set to 319 (the size of the screen) and when you terminate they're set back to 639.

THE DEGAS WAY

This month I'm looking at how Degas files are constructed and in particular the compaction method, which has a tendency to defeat some graphic packages. The Degas compressed format can be used across three resolutions and is recognised by the file extensions PC1, PC2, PC3. The actual size of these files varies in length depending on how easily the file could be compressed but there is always a 17 word header organised as follows:

Byte	Value
00	80
01	02
02	02
03...	14...
32	06
33	00
34	??

The first byte is always set to 80 (in Hex) if the file is compressed. This is the way that Degas detects whether a file has been compressed and not by the file extension. The second byte contains the resolution number - 0 for low res., 1 for medium res. and 2 for high res.

The following 32 bytes specify the colour palette being used in that file. One word holds all the information for one ink pot. By taking the first two bytes of the 32-byte palette - the 1 indicates a green intensity of 1, 2 is a red intensity of 2 and 4 is a blue intensity of four. The first digit is always ignored.

This header block is identical to that which appears at the start of all Degas files - whether compressed or not. All screen data is held from byte 34 onwards.

The decompression routine acts according to the value of the bytes that it encounters. Values between 0 and 127 instruct the system to copy the next $n+1$ bytes to the screen. Values above this tell the system to copy the next byte onto the screen $n+1$ times. Hence, large blocks of colour can be decompressed very easily.

It's much easier to perform this operation with high res screens since, in the case of colour displays, bit planes are compressed separately line by line.

■ If you know how other picture file formats are arranged then drop us a line. Anything from Neochrome to Spectrum 512 to Quantum Paintbox - we want to print them. Send your picture file format information to: Desktop, ST Format, 4 Queen St, Bath BA1 1EJ - you could win a surprise prize! ■

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EDUCATION AND GOVERNMENT ORDERS WELCOME

A PUBLIC EDUCATION

Educational software is expensive, but one cheap source, as ever, is the public domain. I'll be looking at the best (and worst) PD educational software in the months to come.

Of the type to be avoided like the plague (how do you avoid a plague?) is the GEOG.QIZ program, available on Goodman disk GD101. It's a simple question-and-answer format that asks 10 or 25 geographical questions matching capitals to countries or identifying flags. Fine as far as it goes, which isn't very far, but do you really want your child to think Leningrad is spelt Leningrad, or see its capital written as it's capital?

SPANISH TUTOR

■ ST CLUB
■ £2.80

A shining example of good PD material is Spanish Tutor, on the ST Club's EDU.13 disk. It's a double-sided disk, giving you some idea of the program's size, offering a choice of French, German, English or Spanish instructions, with the French version called, aptly enough, MANUEL.DOC.

Introductory files point out two difficulties in learning Spanish: (1) the gender of common nouns, and (2) the variety of modes and tenses of verbs. Spanish Tutor deals only with the latter. The disk contains complete conjugations in all four major modes and all 17 tenses of most of the 12,000 or so verbs in the Spanish language.

The good news for Spanish students is that about 9,000 of these are regular. The bad news is that 2,000 of the most common verbs are all irregular (because they're common, perhaps?). Spanish Tutor has all the data on these. And, of course, one major advan-



■ A bit of verbal: ST Club's PD Spanish Tutor

"Sir" MIKE GERRARD learns that the Public Domain is a fine source of cheap educational software - if you're in the know

tage of a micro (among many) is that it prevents cheating by looking at the answer!

The program is thorough in presentation and content. It creates a record card when you start, updating it at the end of each session to monitor progress. In the testing sections you're automatically moved up a level if you score more than 80%.

The keyboard lets you type in accented letters, a box appearing on-screen when appropriate to remind you which keys produce which accents: nice touch.

Spanish Tutor is well thought-out and allows itself to be comprehensive by sensibly limiting itself to one area: verbs. At £2.80 to non-members of the ST Club, you'd be hard-pushed to find a commercial software program to beat it - at any price. Soon you'll be able to do much more than order Red Barrel in Spanish!

JIGSPELL

■ HAT SOFTWARE
■ £14.95

Jigsaw from HAT Software requires work from the parent if the child is to get the most from it. Described as a "spelling support program," no mention is made of the age-range it's aimed at, but it's for the young primary child just learning to spell.

Though you can edit the words to be tested, and therefore in the end make it suitable for older children too, the simple nature of the program means it's unlikely to appeal to the upper juniors who are probably playing Blood Money in their spare time.

Jigsaw presents a picture from Degas (PI1 files only), First Paint or Stage II - these last two are also HAT products - and covers it with 16 numbered squares. As each

square flashes, the child has to memorise a word and then spell it correctly, whereupon that square of the picture is revealed. Answer all 16 correctly and hey presto, the child gets the picture, literally.

Unfortunately the picture then flashes, presumably for visual excitement, though this makes it rather difficult to enjoy. It's then immediately written over with a "Well Done!" message, also detracting from the reward that the child's been after. Without those aspects it would, surely, be better.



HAT'S JIGSPELL: concentrate, now, concentrate!

You're provided with three pictures (stingey), and four pre-defined word lists of 100 words each. You can load other pictures or word lists in before you begin, or use the editor program to create new lists.

The parent could add interest by matching picture with word-list, so that a farmyard picture goes with farmyard words, and so on. The child can then see the cow, the cat and the dog, reinforcing the fact that spelling, word and object all go together.

Jigsaw rightly demands that the child memorise the word, rather than copy it, thereby drilling it into the mind, and the word-lists are graded from simple two- and three-letter words up to trickier five- and six-letter ones, like whole and heard.

Expensive for what it does, at £14.95, but effective. ■

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Jigsaw from HAT, reviewed on this page

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Once more into the postbag dear friends once more: ROD LAWTON tears into another selection of your pearls of wit and wisdom

DOWN THE DRAIN?

At the moment I own a new 520 STFm with a 1MByte memory upgrade. I have spent a vast amount of money on both software and hardware, only to see that my humble computer is going to be superceded by the 1040STE.

I have only had my computer for six months, as I have a limited income, and I was displeased to see that I would have to sell my computer as now it seemed inferior.

What is the shelf life of computers now? It seems only a year or so before another one comes out and you have to make another purchase to keep up with the times.

You must understand that I am not slagging off the new computer, as it is good to see new technology on the market, but I wish they would give us much more notice (I could have saved my money and bought the STE when it came out in Christmas).

**Chris Margetta, Halesowen,
W. Midlands**

I can't believe you're serious, Chris. Why on earth should you want to sell your 520 STFm, just because Atari release an enhanced 1040? Your own machine doesn't simply get slower or lose half its memory! It's every bit the machine it was yesterday, and if it word processed fast enough for you, and gave you fast enough gameplay, then it still does.

Sure you'll want to upgrade eventually, but why not try to get the best out of what you've got

now? After all, there are still thousands of people enjoying computing with 8-bits, believe it or not!

Atari can't pre-announce their upgrades, because if they did no-one would buy the current models.

Anyway, turn to our full and exclusive hands on review on page 15.

TALKING A GOOD FIGHT

Ok punk, make my day: you were spoiling for a fight Mark, so come an' get a load of this!

Being consistently impressed by the broad spectrum of features in *Format* over the last few months, I expected an informed and intelligent report on the debate over violence in games. Instead, I got a lobotomised polemic. One piece of information and a list of plugs for recent games spread over two whole pages. If I employed a journalist with productivity this low, I'd sack him.

I hope there was some feeble attempt at irony underpinning the piece as there was little else of value to be found within. The logic reasoning "I don't see the problem, therefore it doesn't exist," beloved of tabloid editors and "the man in the street," is no plausible argument to back up Mark's own opinions.

I am, in fact, an avid fan of violent games and have worked off much frustration against hordes of intergalactic aliens. Your last few cover disks have provided me with huge enjoyment in blasting innocent jellyfish.

But Mark skims past the most important point in the debate: that more realism in graphics has bro-

ken down the distinction between reality and fantasy. The new games coming out may not be the cause, but are certainly the symptom, of a serious rewriting of history with Vietnam games providing an excellent example.

The plot line usually pits a youthful heroic American soldier, with few resources other than the odd weapon, against a technically powerful and cynical Vietnamese war machine. But this is in fact the reverse of the situation as it actually was. I, for one, resent the fact that US software companies expect me to live out their paranoid and self justifying fantasies every time I want to play a game.

We all love the thrill of risking our digital lives against unwinable odds. Even more, we love the pretty little explosions (surely the discovery of that venerable old Spectrum software company Ultimate Play the Game). But anyone who has seen what powerful new graphics Paintboxes can do will know that our perception of reality is at the mercy of computer manipulation. We should try to counteract this rather than closing our eyes to the problem.

**Philip Jones
Warringham, Surrey**

In the postbag this month I think we've had more letters such as yours, Philip, responding to that article on violence than on any other subject. I wouldn't claim it was any great shakes in the intellectual department, but it did at least stir up some controversy.

If it prompted just a few of our readers to question the political

NOW IS THE WHINGER OF OUR DISK CONTENT

I started reading *ST/Amiga Format* after issue 2 and was always pleased with the disk. There were always utilities, and sometimes a demo of a forthcoming game, such as *Flying Shark* or *Purple Saturn Day*. These demos were a good idea, giving people the chance to see new games before they bought them.

That was, however, when there was only one side to the disk for each computer, and so single sided drive owners could access all of the other programs as well.

Now with the introduction of *ST Format* and the double sided disks, single sided owners can't access the second side. Both the first two issues have had playable demos on the first side, leaving the other utilities on side 2 where most single sided users cannot access them.

I am a double sided drive owner, and so do not have to spend my hard earned cash on the second disk which is available. But many single drive owners do.

You should put all playable demos on the second side of the disk leaving the first side free for useful

programs which everyone wants to access. If single sided owners want to see a playable demo because they are thinking of buying the game, then they may not mind paying for the second disk as much as if they wanted it for the utilities.

If you do not do this, then single sided owners will just build up a collection of demos which is not what they buy their magazine for.

**Colin Strickland,
Warrington, Cheshire**

I agree with you, Colin, insofar as it's a pity we can't give all our readers the same excellent service. On the other hand, I can't honestly say we've been inundated with complaints from the people actually suffering this appalling deprivation.

And it would seem odd to me to deny those same readers of such fantastic - and fully playable, note - demos as *Xenon II* and this month's *Interphase*.

STFORMAT LETTERS

and moral assumptions underlying grotesquely violent and in some cases racist games, I think Mark can feel he's done some good. You're evidently aware, Philip, of the US colonial bias of so much of this material, but believe me many gamers - and perhaps especially the younger ones - are not.

As for the laughable suggestion that we were "plugging" recent games, presumably implying that we somehow stood to gain from doing so - perhaps you'd care to explain how this scam might work?

NOT MUSIC TO HIS EARS

I'm writing to have a bijou moanette about your section on MIDI. While the rest of the mag is filled with blow-by-blow descriptions of the latest DTP or graphics package, your treatment of MIDI products seems to come a poor second.

In particular, your recent Music Theory section is laughable, the first part containing written examples so ludicrously small as to be unreadable. The amount of copy therein makes one wonder if there is anybody on your staff who has gone beyond Grade Three music theory. Really gentleman (and ladies!) if you intend to do this sort of thing then at least give it the space that it deserves.

I applaud your sentiments in running a series like this but I feel that a subject as complex as this needs a bit more thought and planning as well as a great deal more space - it is a moot point whether an organ such as yours is the right place to run a theory tutorial.

I would also like to comment on what I perceive as a disturbing trend within both the computer and music press to look no further than so-called industry standards when comparing or discussing the wild and woolly world of MIDI sequencing. By this I refer to the constant predilection for thinking of programs such as PRO-24 and C-Lab as the be-all and end-all of sequencing. While I have no intention of decrying the sterling work

done on these excellent systems by musicians everywhere, I can't help but feel that there is more to writing music than the popular song form that these programs are principally designed for.

As a freelance MIDI engineer I am faced with a bewildering variety of musical styles ranging from the aforementioned popular song to some highly experimental forms. Consequently I have to use a system that allows me to work quickly and, more importantly, a system as free from the restrictions of formal structures as possible. I suppose that you think I am as

daft as a brush (very probably) but I like the free-form approach - why should a particular system place constraints upon the user in what he or she does?

Before people start thinking that I'm talking from where the sun never shines, I've really tried hard to use Pro-24 and C-Lab but I constantly come back to my system because I frequently find insurmountable problems in using them. So what do I use? Well, don't rupture yourselves laughing but I use Doctor T's Keyboard Controlled Sequencer. Many of my colleagues think I'm seriously crazy but when they see my Mega 4 running 17 programs (yes, count 'em folks) at once - five TSR's, three DA's, the KCS and eight of the good Doctor's other offerings - they begin to see the value of such an approach. I can tune my system to suit a particular job and not get stuck into using the same methods that other programs force one into working with. For example, there are over 14 ways of quantising a track and that's not including the various custom algorithms that can be developed.

For me Pro 24 et al represent the word processors of music,

while KCS is the DTP system. Yet I get more flak from so called experts for using what is seen as a radical departure from the "industry standards" because of what I can only call snobbery. I don't see people get into a frenzy over the different WPs in use, but there seems to be a different attitude to music programs. Well all I can say is good luck to them, while they're struggling to achieve the impossible I've probably already done it and I'm sorry if that sounds arrogant, but I'm into making music, not wasting my time explaining why I don't use what everyone else does.

I don't use what everyone else does.

Chas Stoddard,
London

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Seriously, though, I'm fascinated by what you say, and I'm only sorry we had to edit your remarks down somewhat. You must remember, however, that not everyone is a professional MIDI engineer, and we try to cater for the wide range of knowledge and experience among our readers.

Would anyone care to challenge, or indeed defend, Chas' extraordinary assertion that "Pro 24 et al represent the word processors of music, while KCS is the DTP system"?

HONOURING HIS OFFER

In issue 1 of ST Format you printed a letter from me offering an upgrade for DosAcc: unfortunately the address was wrong. I believe I have now received all the mail addressed to me but if anybody is still waiting for a reply - I haven't received their disk.

The offer still stands: send me a disk and SAE and I'll supply the

current version of DosAcc (it's also available from the ST Club).

Les Kneeling
38 Francis Avenue
Ilford
Essex IG1 1TS

Oops, sorry Les! Yes there was a wee mistake. Incidentally, the address for the ST Club (assuming we can get it right) is given on page 48 in our monthly round up of PD software.

DIS-ORGANISED

Before the demise of ST/Amiga Format you offered your organisers on special offer, for the cost of some stamps. I duly sent away for one for me and one for a colleague at work. Alas, alas, I'm still waiting. You did say that if stocks ran out you would return the stamps.

Can you please put me out of my misery and tell me, am I waiting in vain?

R.G. Biddles, Guildford,
Surrey

We're sorry you've been kept waiting, RG (why so formal? What's wrong with first names?). A handful of readers have received neither organiser nor stamps, which we appreciate must be somewhat annoying.

All of the organisers have now gone, however, so if you haven't received yours then I'm afraid you're not one of the lucky ones. What on earth could have happened to your stamps we're still trying to find out.

WHAT'S GOING ON?

Can anyone explain to me what this "Light Brigade" thing is all about? I'm completely lost. In fact, does anyone apart from the authors read it?

Pete Davies,
Dorking

Well, I do, and so do our entire Art Department (ahem).

Light Brigade is on holiday this month, by the way, and will be back next month for another mind-stretching episode. ■

A CASE OF SPIRITS: THREE SHEETS TO THE WIND?

I'm writing in response to John Harman's letter last month: it was very unfair of you to dismiss his strange tale out of hand. I too have experienced a similar phenomenon, with frequent trips into what I call the Horizontal Plane.

The best way to experience the Horizontal Plane is to imbibe large amounts of alcohol while working at the computer. While I was doing some word processing and at the same time attempting to enter the Horizontal Plane, suddenly strange, totally indecipherable mes-

sages began to appear on the document I was working on.

Also, I was messing about with an animation program and the Horizontal Plane overcame me. Upon surfacing I saw the last three frames of my running man effort had inexplicably turned into Mr Jelly. Amazing huh?

However, unlike Mr Harman, I am in fact hindered by an insensitive. I often receive ethereal messages threatening to do something anatomically impossible with my computer,

unless I turn it off and help with the washing up!

Ian David Lodge, Grays, Essex
PS This was written on Basilidon Bond finest, using a freebie Computer Club ball point.

Mm, know how you feel. My favourite is the time warp, when you know you've been playing Arkanoid for only 20 minutes but your watch tells you you've mysteriously leapt two and a half hours into the future.

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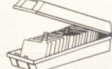
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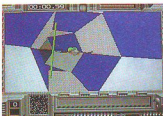
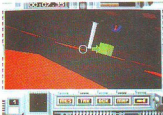
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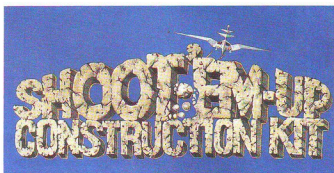
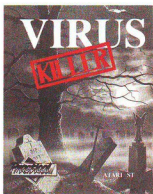
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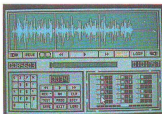


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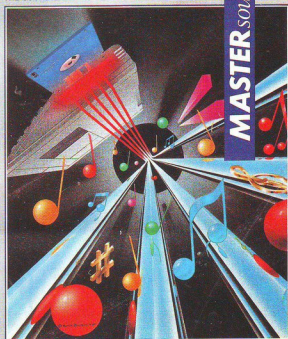
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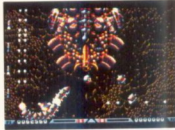
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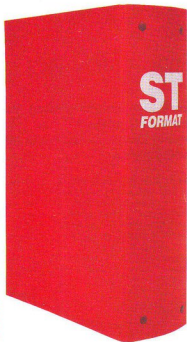


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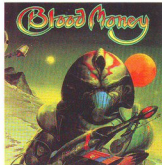
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Magazine: Upgrade your machine with extra megabytes, Daatacan hand-held scanner from Kempston Samplers.

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Cover Disk: Amiga: Blood Money (playable demo), File requester, add requesters to programs.

ST: Archipelagos, playable demo, Fastmouse, speed up mouse operation.

Magazine: Make yourself a sound sampler, Deluxe Paint III, Animation tutorial, Why not invest in a better screen? Here's the choice...

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Cover Disk: Amiga: Colossus Chess, playable demo, VirusX V3.1 protect your disks against viral infection, Boot intro, add scrolling messages to your disks.

ST: Flair Paint, usable demo of this brilliant art package.

Magazine: Video digitising. Attach a MIDI system to your machine and make music. The best available joysticks.

Issue 13 ■ Order Code AM213

Cover Disk: Amiga: Wicked, playable demo of this totally addictive game, Mandeshow, create infinitely complex pictures with this Mandelbrot generator.

ST: Spherical, an excellent playable demo of this strategy game.

Magazine: Pagestream, a brilliant DTP, Animation techniques, the reasons why, The choice of hard drives.

Issue 2 ■ Order Code STF02

Cover Disk: Blood Money from Psygnosis. That's Fun Face from Cavendish, made photo-fit faces with this amazing demo!

Magazine: The life of a joystick, from drawing board to plastic. Continuation of the GFA Basic tutorial. That's Fun Face and its big sister!

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Cover Disk: Xenon II, the playable demo from Mirrorsoft - a brilliant shoot 'em-up.

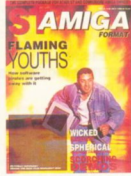
Magazine: The new STs, do we rate them? Take a look at the best of the adventure games, GFA Raytrace: a superb graphics program from the compiler people. Build yourself a drive tracker.

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Cover Disk: Bloodwych and the fabulous GFA BASIC 2, the full working version.

Magazine: Mastersound, a new sound sampler reviewed. Hisoft C Interpreter. Atari, the past, present and future. Have machines a will of their own? Are there ghosts in your ST?



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