


"Special FX programmed the game and have done a great job, recreating the character of the originals with a hint of humour".
Amiga User Int.
"The characters and backgrounds are striking each are superlative - the Amiga features a soundtrack in glorious remixed stereo". The One

"polished in every aspect - from the humorous storyline to the end of the blasting". The Games Machine Top Score.
"... you're in for the time of your life .. fabulous 3D, hours of absorbing play-you name it, Voyager's got it. And that's not all: Ocean throw in a cassette soundtrack which has to be one of the most mind-blowing pieces of music l've ever heard". ZZAP Sizzler
"... scrolling 3D graphics, the most impressive I've seen on the ST ... a great arcade formula and clever graphics ... an excellent game that will keep you playing for quite some time".
ST Action


ATARI ST £10,90


CBM AMIGA
224.00



## 58 STRIDER

He walks, he talks, he's got realistic hands, gripping eyes and eagle hair. And he's the hero in US Gold's first-rate CapCom coin-op conversions.

## 75 <br> WORK IN <br> PROGRESS

Take one coin-op that pushes vector graphics to their limits, add Domark's resident polygon professor, mix well and you've got the 16 -bit conversions of Atari's Hard Drivin'.

## DEMOS

More home-grown wares become public and the domain swells as sampled sounds and silky animation tickle The One team's demo buds.

## GRAPHICS

Now's the time for all Aunts and Uncles to leave the room as Heavy Metal man Phil South tells you how to get solid.

## 88 <br> ARCADES

Brutal beat 'em up action with Violence Fight, Arch Rivals and Crime Fighters, and machine gun firefights in Mechanised Attack. Enough to send Gordon Houghton and Kati Hamza running for cover.


## FEATURE

Lazer Tag grows up as high-tech laser combat in the form of Quasar comes to London. Well, it's better than broken bottles and knives. Paul Boughton is plugged in and shootting to thrill.

## 98

## BACKSPACE

MicroProse's UK head honcho steps into the firing line and goes one-on-one with The One to answer your questions.

## THE ONE'S GUIDE TO PRICE, RELEASE DATE AND EVERYTHING

$Y$
ou may be used to reading reams of opinionated waffle elsewhere, but here we prefer to let the games speak for themselves. Relevant scenes are shown, with informative captions used to convey the 'feel' of the game in question. At the end of each review there are opinions highlighting any good and bad points, prices, release dates, and ratings where possible. Basically, there's something for everyone at best a review, and at worst a highly detailed preview. There's nothing clever, just straightforward facts and ratings. Updates will follow where appropriate.

## And now the ratings...

GRAPHICS Not necessarily how colourful or well drawn they are, but how well they fit in to the overall effect.
SOUND Again, not necessarily quantity or indeed quality of sound, but how well it's used.
PLAYABILITY How does the game feel? Is it addictive or just plain uninteresting.
VALUE Essentially a reflection of lasting interest how much game you get for your money.
OVERALL A useful point of reference - essentially a summary of the preceeding ratings.

## THIS MONTH'S HOT HIPSTERS

## GARY PENN

The Ed's a real workaholic. When there's a job to be done. nothing gets in his way - except Kick Off, Rainbow Islands, The New Zealand Story and Rick Dangerous. Not to mention.

## CIARÁN BRENNAN

Ciaran's a real man about town. Unfortunately, that town is usually Huntingdon, but when he does find the time to visit the office, he gets a kick out of Kick Off and... erm, Kick Off.

## BRIAN NESBITT

MicroSoft's C Compiler VI. 3 has been getting jet-set Brian's pulse racing this month - he's even found time between the thrills and spills of sitting in his bedroom to have his hair cut. What a guy...

## GARY WHITTA

Nowadays Gary's hectic professional and social lives often mean there's precious little time for computing chortles anymore - but he still squeezes in a game or two of Kick Off and Rainbow Islands when he can.

## KATI HAMZA

Now safe and sound from the horror of deepest darkest Ludlow, Kati is adapting to life 'down south' - but only when she's not too busy playing Life \& Death and Kick Off.

## PAUL PRESLEY

Yes! He's alive and working in Farringdon! What? It's... ah. PAUL Presley, that charismatic office charmer who's currently to be seen playing Kingdom Of England and Kick Off. He's lean, he's mean, and, as Jack would say: "I like him already..."

# LETTERS, The One, Priory Court, 30-32 Farringdon Lane, London ECIR 3AU. 

## TECH KNOWLEDGY

$\rightarrow$ —
Dear Sir,
I am currently working on a game for the Amiga A500. I am not a professional programmer but I have been coding and writing utilities and demos for a while.

My reason for writing is that I have a problem. For the game I have written my own BOB routines using the blitter, the problem 1 am having is in the animation of the BOBs. If I clear and update the BOBs every screen scan, ie: once every 50th of a second I get smooth animation. However the main drawback is that it leaves very little processor time for anything useful, as most of the time the blitter or processor are being used to handle the graphics.

Programmers have said in The One that their games run at 25 frames a second. This would clearly allow me an extra screen scan to do the logic part of the game or any non-time critical parts.
How do they manage this? How can I manage this? Matthew Crewe, Wolverton, Milton Keynes.

Our resident tech-spurt says this: 'Basically, you are going to need to make some suitable compromises. A BOB, or BLOB (BLitter OBject) is a sprite which can be any size you like. However, I must ask how big your's is. Obviously a big BOB will use up more processor time. Also, are you using five bit-planes ( 32 colours)? If so, the blitter would take longer to plot the BOB. Plus, you lose blitter and CPU time anyway - roughly 25 per cent. 'Double buffer' the screen, ie: use two screens, so you always plot into the screen you are not displaying, then swap them over when you have built everything - and remember to do this when the raster is off the screen. Are you trying to plot the BOB on a static screen? If so, use a third copy of the screen for faster refreshing. If you are plotting on a scrolling screen, use a 'barrel scroll', ie: a taller version of the screen so that the screen is constructed 'off-stage', way before it gets displayed and so any depreciation of speed probably won't get noticed as there's a 'buffer' off screen.

## PC PICQUE

Dear The One,
I am a PC owner.
Alex Walker, Aboyne, Aberdeenshire. PS I now know why you call your mag The One - it's because you only do one proper PC review a month.

## BUT ON THE OTHER SIDE OF THE COIN



I would like to congratulate you on publishing the best computer magazine I have ever seen. Because I own an IBM-compatible, your magazine has got the largest PC section out of all the magazines I have read so far.

If any other PC owners out there want a pen pal, they can write to me at 28 Inverary Crescent, Hamersley, Perth, Western Australia.
Paul Chew, Perth, Western Australia.

## CDI: CAN'T DIG IT

$\rightarrow$
Dear The One,
I've noticed that a lot of other magazines have recently been flipping their wigs about CD-Rom and CDI and the like... but I've got only one question to ask - what's all the fuss about?
I understand that using compact disks will allow programmers to make use of tons more data storage than they can use at the moment, but does this necessarily mean that the games they come up with will be any better?

And another thing... will we be able to link up standard CD players to our present machines or will we need separate systems?

This may seem like a lot of questions, but l've read an awful lot about these supposedly fantastic games that we're all going to be playing in the next few years and I'm still not sure that it's all about.
Jerry Harris, Cambridge.

44Funny you should ask that Jerry, but the first reaction that we've had from developers on the subject of using new compact disk technology came when, in the course of researching this month's Work In Progress feature, Gary Whitta discussed the topic with Bullfrog Productions. The boys behind Populous weren't exactly 'flipping their wigs' (as you so eloquently put it) about the prospect of games with umpteen billion megabytes of data, or infinite numbers of graphic screens. Their argument is that designing and programming games of that magnitude would not only take years, but it would also be practically impossible to come up with enough original ideas to fill that much space without the game becoming tedious. At any rate, what's the point of writing a game with a million levels, when even the best games player isn't likely to get past 50 or so? Here at The One, we're keeping an open mind on the subject until we see the first commercially produced CD games, but as you say, will bigger necessarily mean better?

## CHRISTMAS CRACKERS?

$\rightarrow$ TDear Sir, The picture that you printed of Chase HQ in your August issue made me think that this Christmas is going to be exactly the same as last year's, with all of the big companies releasing their 'best games' at the same time of the year.
Surely software companies can't expect us to buy all of these games at once (last year there was $\mathbf{R}$ Type, Afterburner, Operation Wolf and Double Dragon, and this year there will be Chase HQ, Ghostbusters II, Power Drift, Continental Circus and Operation Thunderbolt - all at the same time).

And even if we could afford to buy them all, last year's lot weren't any good anyway - Operation Wolf was the best of a bad lot, but Afterburner and Double Dragon were really awful.

Will this year's lot be as bad?
Mark Nolan, Templeogue, Dublin.
Who can tell, but from what we've seen so far, Chase HQ, Operation Thunderbolt and Power Drift are already looking good -
even at this early stage. Maybe in the last 12 months developers have got their act together a little better, or maybe the major software companies are starting to see the importance of good quality software. Or maybe not... we'll all see when we shake out our stockings on December 25th.

## LOADSA MUSPRINTS

$\rightarrow$

## Dear The One,

I enjoy reading The One because of its accuracy, taste, and presentation, but... is it me, or have you made a ${ }^{* * * *}$ up of the positioning of the screenshots and captions of the ST versions of Paperboy and Commando in the News section of the August edition? Please put this right, then your mag will outclass the rest like it has since it started. Kevin Crain, Bournemouth, Dorset.


Well spotted Kevin. We would claim it was a deliberate mistake to put the eagle eyes of our readers to the test. But it wasn't. It was a *** up. But how come you missed the others? Test Drive II and Honda RVF in the ST and PC charts (pages 10 and 13), and also The Champ and APB, also in the News, on pages 16 and 17. And there's more: pages 24 and 43 of the Xenon II review are round the wrong way, there's a caption missing from the Quartz review (top right of page 59) and of course the two typographical errors in the intro on page 58 (aboue and Nedbitt). Not forgetting the glaring typo in the High Steel review Amiga comment. Oh, and....

## A QUESTION OF DEGREE



Dear The One,
Can you get $\mathbf{7 2 0}{ }^{\circ}$ by US Gold? Your mag is brilliant especially the Work In Progress feature. Simon Ford, Benston Rylands, Nottingham.

US Gold informs us that $720^{\circ}$ has been available on the ST for about 18 months now - does that answer your question?

## LATE PAPERS

Dear Sir,
Ho hum, ho hum and double ho hum! I would like to ask you a few things. Right... where are Guerilla War, Paper Boy and Ghosts And Goblins? I remember that back in Issue Two you said that you were going to review Paperboy in your next issue - so what happened? By the way, can you send me Gary Whitta's autograph - and a photo if possible? Michael Greenow, Solihull, West Midlands.

As you can see, Paperboy is already with us, but as for the others... We asked Ocean's software development manager Gary Bracey about Guerilla War, to which he replied: "Oh. Don't ask me about that..." As for Ghosts ' $n$ ' Goblins... it's still in production, but should appear at the PC Show in September (but don't hold your breath, just in case).

## NewS

# IT SHOULDN'T HAPPEN TO 



E efore taking to the road, the player selects the model of Corvette he fancies at the garage. There's the standard production modet, plus a souped-up ZRI and two custom models, the Callaway Twin Turbo and Callaway Sledgehammer that's capable of clocking up over 254 mph !

Qpectrum HoloByte claims that San Fransisco has been reproduced with geographic accuracy, featuring The Golden Gate Bridge, San Francisco Zoo and the Bank of America building among other famous landmarks. The race is broken down into four legs or courses, and takes the players

|  |  | through the city itself and across the freeways, bridges and tunnels that lead into and out of the metropolis. Alternatively, players can opt for a 'Cannonball Run' from one side of the city to the other. |
| :---: | :---: | :---: |



For a more 'arcadey' experience, there's an exterior view - but the realistie performance of the 'Vette still applies, so don't try any flash OutRun tricks.

[^0]
## A VETTE



1 HEN it comes to high performance sports cars, the Americans aren't exactly up there with the Germans and Italians, so it's quite understandable that when the Yanks finally produce a silver dream machine that gives Lambourghini, Porsche and Ferrari a run for their petrol, they like to blow their own trumpet for a bit.

Such is the case with the Chevrolet Corvette. So proud are the Yanks of their 200 mph plus baby, California-based Falcon producer Spectrum HoloByte has given it its own simulation, Vette, to be released here by Mirrorsoft.

Vette allows you to take America's pride and joy out for a spin on the Streets of San Fransisco - but there's more to it than just high-speed joyriding. There's a race to be won, against the fastest cars that Europe has to offer. Plus there's the everyday San Fransiscan traffic and pedestrians to contend with - not to mention Karl Malden and the rest of the SFPD.

And if racing against puny Lambourshinis isn't enough of a challenge, there's a datalink option allowing two players to race Corvettes against each other. The PC version is almost complete, and supports just about every graphics and sound card you can think of.

Release is planned for late September, at a price of around $£ 35$. ST and Amiga conversions are currently underway, and it's hoped they'll hit the streets in time for Christmas.
(Month Ending September '89)

(PE FEDERATION OF FREE
(Gremlin Graphics)

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remlin's FOFT: On Top. Numero Uno. The Man. Playmate Of The Month. The Big Noise. The Choice Cheese. The...


ONE MORE TICKET RND THEY WILL TAKE RWAY MY LICENSE MY SFOUSE IS IN THE HOSPITAL WITH FN EMERGENOY MY REOELERATOR WAS STUEK
I HAVE BEEN CALLED HOME WITH RN EMERGENCY
I WAS GOINE WITH THE FLOW OF TRAFFIC
SORRY, BUT I NEEDED TO FIND A BATHROOM, BADLY I MM LATE FOR MY SON'S EIRTHDAY FARTY I AM TEAT DRTUTNG THTS CORUETTE



## NewS Paradroid dressed up in steel! Collection for second premiere!

# HEWSON HITS 

who have gone haywire aboard a space freighter.
November should see the release of the second of the Premier Collection compilations, aptly titled Premier Collection 2. Once again this features four previouslyreleased titles - but this time around, only two of them are Hewson games - John Phillips' Eliminator and Nigel Brownjohn and Chris Hinsley's Custodian. The other pair are two of Novagen's finest hours - Paul Woakes' classic vectorgraphic adventure Mercenary and his shoot 'em up Backlash. The asking price is £29.99.
Also set for a November release is Brownjohn and Hinsley's scrolling shoot 'em up Onslaught (first mentioned in Issue Seven) and the flickscreen arcade adventure Stormlord, the latest creation from Mr Cybernoid himself, Raffaelle Cecco. with a bevy of software planned for between now and Christmas. First up from the Abingdon Aces in September is Slayer, a horizontally scrolling shoot 'em up in the Zynaps mould programmed by Microwish, the team behind the 16 -bit versions of Graftgold's classic.

Slayer promises all the usual features - upgradable weaponry, end-of-level guardians and three bonus levels exclusive to the 16 -bit versions. In a slightly more original vein is Steel, set for an October release. In a storyline noti-
ceably similar to Hewson's ageing 64 classic Paradroid, the player is cast as a robot commando with the task of wiping out an army of droids

$5^{\text {th }}$ Gear - another Microwish effort, due for release in November.

## BLOOD MONEY

The ST version of Psygnosis' AmiI ga hit shoot em up Blood Money is now available. Wayne Smithson of Baal fame has carried out the conversion, and has managed to squeeze the whole thing onto two disks without losing any of the original's features. The asking price is f24.95.


## - TOP TEN

(Month Ending September '89)

## IBM PC AND COMPATIBLES



SOLID GOLD TRIPLE
(Infocom)
WATERLOO (PSS)


688 ATTACK SUB (Electronic Arts)


F-16 COMBAT PILOT (Digital Integration)

F-19 STEALTH FIGHTER (MicroProse)


WHO FRAMED ROGER RABBIT (Buena Vista)

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## ARETURN CALL

THE SUPERSTARS of the supernatural are back to nuke the spooks, as Bill Murray, Dan Aykroyd and the gang return in the Ghostbusters II. Nothing much seems to have changed in this sequel: the original cast and crew are still there, there are more special effects than you can poke a positron ioniser at, and... Activision has once again secured the rights to produce the game.

David Crane's original Ghostbusters game appeared back in 1984 (the same year as the movie) and broke almost as many records in its field as the film itself, selling over 300,000 copies worldwide - a figure that today's spftware știll finds hard to beat. And all this on 8 bit formats only!

The new movie is set in New York on New Year's Eve in the year 1999 - much has changed since the original film. The


- The 'busters go underground to do battle with an army of ghouls.


The Statue of Liberty takes a walk through pretation. Who you gonna call?
'busters have gone bust, and now find themselves scraping separate livings as talk show hosts, and children's magicians. But not surprisingly the boys go back in business when New York is once again gripped by a strange psychic force - this time created by 'negative energy' brought about by the nastiness of the Big Apple's inhabitants.

Naturally the Ghostbusters are the only ones who can save the day - and they do so with the aid of a cache of new Ghostbusting technology including back-mounted refrigerator guns.

Currently developing the game is Foursfield, the team behind Activision's ISS and Time Scanner. Columbia Pic-
tures has already granted the boys a sneak showing of the movie, as well as providing them with drafts of the scripts, so they could get cracking on the job as early as possible.
Details on the game are still vague, but it seems certain that it will be split into three sections or scenarios, each based on a specific section from the movie. In addition, it will be possible to switch control between the four Ghostbusters (essential, as only certain 'busters can carry out specific tasks).

The movie is already making money by the truckload in the States, and is due for release here on December Ist. Activision hopes the game will be released shortly thereafter.

## A SCREAMER!

A. tari-owning would-be dinosaurs Aand ogres can fulfill their fantasies with the ST version of Melbourne House/Arcadia's Amiga cult favourite Aaargh! There's been the odd aesthetic change here and there, but the stomping, munching and crunching gameplay remains the same. Out now at a price of $£ 19.99$.


## SHORT STORIES

A brief guide to forthcoming releases, delayed projects and work in progress.

- Let the good times continue into tomorrow with the further adventures of intrepid explorer Rick Dangerous. Mr D's edge of the seat platform and ladders and puzzle thrills are taken to new lofty heights in Rick Dangerous II, as the second chapter in the story takes place in space. Core Design, the team behind the character, is promising a sequel every bit as playable as the original - if not more so by virtue of the experience acquired whilst producing the first.
- And speaking of Core... The task of producing the computer interpretations of Monty Python for Virgin is being handled by none other than Core Design. Core's Kevin Norburn says the boys are attempting to create "a very Gilliam-style game", and although the full details have yet to be approced, there are a few definite possibilities... Simon Phipps (the man behind Rick Dangerous) is producing the 16 -bit versions of the game - a mixture of styles, including a scrolling beat 'em up... with a fish. Other likely events include the Mystery Of Silly Walks, Spiny Norman, Spam (with lots of spam), and possibly even Conrad Poohs and his amazing dancing teeth. The Monty Python team won't be appearing as such - only by virtue of the characters they played. One thing you can expect is the unexpected. Incidentally, Pytlfon's animator Terry Gilliam has expressed an interest in designing a computer game...

M/ill Rick hop, skip and shoot his way into space in time for further adventures?



 the expense of buying a pencil.
'Picturist', providing the leased in October on ST, Amisketches automatically. ga and PC, at a price of $£ 24.99$ Pictionary should be re- apiece.

The exceptional aquatic arcade antics of Broderbund's Typhoon Thompson (ST version reviewed in Issue Eight) will be released on the Amiga after all. A price is yet to be announced, but Domark reckons it should have it out before October.

Discerning Kick Off-ers drowning in their saliva of anticipation for the sequel, Player Manager, will soon be able to stem the flow with the recently announced Kick Off Expansion Disk. Anco's extra is one for the experts, as the level of play is set at International only. Five new teams are featured, each with its own star player, along with extra team formations, new referees, four new attributes for the players so they play differently, and, more innovatively, realistic injuries: bad tackles don't only result in a red card - they injure the player and affect his performance. A price and firm release date have yet to be announced, but expect to see something at this year's PC Show in September.


ITick off expands - but will this invincible Brennan?

Each year The Design Council runs several saward schemes in its endeavour to find and promote the best in British design. The judging for the 1990 British Design Awards is currently under way - and Bullfrog Productions' Populous is 'in the running'. Only time and the judges will tell whether its wholly original design will see it through to the award-winning end, but rest assured we will inform you of the outcome, come what may.

$\square$ To Bottom Right monitor: Andrew Reader.

## APOC

$\int$ HE ATMOSPHERE
was electric at the recent The One Populous play-offs held at Electronic Arts' luxurious Langley HQ. Hundreds entered the competition in Issue Eight, but only the country's four finest Populous players met in an epic showdown - a cataclysmic struggle for supremacy between genius minds honed to perfection in readiness for this gargantuan mental battle. There were tears, both of sadness and of joy, and scenes of tactical splendour, the like of which have not been seen since Wellington met Napoleon at Waterloo in 1815.
The event was conducted under the supervision of a panel of Populous Grand Masters, headed by the game's codesigner Petter Molyneux. The contestants were: Brian Burns from East Lothian, Andrew Reader from Maidstone, Ken-


## Reader emerges victorious!

## LYPSE

neth Little from Somerset and Carl Dwyer from London.

The tournament was organised on a 'round robin' basis, with everyone playing each other twice, and the player with the highest number of wins at the end emerged victorious. Bullfrog designed a special Wild West landscape from the Promised Lands for the competition, and at the end of the day the man with the plan was Andre $w$ Reader, who then

## NOW

took on Grand Master Molyneux... and lost convincingly but gracefully.

But that's of no concern to people's champion Andrew he now goes on to play in the World Final, against the winners of the other participating magazines' finals. And to cap it all, it's hoped that the final will be broadcast on Sky TV! So there's still plenty of time to order your dish and decoder box.


## GAMES FOR ADULIS

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Each game is specifically written for the ST and Amiga, making full use of the capabilities of these machines. So they produce stunning graphics and superb gameplay

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# WORK 



BULL Frog by Leonardo - the ceramic source of inspiration for the team's name.

PETER Molyneux Bullfrog's co-founder and programmer of Populous is soon to start work on what he reckons is going to be "the biggest thing ever". Just what this is he refuses to say.



LES Edgar handles all of Bullfrog's administrative work, and also contributes ideas to the games - many of which are to be found in Populous.

GLENN Corpes not only designed the graphics for both Fusion and Populous, he also contributed heavily to the game design and programmed the ST versions. What a guy...


- WITH programming and design work on Fusion and Populous under his belt, Kevin Donkin's currently putting Project $F$ together with Shaun Cooper.

IN between subjecting himself to apoplectic seizure-inducing Thrash Metal music, Andy Jones is putting together the graphics for Project F.


- DAVE Hanlon - the professional musician who creates Bullfrog's distinctive sounds.

- 

INPROGRESS

Tacclaimed as the best I6-bit game to date is understandably currently considered to be hot property. But it takes more than claims of "the best is yet to come" to impress an incredulous Gary Whitta.

Five years ago, Peter Molyneux worked as a Systems Analyst for a company producing accountancy software before his life was changed by a chance meeting with the man from next door. Molyneux and Les Edgar (for it was he) then decided to set up a business together producing professional (business) software for the Amiga: "Both Les and I are Taureans and so we decided to call ourselves Taurus Software," says Peter.
The company of two became a crowd of three with the addition of programmer Kevin Donkin and two years later the first product came off the line... a Database called Acquisition, which was followed by a Computer Aided Design package, X-CAD. However, all this serious stuff was beginning to prove a little tiresome for the trio, who decided to follow Commodore's lead and moved more towards the entertainment side of the industry.

As Peter puts it: "we were getting a bit bored of professional software. We all had Commodore 64s and were playing things like Bounty Bob Strikes Back, Dropzone, MULE, and Paradroid - is the best game of all time.'
So the boys leaped into action and set up Bullfrog with the idea of creating leisure/entertainment software: "We took the name from a ceramic ornament we had around the office."

## ENLICHTENMENT

HJowever, despite the team's enthusiasm for games, its first release was a drum machine/ sequencer called A-Drum. It wasn't until late 1987 that Bullfrog approached Firebird with a proposition to convert Enlightenment: Druid II to the ST and Amiga.
"We know Andrew Bailey, the programmer of the original 8 -bit versions," says Peter, "but we wanted to produce the game from scratch, and so we converted Enlightenment without using any of the original's source code - we just played the 64 version for reference."

Converting Enlightenment provided invaluable experience for Peter and Kevin in techniques such as sprite handling - which they had never tackled before. But the graphics presented an even greater problem. Bullfrog desperately needed an artist to carry out the work on Enlightenment, and their prayers were answered by the arrival of Glenn Corpes, an ex-operator of Cray supercomputers.
"Glenn came along wanting a programmer's job
when we desperately needed an artist," explains Molyneux. "I asked what he was interested in and he said 'drawing'. So l asked him to draw something for us - a brick and a tree I think it was - and he drew on computer this amazing brick and tree."

If anything, Glenn was more surprised by the quality of his doodling session than Peter was: "I used to doodle, and draw cartoons, but I had a very violent art teacher at school and so I stopped taking art when I was 13 . I never had much experience with computer graphics either. I used to play around with art packages on my Amstrad 6128, and later Neochrome on my ST, but nothing serious." And so Glenn was recruited as chief graphics artist, and went on to produce all the sprites and backdrops for Englightenment.

## FUSION

With Enlightenment out of the way, the team started work on Fusion. "We wanted to produce a shoot 'em with a bit more to it - plus something to which we could apply what we learned from working on Enlightenment," Glenn explains. "We took inspiration from Paul Shirley's Spindizzy, which was my favourite game on the Amstrad. In Spindizzy you had to run over switches to change part of the level near you by opening a secret door or something, so you could get to a different place. I thought that was a brilliant idea, so we incorporated it in Fusion."
So work began in earnest on Fusion, with Glenn designing the graphics and Kevin writing the game code. Five months later an almost complete version was showg to Electronic Arts. "We chose to approach Electronic Arts because we saw that they weren't into conversions or licences," explains Peter. "With the exception of Marble Madness, all of Electronic Arts games are original concepts and that's exactly the type of game that we want to produce.'

## REDEMPTION

By the time Fusion was finished, Glenn - who had designed and drawn all the graphics for the game - was itching to program. After all, it was the reason he approached Bullfrog in the first place.
"I brought my own ST into work and started playing around with an isometric routine called Creation," says Glenn. It was a simple but effective

idea allowing landscapes to be built and modified using an assortment of blocks. Glenn showed the routine to Peter who, realising the routine had enough potential to base some kind of game on, set up a replica of the system using Lego. "Lego was the only way we could try out the routine apart from on the computer screen - there's just no way you could make it work on paper," says Peter.
When Creation was mapped out on Lego, ideas for gameplay began to form. "We knew the game would revolve somehow around modifying the landscape - the initial idea we had was to survive against the elements," Peter reveals. "The way our first system worked was, as you put down land and modified the terrain, the water level would rise automatically, so after a while villages and people on lower levels would be flooded out."

That idea was dropped, however, as new and better ones were suggested, until eventually the idea was hit upon to use the landscape as a battle
groupd for a war between two tribes, with the player changing the landscape to affect the course of the battle - and Populous was born. From that moment on, ideas began to surge forward - the first of which was to modify the routine to allow twoplayers to play head to head. "Populous was always a two-player game," says Kevin. "The player versus computer option wasn't added until much later."

It was at this point that 'Divine Intervention gameplay elements began to evolve. "Knights were one of the first things we put in, and were included solely to finish the game. A game could get to the point where both players had massive populations, and there was just no way to win," explains Pete,
"so you would create a Knight to go and massacre the other side and end the game at a stroke.
"We had so many ideas for things that you could do as a God that there was no way you could implement them all, so we just picked the best ones." Pete reveals. "One idea we had to discard
was disease. What happened was one player infected one of the other player's walkers with a plague, and that walker would then spread the plague among the rest of his population. But when we put it into practice we realised that the plague would then spread to your people too, and so have a detrimental effect.

## PROJECT W

Populous is undoubtedly the game that really catapulted Bullfrog to fame - it's arguably earned more recognition for the team than Xenon did for the Bitmap Brothers or Uridium did for Andrew Braybrook. But how on Earth does Bullfrog intend to follow what is widely recognised as the most successful 16 -bit game to date? The answer comes in the form of the two games that the team is currently working on - one of which was first


PProject W's landscapes are calculated by the program rather than having to be stored in memory - a feature pioneered by Geoff Crammond in The Sentinel. This leaves a lot more memory and disk space to devote to game logic, allowing for more features and complexity of game design. One routine that's already working in what Bullirog refers to as 'Ranking'. As opposed to Populous, where the people wandered about on their own, the inhabitants of Project W's world travel in groups - each of the six tribes has its own distinctive formation.
 Whe flexibility of Project W's graphics system can only be truly appreciated by trying it
out for yourself. Whereas in Populous your view of the game world is fixed, in Project W

Tout for yourself. Whereas in Populous your view of the game world is fixed, in Project W the player can rotate the landscape through $\mathbf{3 6 0}$ degrees, as well as zoom in and out - so you can go out far enough to see the entire worl
does have to be seen to be believed.

## GRAPHICS

ike the company's games, all of Bulfrog's graphics are very-much a team effort. Although they're produced by only three people - Glenn Corpes. Andy Jones and Shaun Cooper, everybody contributes. Peter Molyneux can't draw for toffee, but that doesn't stop him giving artists Glenn, Andy and Shaun Ideas to put into practice.
Bullfrog is particularly proud of the way in which graphics and game design are interdependent elements in all its games, rather than the graphics being just a fancy frill. As Glenn puts it: In "Populous, the graphics' geometric shape defined a hell of a lot about the way in which the game worked. It's really helpful to be involved with both the graphics and the programming." Programmer and artist Shaun Cooper agrees: "Something I've noticed lately during the development of Project F, is that if Andy (Jones) comes up with an idea for a certain graphic or type of graphic, the whole game begins to revolve around those new graphics. Project F's gameplay has gone through a lot of changes due to the inclusion of new graphical ideas."

It's partly Glenn's recent move out of graphics and into programming and design that has led to much of the recent graphics work falling to Bullfrog's other resident artist, Andy Jones. Andy joined Taurus on a YTS scheme to test products such as Acquisition, and went on to convert Fusion's graphics to the ST, before designing many of the sprites for Populous.

Since Andy learned much of what he knows from Glenn, both artist's techniques are very similar - they never sketch their graphics on paper first, preferring to go straight to computer with their ideas. "The reason for this," Andy explains, "is because what you sketch out on paper and what you eventually draw on computer will often look completely different.

The use of colour also plays a big part in the overall effect of Bullfrog's graphics. "Colour is very important. The original Amiga version of Fusion runs in Halfbrite mode, with 64 colours on screen at a time, which enabled me to produce proper shadows, and that contributed greatly to the overall effect."

Glenn, Andy and Shaun design their graphics on Deluxe Paint II and III, and to a lesser extent, Rainbird's Advanced OCP Studio on the ST. The latter package includes a map editor which proved invaluable for Glenn when he was designing the levels for Fusion.

According to the trio's experience, graphics can be a very hit-and-miss business. Says Glenn: "You can never tell how long a certain graphic is going to take. For example, my original graphics for the Populous landscapes that you see in the finished game were only a couple of days work, whereas the people - like the Walkers and Knights - took a couple of weeks on their own."
mentioned in Issue Seven - but the names have now been changed to protect the innocent.
"We first got the idea for Project W at around the time that Populous was completed," Glenn explains. "It was inspired by Populous, but it's altogether a different game." Like Populous, the idea for Project W was hit upon accidentally by Glenn: "I just want to have a go at vector graphics. I'd seen other vector-based games, and thought that it looked incredibly difficult, so I wanted to see how long it would take to put something like that together - and then see how fast it would run.

With the mention of the term vector graphics, you'd be forgiven for thinking that Bulfrng was developing a simulation of some kind - but instead the vector routine that Project W employs is used to generate landscapes, in a similar way to David Braben's Zarch and Virus. "Like Populous, we want to base Project $\mathbf{W}$ on a world, because we think that that idea is far more exploitable from another angle," explains Peter, who is coprogramming the game with Glenn. "At the moment it looks a little similar to Populous, but is in fact very different. The only similarity between the two games is that you're looking down on a landscape."

While Project W's graphics are already looking polished, the game design has yet to be finalised. It's known that the game will allow up to six people to play head to head (either via serial or modem link), with each player in command of a tribe of people. but that's about it - or at least that's all that Peter and Glenn are willing to reveal at the moment.

Project W's revolutionary landscaping system has already attracted attention from outside the software industry - so much so that it's shortly to be seen on a TV special about worlds inside computers. "The BBC is doing an episode of The Late Show called Virtual Worlds, about the conceptual idea of holding a virtual world inside a computer," Peter explains. "They contacted Elec tronic Arts and were shown Populous to demonstrate the idea of a virtual world. They were very impressed by what they saw, and when I told them about Project W, and that we were taking the idea of virtual worlds even further than with Populous they asked us to show it to them."
"I think what impressed them," says Kevin, "was that they had been told that to run something like Populous or Project W where you have realworld aspects you needed a 20 Mb mainframe or a multi-million pound Cray - and then we came along and did it on a half-megabyte home computer.'

During the five minute interview with Bullfrog which eventually ran to one and a half hours Auntie Beeb filmed a short clip of Project W in action, so if you're interested, tune in in September when the programme goes on air - it could be your only chance to see it before the game is released next February!

## PROJECT F

Project W looks like being Bullfrog's most ambitious project to date, but Project F, also currently under development, is a completely different kettle of fish. It's being put together by Kevin along with Shaun Cooper, who joined Bullfrog as part of a YTS scheme last August, was taught to program by Peter in a few months and went on to design many of the graphics for Populous (the volcanic level was entirely his creation)

Project F is a return to the Fusion-style action
genre, and like Bullfrog's last arcade effort, there are plenty of puzzle elements built in too... "Project F is meant to be much more immediately playable than anything we've done before," claims Peter.

Project F's gameplay is based entirely around the concept of water - the scenario traps you in an eight-way scrolling maze-like world that is slowly but surely being flooded. Your job is to collect the objects and complete the tasks that allow you to escape, and then get out before you drown - and of course there's an assortment of aliens out to stop you. "We're quite proud of the water aspect," says Peter. "It's something that we don't think has ever been done before."

As testimony to Bullfrog's attention to detail and realism in its games, everything in Project F behaves as it would do in real life - especially the water, as Kevin is quick to point out: "The water actually rises properly. It's not just a case of it coming up line by line - it overflows realistically, like from the lip of a glass."

With Projects W and F, Bullfrog looks set to prove that it's no two-game wonder - but this is only the start of the story. Work is soon to begin on Populous II, which Bullfrog is confident will be a significant improvement over the original. "It's not going to be just Populous with a two stuck on the end," promises Peter. "We won't be using any of the routines from the original. Obviously we can't change the original concept too much, but we will be approaching the new game from a completely different angle with a totally different graphics engine."

## PROJECT X

And then there's a project which Bullfrog refuses to discuss beyond name - the working title is Project $X$, and all Peter, who has produced the original specification for the game, will say is: "Believe me - I can't say anything about it, but Project $\mathbf{X}$ is going to be... frighteningly good.

At the moment Project $\mathbf{X}$ is coming together on paper, and programming work should begin within the next couple of months. But don't expect anything for some time - Project $\mathbf{X}$ isn't due to be completed until the Summer of 1991!


Eullfrog's Lego model of Populous still stands in the company's office as a memorial to the game's development. Incidentally, plans are afoot for a board-game version using a system similar to Lego...

## GAME DESIGN

TThere's a whole world of difference between the styles of gameplay found in Fusion and Populous, and the diversity between Projects W and F promises to be even greater. It seems that Bullfrog doesn't want to produce any one kind of game, but does the team have a criteria for the type of product it produces? "We always look for originality and playability in our games," Peter reveals. "Lasting appeal is also an important factor. I personally believe in the 'pound-an-hour' theory. That is, if you spend $£ 25$ on a game, you're entitled to get 25 hours of solid enjoyment out of it. In short, we want to write the sort of game that we want to play.
"Although all our games are original, we don't want them all to be strategy-type affairs like Populous - we're aiming to produce a variety. That's why we're doing Project F, which is more in the classic arcade mould."
'By originality, we don't necessarily mean a revolutionary new games concept - you can take a tried and tested style of game and approach it from a new angle. That's why I liked Kick Off and thought that was original."
"We believe that games should be a team effort. That's why every Friday afternoon we stop work and have a meeting. We just sit down and share ideas - either an idea for a new game or ideas to improve ones currently under development.'

It's Bullfrog's belief that even sound should play a part in the design of a game. "Sound should be an interactive element in the same way as our graphics are. We're trying to emphasise that in Project F. Instead of just gurgling effects in the background, we're going to use sound to warn you of danger, so the sound of water becomes fiercer as you approach it, or as the screen fills with it."
"We don't want to be known as the Vector Graphics King, or the Arcade King, or the RPG King - we'd like to think that we can turn our hand to any kind of original game. We believe that our strength is our creativity. Even if we were to do a coin-op conversion, we'd approach it as we would an original game.'
$\square$ Dopulous' 'stickmen' sprites took the most time to develop than any other graphic elements. This sprite screen, used in the game's development, shows all the animation frames used to depict, walking, combat, drowning - and even a few ideas, like the 'POW' and 'SPLAT' icons that never made it into the finished game.



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THE DASHING ARCHAEOLOGICALADVENTURER IS BACK ON A NEW QUEST - AND IN A DEADLY RACE AGAINST EVIL ..
But first he has a personal mission to fulfill-the search for his missing father, Doctor Henry Jones, renowned historian, has been kidnapped, and his captors believe that he knows the whereabouts of the Holy Grail, the golden chalice that holds the key to eternal life From the canals of Venice, to the dizzy heights of German castles and the arid wastes of Eastern deserts, the search is on. Indy must rescue his father and together they must fight



*
Easy Street is strictly for novices $\square$ and so offers no points bonus, while Middle Road is a touch busier and so offers double the trouble and the points to match. Hard Way is fraught with danger, which is way triple points are on offer to anyone crazy enough to attempt it.
A s you'd expect from an originalery is done in th American game, paper delivin their traditional way. As you pass a house, just chuck a paper either into the mailbox at the end of the driveway or, even better, onto the doormat. To ensure that at least one paper hits its mark, it's best to throw two or three - your supply is topped up by collecting bundles of papers left on the pavement. But don't break a customer's window or you lose his subscription.

Elite's conversions of Atari's classic coinlop finally arrive in

## time for the late edition, so Gary Whitta dons

 his baseball cap and bicycle clips to do the rounds.

Atari's Paperboy has to be one of the biggest coinop successes of recent years. American suburbs may sound like a place of peace and tranquility, but for the average paperboy it's a hell on earth. Super Joe Paperboy knows this only too well, having to deliver The Daily Sun to three of the toughest streets in the suburbs.
Joe's objective is to deliver consistently for a week - if he can do this he's promoted and lands a job in a tougher neighbourhood at the start of the next week. And so it goes on. Tiddly Pom...


> 4he street map is displayed before customers subscribe to The Daily Sun. For these houses, the utmost service is required. For the rest, just sling the paper anywhere, and perhaps even break a window or two to show them the error of their penny-pinching ways.



Daperboy's route is riddled with the dangers of suburban life joggers, maintenance men, loose dogs, remote controlled cars and punk unicyclists all pose a threat on the sidewalk. It's not much safer on the road: drains, open manhole covers, oncoming cars and steep kerbs threaten to slip him up.

## REVIEX

## EXTRA! EXTRA!

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## 'WORST EUER'CLAIM IRATE CUSTOMERS





Cuffer one too many crashes, or complete the job and the Daily Sun's front page chronicles your performance.
$\Delta t$ the end of the day Paperboy thas a chance to earn bonus points by taking part in a time trial on a dirt track. The targets provide paper-throwing practice and he can also try out a few stunts on the ramps - but there's not time to dawdie as the time bonus is forfeited if the finish isn't reached within the strict time limit.



This is an almost flawless conversion in virtually every aspect. The gameplay has been successfully recreated, and the lack of handlebars hardly makes any difference to the playability at all. Sound, too, is spot on - Atari's distinctive coin-op sound has been faithfully reproduced, as have the tunes themselves to lend an authentic arcade feel to the proceedings. In fact the only aspect slightly off the mark is the graphics, which are ever-so-slightly chunkier than the original's. A first rate conversion - it was worth the wait.

## PRICE

£19.99
RELEASE DATE October
GRAPHICS 80\%
SOUND 84\%
PLAYABILITY 83\%
VALUE
75\%
OVERALL 80\%

?The gameplay is expected to be identical to the coin-op's. However, the screen display will be slightly smaller and the sound that bit more 'tinkly'. ST Paperboy is due for release in October at the same time as the Amiga.


Due for release in late October, it should cost £24.99 and support EGA. The possibility of a VGA-compatible version has yet to be confirmed.


Step into the driving seat of one of the most wicked stunt cars around as a Stunt Car Racer. It's now up to you to prove just how good you are and to see whether or not you can ultimately become Division One Champion.
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Battle it out on the track against other computer controlled rivals, such as, Dare Devil and Road Hog. Race and jump so fast that your car starts to break up under the strain and then accelerate even more. There's no prizes for being second best in this game - it's all or nothing.
Stunt Car Racer - do you think you could be up there with the best?
Stunt Car is utterly brilliant and offers adrenalin-pumping, gut wrenching high speed action that'll keep you engrossed for months. $C+V G$.


Stunt Car Racer is available for ST, Amiga, PC, Spectrum and Commodore 64




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The year is 1421. Standing atop the vast hill at the forefront of your army, you gaze into the valley below where you spy the castle of Lord Ravenhill, teeming with his subjects readying themselves for the forthcoming battle.

Should you emerge victorious, you could take control of Stratford and its neighbouring provinces. Your mind drifts to your other enemies and you know that Farnborough must now have fallen, you curse yourself for not leaving a strong defensive force behind.

The heavy rumble of your catapults jolts your thoughts back to the present and you prepare to give the order to attack...

Way back in 1985 Cinemaware released Defender of the Crown, a strategic game based on the mediaeval conquest of Britain. It boasted (for its time) incredible graphics and sound coupled with action sequences to liven the atmosphere. Sadly it lacked gameplay - there wasn't enough variety or strategy and the map was too small.

Now comes Kingdoms of England - a similar concept with a more extensive map, more strategy than World War III and a multiple player option. But has it improved on Defender or has it become too complex for its own good?

$\prod_{t}$wice a year all the lords get together and take part in an archery competition, the prize for which (apart from a boost in your army's morale) is a large pot of silver. Three factors affect your shot: wind speed, wind direction and the distance from the target.
> n days of old when knights were bold and Gainstar wasn't even around, let alone distributing Incognito's software, Paul Presley picked up his lance and prepared to defend a new crown.


England is split into 63 provinces - each waiting to be conquered. An area has a Tax value showing how much revenue the owner will take in and a Terrain value that determines how easy it is to cross. It also reveals who owns the land, how big a castle he has and a rough idea of how many soldiers are stationed there.



When occupying un unowned province, one option is to visit the town and hire more men. You can also construct a building (anything from a small tower to a large castle), join forces with another of your troops or split your men into two or more separate armies.

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When two human players do battle, and one has a castle to defend, the battle ensues with much greater detail. Firstly, armies are split into a number of units by allocating men on the Battle Setup screen, up to 10 army and 10 catapult units are available and are selected by taking men from the top of the screen and placing them in the units at the bottom.


Var begins when two opposing the same province. In Quick Battle mode, this conflict is carried out on a numerical battle sheet. You have partial control in that you can opt to surrender or flee at any point and you can decide what the catapults fire at, but other than that it's figures that win the day.


B attle commences with the troops catapults splillingerging on the castle and the catapuits splilling forth their deadly ammuni-
tion. At any time you can call up information about your troops or move your troops and fire your catapults manually. Just leave them alone and they will fall under computer control and probably do something completely different than what you had in mind for them.

Kingdoms Of England grabs your attention from the outset, with a suitable mood generated by an impressive musical score and functional graphics. More importantly though, the gameplay hasn't suffered as a result. A quality strategy bent is apparent throughout, more so when up to four human and four computer players are involved, taking turns. A good example of the level of detail and flexibility present is the ability to split your forces into any number of different sized units at any time, anywhere. Anyone who played Defender Of The Crown and was left wanting more will be more than satisfied with Kingdoms Of England. And so will anyone else after a lasting challenge for that matter.
PRICE
RELEASE D
GRAPHICS
SOUND
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VALUE
and so a price

Gainstar reckons that there's every chance of an Atari version appearing. However, work has yet to begin, and so a price and release date are yet to be determined.
Kingdoms of an MS-Dos
compatible nature are
currently under de-
velopment. A price of
E24.95 has been fixed,
and a release date should follow within
the next month or so.

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## REVIEX



The idea of a game that actually lets you handle the surgeon's knife is just too attractive to resist - your imagination runs riot with images of brain surgery, cardiac arrests and complicated kidney transplants. That's why, depsite its outstanding originality, Life \&x Death comes as a bit of a disappointment. You only get to wet your scalpel on one sort of operation - appenaectomy - and there are only two or three other non-surgical treatments which it's very easy to get the hang of. That's not to say the surgery itself isn't absorbing. Making accurate incisions, watching the ECG and administering the right drugs takes plenty of practice and leaves lots of room for improving your technique. What's ultimately lacking though, is variety. A bigger choice of operations would definitely improve long-term playability and reduce the sense of routine. The graphics are limited to CGA and become slightly indistinguishable on the operating table - subject matter like this would definitely benefit from the additional colours of EGA, especially when accurate procedures like clamping and cutting in exactly the right spot are so important. What little sound there is is helpful as an aural guide during cutting. For the curiosity value alone this is one package you have just got to see - and if you value originality more than variety you may end up buying it too.

| PRICE | £24.99 |
| :--- | ---: |
| RELEASE DATE | Out Now |
| GRAPHICS | $60 \%$ |
| SOUND | $52 \%$ |
| PLAYABILITY | $72 \%$ |
| VALUE | $65 \%$ |

## OVERALL 70\%

-Complete with enhanced, possibly sampled, sound and fullcolour graphics, the ST version should feature some more realistic representations of blood and gore. This too will set you back $£ 24.99$ and should be out now.

再
Scheduled to appear at the same time and price as the ST version, this should be more or less indistinguishable from its two cousins, with the exception of the obligatory sound enhancements.
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## THIS MONTH!

## Walk like an Egyptian in RICK DANGEROUS! LAST CRUSADE aid! <br> Whip up a storm with TYPHOON THOMPSON!

## TIPS

## ROBOCOP

## Ocean

$>$Peter Johnson, currently taking a rest after finishing the Amiga version, provided these tips to get you off the mark... Remember that all the attack waves, and movement patterns of the enemies, are preset - nothing is randomised. With this in mind, it doesn't take too long to learn what's about to appear and get ready to deal with it.

- TThe infamous ED-209 takes between 12 and 20 shots to kill, and all of these must hit in the head section - leg shots don't count. Keep jumping and firing while in the air to hit ED in the head, and try to knock him out before he reaches the far left of the screen, where he causes the most damage.

o deal with motorbikes, kneel down and punch them as they approach. As they go past, turn round and punch them again to finish them off.



This situation requires speedy reactions to get past with the minimum of damage. Using your three-way firepower (which by now you should have collected), shoot the bald guy's bullets before they have a chance to explode near you, then walk up to the stack of crates. Punch out the first one, then take a step back and shoot the grenade-thrower. You are now clear to break open the other crate, which reveals a jar of baby food.


ne of the most common types of assailants are those who shoot at you from open windows. Most people initially try to shoot them out, before quickly turning tail and running away - but this invariably results in RoboCop getting shot in the foot. A much better method is to jump diagonally forwards as you enter the criminal's line of fire, allowing you to evade his bullets and you land in a prime position to shoot him!


A Iways match the hair up first it's the easiest to do. The eyes, chin and mouth are easy too, but some of the noses and ears look very similar, so it can be difficult to choose the right one. To match the noses, concentrate more on the cheeks than the nose itself, as it's easier to spot differences in the pixel patterns.


The more athletic criminals are some of the most difficult to deal with, and care must be taken not to allow them to land on you, which causes the most damage. The best tactic is to shoot them while they are in the air, as this is when they don't shoot at you - if you have three-way firepower, this is made a lot easier. The same tactic works for the hurdling chainsaw-wielders on Level Two.

Your move, creep! To take out the perp, aim your crosshair just slightly away from him in the direction he is moving. The ideal spot to aim for is just over the hostage's head.



Thenew Zealand

hoice's choice conversion of the cute Taito coin-op has got kiwis worldwide in a flap. It's more addictive than a box of Trill but also more difficult to finish. Fortunately help is at hand (or should that be wing-tip?) with the team's top tips.


## THE NEW ZEALAND STORY

Psychotic Walrus loves fresh kiwi - so much so he's kidnapped Tiki's relatives and hidden them in 20 multi-directional scrolling locations, or Rounds, spread even across five levels. Only Tiki can save the 'kin day - not to mention his 'kin kin!


## BAD BOYS

The Walrus' pals are unkind and keen to see a brave kiwi falter. Not all are deadly to the touch, but all should be shot or avoided.

## SHELLS

Walk left and right until they reach the end of a platform, whereupon they turn. Shells shoot one shot in their current direction.


## CRABS

Walk on platforms and shoot like the Shells, but drop off platforms when Tiki is below.
BOOMERANG MEN
Walk on platforms and follow Tiki's movements. These boys throw boomerangs and don't move until it returns and is caught.

## CANNON FROGS

Always jump and only turn at walls. They also explode shots when Tiki is above.


## LITTLE PIGS

Try to get the same height as Tiki so they can shoot at him. When Tiki moves too far away. they follow.


## FANCY PIGS

Move towards Tiki, shoot at him then wait a bit before shooting again.

## SPEAR GUYS

Move until they are below Tiki, then they stop, throw spears, wait to catch them and throw again.


## BALLOONS

Get around the Rounds in style. Blast or bounce the bad boys off their transport to go for a ride. Some balloons fall to the floor unless the joystick is pushed up.



NORMAL
BALLOON
Tiki can jump on this and use it to float in the direction he wants. It explodes when shot.

## METAL BALLOON

Can only be destroyed by a Laser Bolt.



## PORCUPINES

Try to maintain a vertical separation from Tiki until they are directly above him, then they descend.
RAT 20s
Try to touch Tiki. Watch out.


## PENGUINS

Move towards Tiki until they are within range, then they throw a rock, wait and repeat.


PUMPKIN BATS
Maintain vertical separation until they are above Tiki then drop bombs.


## REVIVING

BALLOON
Also has all the features of the Normal Balloon, but it takes several shots to burst it.


## DUCK BALLOON

Has all the features of the Normal Balloon but can also squeeze into tight spots that the Normal Balloon cannot.


TORTOISES
Move towards Tiki and shoot at him when they are at the same height.

## ELVES AND

 CLOWNSMove about then stop and shoot.



## SHORT CUTS

There are a few dotted around. This one on 2-2 saves you going round the houses. Jump from here, into the water, then swim along the bottom of the 'pool' (avoiding the Anemone). Replenish oxygen in the gap along the way, then swim aorund the end of the Round.

## THORN BALLOON

Kills Tiki or the enemy when they touch its thorns.


UFO BALLOON
Fires laser bolts in the direction it moves.

## SPARKLES

Multiply and are deadly to the touch.


## BATS

Travel in pairs. Fly in the same direction as Tiki when they first appear and drop stalactites when over his head.


## SHEEP

Move left or right on platforms and shoot out of their cannons. SEA-ANEMONES
Catch and swallow Tiki if he swims too near.



## PLAYERS GUIDE

## 'ARMOUR' LOVER NOT A FIGHTER

Tiki's armoury isn't very extensive and only one weapon can be used at a time, but in a mission this dangerous, he needs all the help he can get Every creature shot leaves be hind a piece of fruit, which is collected for bonus points. However, every eighth adversary shot leaves behind a Special Item.
BOW AND ARROW
This standard weapon shoots to the left or right and is effective against most adversaries.


## BOMBS

Tiki can throw the bombs to the left or right. They explode when they hit anything.


## LASER

Shoots left or right with the added ability to pass through walls.


## MAGIC WAND

Throws fireballs (only two allowed) which bounce around until they hit something.



## 'WATER' CARRY ON!

Be precise with Tiki's underwater movements, as oxygen is in short supply. His oxygen level is topped up by poking his head out of the water. Holding down the fire button while up to your waist in water spits it out. Not only does this knock out any enemy in range but quickly replenishes your supply.


## ROUND I-2

Stand here, face left and fire five times. Now fall to the floor before jumping into the warp (you don't want to jump onto the platform above) which takes you below this Round.


## OTHER ITEMS

Also left behind by every eighth enemy shot.
CLOCK
Pick it up to stop the enemy moving for a time.


## BOOK OF DEATH

Destoys all creatures on screen.

T+ +atar: A+: and: . :

 ,
 EXTEND

Pick up all six letters for an extra life.


## POTION

Makes Tiki invincible for a while so he kills the enemy just by touching them.


## JOYSTICK

Allows Tiki to control the balloons better with joystick directions.
SPEED UP
Makes Tiki run faster.



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## RICK DANGEROUS

## Firebird

After conquering the South American jungle last month, Core Design takes you through the perils of Egypt... 'CHEAT' MODE Enter POOKY on the high-score table. Any levels completed can now be skipped by means of a novel level select feature.


Try to walk under the hanging block and it drops on you. Wait to the left of it for a while and it drops automatically, so you can leap over it safely. But be quick - dawdle and you get crushed against the ceiling.


$\rightarrow$ Tlalassic Indiana Jones stuff here. The platform above you starts to descend threatening to crush you as you crawl under. Getting across is easy in theory just keep crawling as fast as you can, but make one slip and stop for even a split-second and it's lights out


ook closely at the blocks on the stairway and you might spot the two which have small dents at waist height. Poking your stick into each of these triggers a spear one horizontal, one vertical. These can be used to kill the two arab guards. Lure the first one down onto the stairway, and get ready to trigger the first spear. As soon as he's on the stair above you, poke your stick into the block to fire the horizontal spear into him. Now make your way up to the second dented block, and the second arab guard will be directly above you. Poke the dent to trigger the vertical spear and see him off.


$\checkmark$ DON'T go up the left-hand ladder to investigate the 'Ark Of The Covenant' at the top of the screen - if you do, 'The Power Of The Ark' zaps you in a scene reminiscent of the end sequence of Raiders Of The Lost Ark (well, almost). Take the right ladder instead and exit as soon as possible.


4eap up onto the left-hand ladder and climb up about half way. Wait for all three arab guards to follow you up the right-hand ladder, and once they're all parallel with you, make your way up to the top of the screen, touch the blue gem, and STAND STILL. Strange cosmic rays are emitted which kill the arab guards, leaving you free to drop down to the bottom of the screen and exit to the right.

$\underset{\text { fire your }}{ }$ump down onto this block, stand as far to the right of it as possible and fire your gun. This triggers a mechanism which sends the block moving across the screen. Stand on the far right of the block again, to ensure it doesn't move away from under you when it moves a second time. When it stops again, quickly jump off and exit to the right before the block slides back to its starting position.


ON'T jump off the end of this platform - a spear trap awaits. Crouch down on this block and wait. After a while it drops to the floor, allowing you to exit to the left.


## TIPS

.To ensure you don't get impaled on a flying spear, time your jumps to the right so that the sound of your leap is perfectly in synchronisation with the sound of the spear firing. When you reach the second platform, fire your gun to retract the spike trap and exit.



It's possible to do away with this guard AND avoid the spear trap to the left with one technique. Climb the ladder to the very top, and stand on the far left of the platform. Then, while the guard is walking away, walk - don't jump - off the platform and duck as soon as you land. Landing triggers the spear launcher, killing the guard.

D
ON'T fall straight down - jump the gap and fall from the left.



$\square 1$Where are two factors determining when you should jump here - the firing of the spears and the position of the arab guard. If you only judge one factor correctly, you could find yourself avoiding the spear but landing on the arab or vice versa. Jump as the spear fires and as the arab is walking away from you, and you should miss the spear and land in good position to shoot the guard. Walk off to the left, pushing right as you fall to avoid the spikes.


Whe wall tiles marked with a horiholds, enabling you to climb certain sections of wall. These tiles are invaluable on this screen. Jump onto the tiles, and position yourself on the wall exactly as shown. Then jump into the floor recess to the left - but make sure you land on the left-hand side - the right half conceals a spike trap.



look like... well, Gary Whitta really.

 trider is the ultimate warrior, and as such it's his job to free a futuristic world (some areas of which were based on modern Russian architecture) from an evil dictatorship by battling throught five scrolling levels.

Strider fights the old fashioned way - he's not keen on clumsy random laser guns, and prefers to do battle with a samurai sword, which he draws and swings with frightening speed.


A
fter flying in on a futuristic hangglider, Strider limbers up and the mission begins. The first level is pretty easy, and provides useful practice to master the techniques you need in the tortuous later stages.

Etrider's main source of grief is hordes of foot soldiers. A quick sword swipe sees them off, but on later levels they are accompanied by hardy flying gymnasts!


## TIERTEX

Clectronics Engineer Donald Campbell and Doctor COf Physics John Prince decided to forget about quarks and neutrinos and instead set up Tiertex together. The two-strong company's first projects were for the now-defunct Artic Software, but soon after that they got their big break when they signed to US Gold. The team has since produced a string of coin-op conversions for the company, including Rolling Thunder, Street Fighter, Last Duel and Thunderblade and more recently their first film adaptation, Indiana Jones And The Last Crusade.
Strider was arguably Tiertex's toughest conversion project to date, so how did the Mancunian marvels go about the job? Dr John was the project's head honcho, handling all the programming himself.




## REVEN

he second level's setting is a snow-capped mountain range. It's difficult enough here just to keep your footing on the icey mountainsides, let along defeat the enemy forces complete with snarling panthers.


ungle japes from Strider in Leve Three. The enemies are nastier and attack in greater numbers, so he uses the vines and tree branches to his advantage.


Etrider takes to the air in Level Four when he battles aboard a huge floating spaceship. Rotating gun turrets provide problems, and there's an array of suitably mechanical mashing machinery to get past.

produced by music man Mark Tait using an Akai X7000 sampling synthesizer and a Steinberg 24 track recording package running on an ST and interfaced by Midi.
The entire project took just over six months to complete. But what of the months to come? "We're not sure yet," says Donald. "We should soon be working on another licence for US Gold." Any particular coin-ops that the lads would like to have a crack at? "We'd like to try doing a racing game," Donald admits. "P'm a big fan of Final Lap and especially Sega's Super Monaco Grand Prix. Were we to convert that, we could make good use of some of the technology we developed for the Thunderblade conversions.

©Many of CapCom's coınops sport huge sprites, and Strider is no exception. The graphics have been shrunk down in the transition from coin-op to Com modore, but their definition is of sufficient high quality to make them easily recognisable to those familiar with the original. The quality of animation has also been trimmed, unfortunately, so Strider now shuffles instead of struts. This aside, it's good to see that both gameplay and sound have survived the conversion intact. Strider plays at a slower pace, but since all the level maps and alien attack patterns have been converted faithfully, all the tricks and tactics that worked in the coin-op work just as well here. Sound, too, is authentically reproduced - it's not the tunes themselves that impress as such, more the coin-op quality 'instruments' used. Coupled with some speech and cameo pictures which appear between levels, an authentic coin-op feel is created. Tiertex has done a commendable job of recreating all the thrills of the arcade original.

PRICE
£19.99
RELEASE DATE
Out Now

## GRAPHICS 78\%

 SOUND 79\%PLAYABILITY 80\%

VALUE
72\%

## OVERALL <br> 80\%



There's very little to differentiáte this from the Amigá incarnation even the sound is almost identical. As you might expect, it's a two-disk job, but very little swapping is required so gameplay isn't affected too much.
PRICE
£19.99
RELEASE DATE Out Now
GRAPHICS 78\%
SOUND 89\%
PLAYABILITY 80\%
VALUE
78\%

## OVERALL 80\%

Tiertex is currently beavering away on CGA and EGA versions, and both are scheduled to appear in October at
price of $£ 19.99$.



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## TYPHOON THOMPSON

## Domark

$\square A$good way to pick up Sprites and avoid enemy fire is to fly underwater. This is done by tilting forward as much as possible and then igniting the turbo booster. While underwater you can still collect Sprites and are safe from most types of Flyer - but there are certain kinds which will follow you under. To return to the surface, fire your weapon.


$\checkmark$
The easiest Flyer to beat is the Bumper. These simply bump into and spoil your aim, but they also follow you underwater and knock you to the surface.


$\nabla T$
he Forcer is protected by a repel-
lant forcefield which pushes you away from it. It isn't particularly dangerous, but it's difficult to hit as you have to shoot from long range.

$\Delta 0$nce you have destroyed all the Flyers and collected all the Sprites, a circle of red lights flashes around the Treasury Dome in the centre of the village. Fly over any one of these lights to exchange your captured Sprites for the artefact you are after.

$\checkmark$ T
The Zapper is the nastiest Flyer of all - it can fly both above and below the water. It pauses when it gets close to you and then suddenly rushes towards you. It destroys both you and your jetsled on contact.




$S$uckers pull you towards them, destroying your jetsled if you get too close.

$\triangle$ common problem is that when Sprite is released from its Flyer by shooting it, there's precious little time to capture it before it returns to its pod. To overcome this, lure the Flyer as far away as possible from the village and shoot it there. You've then got plenty of time to capture the Sprite before it can get back to the village.


Spitters fire at you constantly. They are most accurate if you stay still, so keep on the move to confuse them.


- ubblers act like Spitters, so the same tactics apply, ie: keep changing direction to avoid their bullets, but watch out - when they die they release a barrage of bubbles in a last-ditch attempt to kill you.



## SILKWORM

## Virgin



ST only. When the high score table appears during the attract mode, press $C$ to reveal FAT MOUSE'S CHEESE MENU, which can be scrolled through to reveal the name of just about every kind of cheese imaginable - except Gorgonzola. Exit the menu, start a new game, and during play type in GORGONZOLA to activate the 'cheese mode' and trigger plenty of cheesey effects, such as turning the bouncing bombs into red edams and replacing many of the game messages with 'edam'. But there's more to this cheat mode than cheesey hilarity. Hit C while playing to add extra credits!

## NAVY MOVES

## Dinamic

The entry code to the second level, as supplied by Steve Williams of County Durham: 786169.

## SAVAGE

Firebird
The codes to the second and third sections:
SECTION 2: Sabatta SECTION 3: Porsche







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## REVIEN

# Castle Warrior 

Delphine's latest sees Brian Nesbitt wielding his weapon with precision and grace in a mission to save a dying king and his land.

evel One is a stroll down the subterranean passage that leads to Zandor's castle. This Corridor Of Death is filled with deadly bats and grabbing hands - not to mention a large golden snake and a not-so-jolly green giant. Both of these beffy beggars spit fireballs, and it takes a timely sweep of your sword to send the destructive orbs flying back
 Land Of Peace. Its king, Edelred, is about to die, poisoned by the evil wizard Zandor who wants to rule supreme. Enter Edred The Brave, son of Edelred and a warrior to be reckoned with. Only he can save both King and Kingdom from certain oppression by destroying Zandor - but not before acquiring an antidote.

You control Edred in his journey through four levels of differing gameplay styles before a confrontation with Zandor (seen here on the title screen). The journey back home's no picnic

he Subterranean River isn't the sorta water you want to go swimming in. Not only are there Rocks Of Death to negotiate, but killer goldfish to fend off and, falling stalactites to deflect - swifty use of your shield is the order of the day here.



#### Abstract

The mighty dragon Olisos stands The mighty dragon Olisos stands between you and the third level. Your best bet is to unleash a barrage of spears in its general direction while dodging the beast's long arms and avoiding the fireballs it spits.


> A last, a fight to the death with Zandor. The antidote is within reach, although he's none to keen to give it up and so throws evil spells in your direction to prevent your beating him with your sword.


1

The end is in sight. Level Four is much the same as Level Two, and sees you doing battle with Zandor's guard: the monstrous jibba.

(1)Castle Warrior is slick and polished, with music to stir the soul and graphics to astound and amaze. It looks like Dephine was attempting to produce a more interactive and subsequently playable incarnation of the laser disc coin-op Dragon's Lair. Full marks for trying but the end result is, unfortunately, lacking. There are only six sections, which wouldn't be such a problem if each had more depth and playability - but they haven't. Section One doesn't last very long, which actually isn't so bad as the action is slow paced and not varied enough to enthrall. The spear-throwing antics of Section Two are even more limited and uninteresting, and while the dodging and deflecting involved in Level Three is somehow reminiscent of the first section, your reflexes are put to the test so the going is more enjoyable. And so it goes on (although not for long). Most of us yearn for a more interactive form of 'movie', but maybe this sort of game should be left to the memory abundant laser disc systems. Or maybe we should make software more like games and less like movies.

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SOUND
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PLAYABILITY
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value
58\%

## OVERALL <br> 61\%

?Anyone familiar with Delphine's debut Bio Challenge will know that the team has the talent to minimise the differences between different versions. Castle Warrior is no exception - well, apart from the fact that it comes on two disks and costs £19.99. It should be out now.

complesThe news for MSDOSers is... well, this: Castle Warrior won't be appearing on IBM PCs and its many many compatibles. Sorry 'bout that, but the PC isn't such a big noise on the other side of the Channel.

THE ADVENTURE BEGINS WHEN RICK DANGEROUS, SUPER HERO AND PART TIME STAMP COLLECTOR IS IN DIRE PERIL, ARMED ONLY WITH HIS TRUSTY SIX SHOOTER, A STICK AND SOME DYNAMITE, RICK CRASH LANDS SOMEWHERE IN SOUTH AMERICA. HOW LONG HE GAN SURVIVE IS UP TO YOU.
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what's your vector Victor? Atari's sitdown driving simulator houses enough hardware to run an average house - so what chance do the incredibly realistic 3D graphics have of making it to your bedroom? Gary Penn takes to the road to investigate...


Converting Atari's superlative driving simulator is no mean feast, what with the coin-op boasting multiple maths processors and 256 colours on screen. Obviously a dab hand with vector graphics is needed to accurately capture the original's look and feel on 16 -bit. So who better than the man responsible for the near-perfect conversion of Atari's vector-based shoot 'em up Star Wars, Juergen Friedrich.
German-born Juergen started his computing career in 1982 - partly as a student of computer science and partly as a leisure activity. His first computer ever was a Tandy TRS 80, quickly followed by an Apple llse, on which Juergen wrote his first commercial programs a RAM disk utility, a graphics package, and finally a Computer Aided Design package. It was while Juergen was developing his CAD utility that he first came into contact with vector graphics, now his trademark.
"I developed an experimental routine to move vector graphics around the screen in three dimensions," Juergen explains. "When this routine was up and running, I realised it could also be used as a game. I was a Star Wars coin-op addict at the time, so to put my routine to the test and I converted that from memory."
With a virtually complete 16 -bit conversion of Star Wars in his mitt, Juergen payed a visit to Domark, who had just acquired the Star Wars licence. The rest is history.
Since then, much of Juergen's time has been spent converting Star Wars to other machines - he's recently returned from the states where he put the finishing touches to the Macintosh version. "While I was in San Francisco I visited the local arcade and got hooked on Hard Drivin'. It appealed to me because it's more of a simulator than a racing game. There's a tremendous amount of skill involved just in keeping your car on the road, let alone complete the course in time."
Suitably inspired, Juergen jumped at the chance to convert Hard Drivin' when Domark offered it to him, but was initially wary of the prospect of making the jump from wireframe to filled vectors. "The maths is a lot more complicated where filled vectors are concerned. I've been able to use a couple of the vector routines and the maths from Star Wars, but
the rest l've had to develop new techniques to deal with the filled vectors."
Juergen started banging away on his ST in March, first developing the core routines or 'skeleton' of the game in C, and then filling in the gaps with Assembly Language, which, in Juergen's opinion, gets the speediest results.

At first the conversion was based purely on Juergen's own experience of the coin-op, but then more recently Atari provided a wealth of reference material. "Atari has been a great help," admits Juergen. "They sent me all the original graphics, exactly as they appear in the coin-op but in Neochrome format, plus a 250 K database containing the layouts of all the maps and positions of the objects." It's this data which has contributed to the accuracy of Hard Drivin' on I6-bit.

Understandably some compromises have been made... Since the coin-op boasts 265 on-screen colours Juergen had to 'trim' the graphics a bit by losing 240 colours from the palette. A few elements of the scenery have also been removed to make the game run as fast and as smoothly as possible. Gone, for example, are the tufts of grass, which you don't tend to notice anyway. And gone is the huge train - but that's about all (the cow that moos when you ram it is still in!). Most importantly, Juergen's managed to successfully recreate the general look and 'feel' of the coin-op.

The ST version is almost complete, with a few objects to add along with a few presentation pieces which Juergen plans to have included by the time you read this. "The action replay set-piece that occurs when you have an accident will be easy to incorporate. The thing with vectors is that they hardly take up any memory - most of the graphics are calculated, so there's room for plenty of presentation."

But what of the Amiga and PC versions! Juergen anticipates that the vector side of Amiga Drivin' will be a tad slower than the ST. "The Amiga's CPU is slightly slower than the ST, and I can only use the blitter to create smoother movement on the bitmap graphic background scenery. It's not suited to this kind of application." The PC versions on the other hand are set to support CGA, EGA and VGA graphics modes.


Before you get to race you get to choose whether you want to drive with automatic or manual gear-changes. The original coin-op screen is on the left.


Most, if not all, racing games have been of the third person perspective variety, ie: the viewpoint is from behind the vehicle you control. Also, the effect of speed is traditionally generated by a 'sprite engine' - a means of manipulating (eg: enlarging and reducing) a detailed shape with speed, the only drawback being that when the object in question is staring you in the face, it resembles a Lego construction. Sega's OutRun, Afterburner and Galaxy Force are perhaps the best examples.

Hard Drivin' however. was the first game of its type to utilise filled vector. graphics in a first person perspective viewpoint, ie: from inside the vehicle you control. A system more commonly seen in home computer games in fact.

It's also one of the few games with. an authentic feel - anyone who's ever driven a car will appreciate the way this baby handles, even if the gears and the steering wheel are a little on the stiff side. The fuxury cabinet features a contoured seat, clutch, brake, accelerator, a four-speed gear-stick and even an ignition key, which is turned to 'start' the car!
Even the gameplay's very individual. Instead of roaring around Grand Prix circuits you get to drive a highpowered sports car around a bizarre obstacle course in the countryside, featuring a drawbridge to jump, a 360 degree vertical loop to zoom around and plenty of cars on both sides of the road. In some ways Geoff Crammond's Stunt Car Racer is a cut down version with the 'stunts' split into courses instead of spread over a terrain.


SOUND
Cound is another of the coin-op's notable aspects, Dits array of effects less of an 'afterthought' than other racing games. None of your sampled flymo buzzing to represent the road of an engine - oh no. The coin-op features a realistic engine hum, screeching tyres, explosions and mooing (!), which further enhance the feeling of 'being there'. Conversionwise, sound is being handled out of house, but it looks like most of the sounds will be digitised from the coin-op.
GRAPHICS
It's hardly surprising that the arcade machine's so smooth and realistic... with six processors at its heart, including two 68000 -based chips, one Texas Instruments graphics chip, which is solely responsible for manipulating the polygons, and a 'DSP' chip capable of performing a 16 -bit multiplication in a single second (which makes it around 100 times faster than the ST or Amiga). All this hardware means the coin-op can display around 400 polygons every 30th of a second.

Hard Drivin' scenery is actually built from 'building blocks'. Over 150 objects are used in total, some of which comprise over 300 vectors (points). More 130 are included in the conversion, and Juergen reckons anything between 20 and 30 are displayed on screen at any time. His program can handle up to 50 , but then the processing begins to slow down a little.

Apart from the filled vectors, there are a few bitmap screens involved - like the dashboard, and the mountains which scroll horizontally in the background. Atari supplied these in Neochrome format, although this wasn't quite as convenient as expected the resolution of the coin-op is four times that of the ST.

As far as the filled vector objects are concerned, Juergen used Atari's database for accuracy. However, with some of the objects featuring over 300 vectors and 100 polygons it became obvious that something had to be done if the car was to move at more than a few miles an hour. So, Juergen removed any extraneous details (the occasional headlight, every other road marking and so on), which meant that the graphics actually used in the conversion feature roughly $50 \%$ less vectors to manipulate. Also, to speed things up further, Juergen's using two versions of the same object - version one features less detail and is used when an object is far away, which means there are less points to manipulate. As the object draws nearer, a second more detailed version is used.

I sing Atari's database of object definitions in conjunction with an 'editor' program modified from the actual game routines, Juergen could reconstruct with relative ease the sections of road and other scenery which are bolted together to form the environment - the ears and the like are objects in their own right. Each object is drawn in a 'join-the-dots and colour it in with crayons after' method, ie: built from a number of points, or vectors, from which the individual shapes, or polygons, are defined.

uergen uses his own 16-colour palette to give the objects a greater air of solidity. Now all that's left to do is remove any extraneous shapes so the game can run at a worthwhile speed.
olour is applied to the polygons tion. Unfortunately, these are based on Atari's original colours, which don't look so good as Juergen has only a fifteenth of the palette to play with.

7 The dots are joined to create a the object in question. The highlighted (red) shape is the polygon currently being edited.


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# Phil South, our resident Man Of Steel, looks at the problem of solidity and tells you how to make your flaccid twodimensional sketches look like rock hard threedimensional objet d'art. 



- AS-RELIEF A nice cheap trick which you can only do on computers is a variation on the old photography trick 'bas-relief' is where a negative and positive are sandwiched together in an enlarger, but slightly offset to give the effect of being carved in stone. You can recreate this effect by using three tones of the same colour and slightly offsetting them. Here you can see the text has been plonked down in the darkets tone, then the lightest tone offset to the top left. Finally, the background colour is used to blank out the mess in the middle.


## PIXEL PATTER

Bullfrog is well known for its foray into three dimensional space, with such shaded games as Fusion and Populous. So I asked Glenn Corpes, programmer and graphics artist, what he could tell me about getting graphics to look solid.
PS Will you talk to us about graphics?
GC Well, I have to say first that I'm not doing graphics anymore
Er, Why?
Because I don't think I'm good enough. And besides I like progamming better.

So who's doing your graphics from now on then? A new bloke I just finished interviewing. He's brilliant.

Goodness, if he's better than you, hadn't we all better buy dark glasses for the next game?

How do you make flat objects look nice and solid - or at least give the illusion of some kind of depth? Mostly it's a matter of shading, as it is with yer actual paper and pencil art. But the problem with computer art is that the pixel size you work with is quite large, and so subtle tricks need to be employed when using shading effects.
The two main criteria are: choose your palette wisely, and don't be afraid to boldly sketch before you finish a drawing. There is a tendency to view any marks you make on the screen as final. This is NEVER the case, as you know you can edit endlessly on screen, so any construction lines you make can be fully removed before anyone sees your work. So be BOLD! Try out ideas first, try out these simple tricks and 'flesh out' your 2D art for real professional
 results!


$>C_{t}^{h}$hrome - a demo recently put together by Glenn Corpes displaying more of his stunning bas-relief graphics. The graphics may yet find their way into either Project F or another of Bullfrog's pipeline projects.

## Oh blush, you're too kind.

So how do you go about getting solid graphics, like the stuff you did for Fusion?
Bas-relief is very simple. You light everything from the top left, so every plane on the top or left of the object is light. Every plane facing down or right is darker. It's purely a mathematical approach rather than, say, artistic. All the graphics in Fusion on the Amiga were in 64 colours, a point which nobody noticed, so there really WERE more colours than met the eye. We won't bother again, because we put a lot of



$4 P^{2}$ALETTE The only get nice shading on 2 you have the right palette at your palette used to create my Darks been placed next to it so you can used to create the shading. Onl), were used, and the shading war magnify mode, putting down the darkest-टifours first and then adding lighter and lighter shades until it looked right. The effect is more colours than there are in the palette, but this is the eye and brain adding tones that it expects to see. To select your palette, mix your basic colours then add some darker and some lighter tones.

cONSTRUCTION The stages of construction of any piece of computer artwork, be it a sprite or a fixed screen, should always begin with a line drawing in one of the basic colours. Don't be scared to make mistakes. The whole point of this is to get the basic shapes and proportions right before you colour it up and start adding shading and highlights. The Frogstar Warrior began as a line drawing and was gradually filled, detailed and finally polished with highlighting and anti-aliasing to smooth out the jaggies.



## GET ANIMATED!

solid object must act like the real thing if it's to be believable. The simplest example of this is a ball bouncing. Although a real ball doesn't deform this much in a real bounce, you have to exaggerate the shapes of animated objects to make up for the lack of frames (there are no 'frames' in real life). There is a stight anticipation of the impact, where the ball stretches towards the spot where it will bounce. On impact it squaskes almost flat, and then springs into a longer shape again. As it rises to the apex again it resumes its norm? shape. Obviously a harder object like a ping-pong, ball would deform less and move faster.

work into making it as fast as possible - and what for? So anyway, as we do work for Electronic Arts, we've had a copy of DPaint III for over a year now, working in 64 colour mode

## was easy.

What about the ST version?
On the ST it was a little trickier. I copped out a bit by turning the darkest colours on the background graphics to black. Most of the palettes on the Amiga were five greys, plus five of one colour and five of another, PLUS five oranges for the explosions. On the ST I had to trim them to four greys. The spread function in DPaint wasn't used to make the palette, but it ended up as the same colours. We actually used our own editor program to generate the colours, but we could have got the same effect using DPaint's 'spread'.

How did you do the smooth pastel shades along the floor in Fusion?
It's a programming trick using the blitter, where you can get graphics information from three different sources and mix them. On the parallax areas we used it to get the rounded effects, but on flat areas of the map we combined two colours and a texture, giving that unearthly blend. You can't get it any other way, and we won't do it again because it's so costly in processor time. Lovely effect though. Any anecdotes to tell about your products? I probably shouldn't tell you this but the colours of Populous were arrived at by looking at Dungeon Master and working out how they got more colours from only 16 in the palette! but dor.'t tell anyone.

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 In Downtown LA, the macho ethic rules, Mafia members, reckless drivers and general businessmen gather together for the Violence Fight - to decide which group is the best. With tongue planted firmly in cheek, you choose your hard guy and grunt into a sweaty bear-pit where an equally hard guy awaits you.
The most striking aspect of the game is the size of the sprites - they're huge and adequately animated against basic crowd backdrops. They can move 'in' and 'out' of the screen as well as left and right, and each fight is set against a strict time limit. When you punch your enemy, comic book effects appear on screen: you're rewarded with obscure words like 'goon' if you do well, or 'dogon' if you're badty wounded.

Violence Fight is more in the style of a boxing simulation than a beat 'em up, and it's got a great sense of its own silliness. Some of the moves are very comicat, and there's more a sense of fun than agression: if you're looking for an alternative to the more serious kick ' $n$ ' punch games on offer, this fits the bill.

$S_{\text {in Violence Fight are }}^{\text {ome }}$ almost comic: one of the moves open to you is a rapid punch which knocks seven shades of stuffing out of your opponent. It's too quick for the eye to follow and very useful in tight situations.

Each player has Ethree fire buttons for a variety of kicks, jumps or punches. In addition, each has a unique punch or kick performed by holding down two of the buttons at once.


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moke billows, lights flash. Figures move stealthly through the shadowy futuristic landscape. Lights glow eerily from chest and back packs. Each holds a glowing laser gun. I withdraw into the shadows, waiting patiently. They are easy prey. A figure emerges from the gloom. I take aim and fire. A red beam cuts through the dark. And another. He's hit twice. A look of annoyance crosses his face as he rushes off to the re-energiser. Ha! That will teach him to tangle with me.


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## YכAASPACE

# MicroProse has rarely been out of the news lately, what with the purchase of Telecomsoft and the release of Greenpeace. So it's about time that UK boss Stewart Bell faced the Backspace firing squad... 

Regarding the recent release of the Greenpeace: Rainbow Warrior game: do you not think this smacks of hypocrisy given the fact that MicroProse seems to actively condone war and destruction on a grand scale with its string of military simulations, including one which centres around the exploits of a NUCLEAR submarine.
I see no reason to get worked up about the fact that we are releasing a game in conjuction with Greenpeace. MicroProse simulations are known for their quality and depth of gameplay, the strategy needed in order to succeed, and for the attention to detail. People do not, as you state, think of MicroProse simulations as 'destruction on a grand scale'
Because of the strategy element involved, the best scenarios to use by default are ones that involve armed conflict based around real life circumstances. None of our simulations could ever be accused of gratuitous violence as is witnessed in shoot 'em ups and space blast 'em ups from other software houses. Indeed, had another software house published the Greenpeace game, the computer press would not have bothered the publishers of the game with banal questions, such as, 'Don't you think it hypocritical that **** Software Ltd should be publishing a Greenpeace game bearing in mind it has just brought out "Alien Mindbender's Killing Spree and Warped Avenger's of Death"?'
The fact is, we at MicroProse would rather see wars fought on computer than in real life.


We care about the environment as much as anybody else. Greenpeace have vetted us, along with quite a few other software houses, most carefully before they agreed to let us publish the game and their decision to work in conjunction with us at MicroProse should be sufficient evident of their faith in us.

Both MicroProse and Greenpeace are working to one common aim with Rainbow Warrior, The Greenpeace Computer Game, and that is to bring the Greenpeace message to a far wider audience. If we succeed in making more people aware of what Greenpeace are trying to achieve for all our sakes, then it will have all been worthwhile. A significant number of MicroProse employees, including myself, are

## PC SHOW DISCOUNT!

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This coupon entitles you to 50 p off the entrance price to the 1989 PC Show at Earls Court, London - but it's only valid for Saturday 30th September and Sunday Ist October.

## PLEASE NOTE

- The PC Show Organisers reserve the right to refuse admission.
- Photocopies will NOT be accepted.
- Only one voucher can be used per reader (so don't think you can use seven of 'em to get in for free!).

Greenpeace members. Are you?
What's the reasoning behind the MicroStyle and MicroStatus labels? Can games really be classified by the age range that they will appeal to? Surely you don't need to be an adult to enjoy RVF, or a child to enjoy Dark Side? A game is a game is a game... isn't it? Surely anyone who enjoys computer games is really just a kid at heart?

Virtually every successful brand or product is successful because it is produced with a target consumer in mind. The only way to satisfy customers is by knowing what they need. The average software consumer in this country is getting older and more sophisticated. He is also disillusioned with most contemporary software. We target our products to make them better value for money. The more software houses do this, the more satisfied customers will be.

The fact that we target MicroStyle at 17 year-olds does not preclude a 10 year-old or a 40 year-old from enjoying the product. Indeed, the product is developed with the anticipation of a wide age span. But we treat the consumer seriously - we have to, without them where would we and, for that matter, you be without the support of the consumer?
The 'game is a game is a game' attitude is symptomatic of an industry which gives its consumers banal, low value product in volume. We at MicroProse steer well clear of this welltrodden path and we're proud of our excellent reputation for producing high-class software.

Now that you have got Firebird and Rainbird under your belt, are we likely to see a change in the style of Firebird and Rainbird products - will MicroProse continue to use these labels, and if so, how will they fit into the child/teenager/adult scenario?

Firebird will be targetted slightly younger than MicroStyle with 'themed' product. Rainbird will be complementary to MicroStatus with strategy product. Both will be formally relaunched towards the year end.

Do you foresee - or at least hope for Christmas chart success this year? If so, how do you plan to combat the Ocean and Activision warships that are armed to the teeth with licences galore? Can you fight fire with fire?
MicroProse is not interested in short-term chart positions. We are not bringing out a Christmas product as such. What we do have is a range of high-value product that will be promoted around the Christmas period. What is the point of being the Christmas No. I bestseller? Will this year's No. I be a fantastic game or will it simply be an average to good game with an expensive licence and hyped and advertised beyond all recognition? And, correspondingly, how soon afrer the Christmas rush will it appear on a compilation or at a budget price? We will continue to develop and sell product as we always have done. The result the best software money can buy.


## GUESS WHO'S COMING TO SAVE THE WORLD AGAIN?




[^0]:    The cars you're up against are the Porsche 911, Lambourghini Countach, Ferrari Testarossa and Ferrari F40. Spectrum HoloByte seems to have an overoptimistic view of the Corvette's performance, as acceleration graphs here show the stock modet can hotd tts own agalnst the tegendary F40, arguably the world's fastest car!
    ou're nicked son! Knock down a
    pedestrian, hit another car or break the speed timit and the cops'tl be after you in no time. Think fast and you might be able to come up with an excuse that will save your licence.

