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LOADING GUARANTEED!

The action starts on page 33



▲ Purple Saturn Day demo (ST and Amiga)



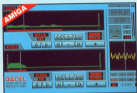
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Death to mainframes - how networks are chiding together to outgun the big boys.



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Not one Purple Saturn Day, but two! Both ST and Amiga demos of this Format Gold game. Also Amiga fractal language generator and an ST database constructor set... aren't we good to you!



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While heat for a cold new year! Purple Saturn Day and Seal lead the way, fully pursued by Cosmic Probe and Roger Rabbit, and news of next month's mainlander.



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85

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Steve Bak, ace programmer of Flight Night, StarRay and Goldminer offers his thoughts on STs, Amigas, software houses and the universe.

1989: 16-BIT YEAR

Each of the last three or four years has been heralded as 'The Year of 16-Bit Wonder'. In truth, there are still 10 times as many 8-bit machines on the lips of fervent games players as 16-biters, so why should anyone be stupid enough to make the same claim again?

Well the rules have been cast and they all point to the fact that we are close to reaching a point of no return in 16-bit sales. Not only are ST and Amiga games increasingly released before their 8-bit brethren, but there are plenty designed exclusively for 16-bit machines, as the superior graphics and sound are essential.

Look at this month's master games if you want further proof. Purple Saturn Day and Beal are just too good graphically and conceptually to be converted down to 8 bits. Other versions may follow, but they will only be poor imitations of the originals. As software houses have seen their 16-bit sales explode, they are keen to give programmers full rein to produce new, fast, exciting games for the best machines. It's not just games programs which are taking off on ST and

Amiga. The number of graphics and music utilities, word processors, databases and typewriter simulators (7) which prefer to be reviewed increases by the month. And best of all, the volume of UK-originated products is on the up and up. It seems our beloved machines are at last being taken seriously.

Now the 16-bit snowball has gathered sufficient momentum, there will be no stopping it. Don't stand in the way unless you want to end up with very cold feet. For details.



Starting this month you could save up to £27 on your mail order shopping through the pages of Format. At the back of this issue you'll find four discount vouchers good with any advertiser displaying the Format Voucher logo - ideal for the January sales! Turn to page 253.

TECHNOPHILE



ST SPEECH SYNTHESIZER

44

Don't let Amiga users get one over on you - build our way to use speech synth.



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How to make your screen disappear, turn games or come out in spots. A programmer's insight to graphics on ST and Amiga.



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87

Another trackload of tips and tricks for trendy ST users.



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Another bank of tests and tips for happy Amiga users.

COMPETITION

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WIN A HANDY SCANNER!

Win one of two fabulous Canon Handy Scanner systems in our easy to enter (and to win) comp.



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YOU'VE NEVER HAD IT SO GOOD



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24 Frames per second - 32k movement
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SUPER ST SURPRISE

- Super ST details
- Chip famine continues
- 1988 Industry awards
- Charity games compilation
- Kickstart 1.3 problems

Now an Amiga laptop?

To prove how close the ST and Amiga really are, no sooner have rumors of the ST laptop Stacy



■ Could an Amiga in '87 - or later - stand for the nation's laptop?

Rain's much rumored Super ST - which has been making headlines more often than the Sunday Scoop's WWI bomber-over-the-Moon stories - is closer to being reality after US-based Magabyte Computers' revelation that it is negotiating with Atari to supply its high-speed circuit boards.

Magabyte's board, which is currently on sale as an add-on for normal STs, comprises a 16MHz 68000 processor (the processor in your ST is rated at 8MHz) and claims an astounding 95% speed increase over standard machines. The usually scrappy of around ST chips, but surpassing the US retail price is only \$249 (around £150), so it shouldn't push Atari's end product price up too much.

According to Magabyte's statement from Kevin Henderson, Atari should have decided whether it is



■ The humble ST - sitting with the 68000 but set for a turbocharge courtesy of Kevin Henderson's Speed Booster board.

interested in incorporating the circuitry within new 'Super' STs by the time you read this.

Early rumors indicated that the processor board the so-called Super ST was to be the 32-bit 68020. However, Bob Katz (Atari UK's technical director) crushed the story when he mentioned to developers earlier in the month

that to keep costs down the chip would in fact be a 68000.

It remains to be seen whether the new machine also has the promised language/loading times sound, 4875 colours and fast menu scrolling. Whatever the case, it can no longer be denied that Atari definitely has a new ST-compatible micro on the horizon.

emerged than an Amiga model laptop.

Details are vague, but it seems that a small company in the States is researching the Amiga board, in new cases with a 7" order monitor and space for two disk drives. The provisional name is Journey Man, and the price? Um... \$2,200 is the current estimate.

The pair who produced it raised the necessary investment

capital by selling T-shirts and calendars. Release it, set for the New York Amiga in March...

phone Map Meriton in the States on 0101-800-949-5510 for more details.

CHIP FAMINE STRETCHES INTO '89

The Great Memory Chip Scarcity was the mainstay story of '88, but warning announcements by Atari and Commodore have recently given the impression that all is over.

Not so. Investigations by Format reveal that ST and Amiga owners face real difficulties when trying to expand their machines' memory.

Many of suppliers are offering memory upgrade boards. However, if you are thinking of buying one, read the small print - it usually says "unavailable". This means that if you get the bare board, and buying the \$1.25 or more of memory chips to go on it is your bad luck.

Commodore themselves - who launched a press release about how they had assured a supply of 64MB chips - are not without problems. Their 8MB Amiga 2000 expansion board is being recalled with only 2MB of chips on it. And dealers who have agreed to top the other 6MB have been told to find independent sources.

The chips the ST and Amiga require are 256K DRAMs (Dynamic Random Access). Most suppliers won't quote a firm price. Brian Brooks of Magnetix says, "We can get the DRAMs quite quickly, but prices fluctuate so fast we'll only give a price on request." At the moment, expect anywhere between £7 and £9. Maybe the most solid price above catalogue is at IBM Smith, but the chips at £3.25, but the price has risen to £8.95 since printing. You need 16 chips for a 512K upgrade.

Minix mimix Unix

It had to happen. After all, Atari's recent press attention, British's recent press attention, British's Prestico-Hal has announced a Unix-like shell for the ST. Called Minix, the operating system has all the outward appearances of being Unix: it is compatible with V7 Unix, it comes with many utilities that operate just as named identically to Unix versions. The Minix manual costs £19.70 while the program disk - all nine of them - cost £59.44.

■ Department 35, Prestico-Hal, 65 Wood Lane East, Hemel Hempstead, Herts, HP2 4RC-0442 250355.





OPERATING DIFFICULTIES

Practical owners of new Amigas bought in the Christmas rush are finding a few problems with some software — however, they've got the new version of the Kickstart ROMs, the Amiga's operating system.

Although all software which Commodore describes as "legally certified" runs on the new ROMs, some games aren't. In particular, Electronic Arts' *Amiga Formula One* fails out of the new system.

Steve Proctor, of Commodore's technical support department, was puzzled. "Kickstart 1.3 is barely changed at all from 1.2, so there really shouldn't be any problems," he said. "It's not that it can't be running for a long time now. What is true is that it takes up slightly more of the Amiga's free RAM on booting, so any program which is critically memory-light on an old ROM might have trouble, but we haven't heard any yet."

NEW TOS

And in the subject of operating systems, the latest release date set for the new version of Amiga's TOS is March 1989.

When the last version of TOS was introduced in September '87 there were massive incompatibility problems because it ate up 148 of RAM more than the old version. Bob Katz, Amiga's technical director, says that the forthcoming version will be more compact, so there shouldn't be any similar problems.

The new TOS will come on two ROMs, and although Katz says it is too early to set a price for mature owners that Amiga will only look to cover their costs. Expect a price of £19-£23.

Unofficially, reports of old 25s — pre-September '87 — won't be able to fit the ROM upgrade at the circuit board design was changed at the last minute.

the printed industry," he said.

The last charity computation, Sun's last in 1987, raised £204,000 for famine relief. The launch date for the new venture has been provisionally set for Easter 1989.



■ "Inexplicably generous" —

THE SALES ARE ON

Perspective purchasers of 25s and Amigas have never had it so good. To keep the 16-bit market bubbling in the post-Christmas lull, two major bundling deals have been announced by national wholesaler Silco Distribution, with a third promised for the near future.

SILCO have decided to promote the 3240 as a games machine — the same fancy games as in the 520 Super Pack will be bundled with 3280s at £899-figures.

SILCO's second deal covers the Amiga. For £399 you get an A500, ten games including *Tetris*, *Barbarian*, *Wetall* and *Daggy Day*, and the rights to purchase the package *Phalanx Front*.

And Navi Entertainment has revealed that they plan to push the 512 in the music sphere with another bundle. 1280s will come be topped with Steinberg's Pro-12 sequencing software, vital for bringing up via the MIDI port to a layman. This too will sell for £399.

■ Silco Distribution, 1-4 The Maze, Hatherly Road, Galley, Kent DN34 4DR 01-809 31133

1988 INDUSTRY AWARDS

The 1988 microcomputer industry awards were announced amidst the popping of champagne corks (the winners) and bowls of cabbage (the losers) at the Bemo in December. The initial pleads went to:

- Game of the Year: *Wiz* (Frotz)
- Best Sound: *Seven* (Melbourne House)
- Best Graphics: *Bungler* (Bantec)

- Best Arcade Conversion: *Pacmania* (GrandStar)
- Adventure of the Year: *Dungeons* (Master Memory)
- Simulator of the Year: *Kaloon* (Memory)
- Utility of the Year: *Photos Paint* (Silco/Dynalux)
- Budget title of the Year: *Suspense* (Mastertronix)
- Programmer of the Year: *The Slingshot* (Brothers)

And just to keep those lips at our sibling magazine ACE in the office next door quiet for a bit, we've got to admit that they did pick up the gong for Magazine of the Year. Congratulations, chaps; now will you please stop telling us about it?

AUTISTIC TALENT

1989 will see the games software houses working together for charity in aid of autistic children. The project was launched at the annual computer industry awards last year before Christmas, and it's already won the support of four major game houses.

The idea is that publishers will contribute 16-bit games to a compilation disk of ten titles to sell for £20-£25 each. Activision, Electronic Arts, High/Mastertronix, and Frotz have all said they will sub-

mit games for consideration. Each game will be edited by a panel including Activision, Irem, Data Couzors and ST Amiga Format publisher Greg Ingham — both head-line gamesters — who promise to ruthlessly weed out anything less than top-quality.

Launching the compilation, Ingham was confident that the games would be of a high standard. "This industry is inherently more generous in its support of charity events, and has a genuine desire to help. For this, the games software industry has been much more generous to charity causes than their counterparts in



■ A simple black-and-white digitised screen, courtesy of Photobit.

QUICKIES

■ By the time you read this, Sunjammer Amiga developers will have what's in store for 1989 from Commodore. A developer's conference was held from 18th-19th January in Frankfurt — we'll bring you a full report next month.

■ The results of numerous other recent enquiries in December as of important cases of the monthly software game list. Games from Space were implemented by the new team. Hammer has it that they couldn't work how to run them, no action has yet been taken?

■ P.A.L. (Programmer's Advice Line) is a new group for IT programming in general and users of office products in particular. Contact: 45 York Road, Harewood, Leeds LS15 8BB, West Yorkshire, PC 2004 and members list at part of the guidelines provided.

■ Calling all fans of *Electronica* who love playing games — the books are now available at £5 each to take you finally get to the bottom of *Hardy Tale II* and *II*, Scotland, Westwood. The *Hardy Tale* and *Hardy World*. Phone 0753 848803 for info.



back to you on disk.

At the moment, the service is only available for the Amiga, although an ST operation is under development. Prices are £1.50 for each colour image, £1.80 black and white, plus 50p post and packing. My resolution can be used, including 4096 colour (RGB) mode with screen-buffers the image fills the entire screen, like a TV. Photocite must be supplying their own disks at £3.00 each, as a precaution against

viruses.

If you've got a 3D object you need digitising - a feature (rather than a mode), for instance - Photocite can provide images suitable for viewing with 3D glasses.

■ Photocite, PO Box 106, Nottingham NG2 4SQ 0562 481993

68010 upgrade kits

Following the recent correspon-

dence in Format's pages about upgrading an original 68000 microprocessor to a 68010, Coppe Side Industries are offering a kit for £27.50 or an 4850, or £29.50 on an A2000, you get a 68010 chip and full technical manual for use. The extra £1 on the 600 is for a special screwdriver to undo the metal shielding inside the case - the A2000 doesn't need it. You will also need the special software patch sup-

plied on Format cover disk number 4 - both issues are still available.

The 48010 simply slots into your Amiga where the 68000 currently is, whereas you should see a speed increase of between 8 and 50% in your Amiga's operations, depending on what you are running.

■ Coppe Side Industries, 15 Coppe Side, Broomfield, Goddington, Surrey GU7 2BW

1988 AND ALL THAT!

The Format team cast a caustic eye over last year

Oscar Wilde once replied to a friend, when asked what he had written that morning, "Oh, I had a comma."

"What?" said the friend, "You spent a whole morning adding a comma?"

"Oh no," replied Wilde, "I also took it out again."

Perhaps this headline head of Alan UK has heard the story. In May they heard the price of a 200ST is £100. Meanwhile Commodore cut the Amiga by £100, finally putting it on parity

with the ST at £299, much to the relief of its dealers. Quick as a flash, Alan dropped the ST down to its original level for the Christmas push.

Two weeks away

There's a bit still in the pipeline. When you hear a manufacturer saying, "It's two weeks away, we're just finishing the manual off," you know there'll be a six-month delay into the category far most of Alan's announcements for 1988, though to give them their

due, some products have always been intended for '88.

Their CD ROM, which we reviewed/previewed in the August issue, is still not quite on the shelves. The Stereo laptop may close in more than prototype form at the Which Computer Show in February and the newer ST HD looks in the wings. Perhaps it's taken its first steps to standard in '88.

Commodore avoided the charge of not supplying what it announced... it didn't announce anything until the autumn, when the Amiga 2500, Transputer card



"Remember the computer stores? Well, we have got it in this case labelled 'it's not'."

and AT Bridge Board were all listed as for '88.

The most important launch of the year was undoubtedly the arrival in June of ST Amiga Format, though we are, of course, far too modest to mention this.

THE FORMAT AWARDS

No prizes, no cashback, here are the combined opinions of the Format team on hardware and software in the following categories:

BEST GAME RELEASE

ST: View
Amiga: Intermagix

WORST GAME RELEASE

ST: Super Breakout
Amiga: Quasimodo

BEST NON-GAME

ST: Fine Point
Amiga: Proteus

WORST NON-GAME

ST: 12-Tone synthesizer emulator
Amiga: Photo-Paint memory patch, including word-gain background

LONGEST AWAITED

ST: The Field
Amiga: Blackboard 1.3

MOST HYPED PRODUCT

ST: Paras graphics board
Amiga: The Amiga. (Did you see their Christmas ads?)

AMIGA BRIDGE BOARD

Format's story of 1988 products couldn't compare without the Amiga AT Bridge Board - a PC emulator for the A2000. It has a special place in our hearts, remaining one of the few bits of kit which is generally available to the general in the street, but which remains elusive.

It's the renowned A Bridge Board for review from Commodore's PR company. "No problem," they said. We rang with remaining issues in the next month. "Sure, it's in stock, no problem." Commodore then changed their PR company, so we began again.

Amiga's Steve Barrett, Commodore's marketing manager, was in a meeting the several weeks. We sent a fax for Steve's attention in 88 pages, then three BQ. Steve answered his phone. "No prob-

lem, it's in with you by the end of the month."

SEPTEMBER. He spoke to Lenky Rubin, Commodore's marketing assistant. "No problem. Except the firm authorising the logo has to be agreed by Steve Barrett and Steve Franklin (the managing director)."

We Steve Barrett of the PC Show. Steve counted us there was no problem.

OCTOBER. We rang Commodore. "No problem. The form's been agreed, we're expecting the stock in any day now."

NOVEMBER. Steve Commodore, Amiga Board not in stock.

DECEMBER. Bang Commodore, Amiga Board not in stock.

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GRAPHICS

BAK TO THE FUTURE

STEVE BAK: created nine games in 1988, has been ripped off by countless software houses, responsible for the Cuthbert series, might drop programming and buy an ice cream van. Read about the man, what he has to say about programming and his experiences in the computer industry.

Why does a man capable of earning £2000 a week quit his job for one which might make a tenth of that at best? Why does the author of an award game often make more money than the creator of a great game? Why do programmers often think they're something special? Why am I asking all these silly questions? Well, as I have written, at least one answer will be revealed.

Before I continue, let me state that you — and only you — of the above applies to me. It's for you to decide which.

During the Autumn of 1987 I met a young programmer who had written a game and published it himself. The name of the company I can only just remember, the game itself I remember well. It was a good game with plenty of real ideas and a fair amount of technical merit, the programmer thought it would make him a reputation and some money into the bar-

gan. The game was a failure. A few weeks ago I saw the same game, hardly recognizable without a programmer's insight, being sold by a fairly large company and doing very well. Thank you. The game is a success and the programmer has a good future ahead of him. This is what programming is all about: create the game, let someone else take care of the marketing! So ends the first lesson. To anyone out there who hopes to be a successful programmer — forget the business side of things; that's a job for businessmen.

Bak to Business

Let's get on with it, if you're going to write a game, the first thing you must have is commitment. Many people have approached me with part of a game asking what to do next. The answer is always the same; you should have decided that when you first started! That's not to say that alterations and improvements can't

be made on the way, or even a fair amount of 'making it up as you go along.' You must have a plan containing an overall idea of the whole game and what's going to be in it right from the start. If you don't you might at least get up before you begin. Of course, some areas of the plan can be left blank and filled in later, but you must have the gamut to fill the blanks in later.

The first step then, you can start making real progress. Split the plan into small, independent parts and work on one part at a time. Each part can be split into as many smaller parts as you like, the more the better! Concentrate on small routines, making each one work properly before moving on to the next. A couple of tips might be handy here. Comment your source code, it is very helpful not to, after all you understand it perfectly and review it will save time. Don't be mind boggled, that you may need to return to your source years

Microsoft's latest core platform pack, MS-DOS Volume 1, contains four games. Three of these are by Steve Bak.

THE WISDOM OF BAK

Why are 18-bit games so expensive? Is case you don't know, it's because of low quantities, high development costs and high production costs. But if you read the magazine you should know that Right! Wrong! The first answer carries a little weight, but Steve's only real reason a £20 game couldn't sell many more is it was offered at half the price! Note the so-called 18-bit budget titles have all had great ideas, it's not when game makers start that make the profit per unit for everyone in the chain — the programmer, publisher, distributor and dealer. So the real reason is great, right? Wrong again! An answer. That's not good, that's business!

WHO IS STEVE BAK ANYWAY?

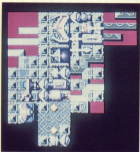
Just for the record, I am a 35 year old ex-robotics, ex-arcade game developer living in the Midlands. I bought an Atari Atom (the predecessor to the BBC) my first in 1982 (as I couldn't get hold of a ZX81 or Yu 30). Unfortunately there were no decent games for it so I had to write my own. First was Robot Wars, written in BASIC and published by TTY Software. BASIC couldn't cope with what I wanted so I turned to machine code. My first attempt was a kind of Missile Command, again published by TTY. After it created more games on the Atom I upgraded it to the Snuggler, then came the Cuthbert series! After that I went through a rapid succession of moves — Family Color Computer, IBM, C16, Enterprise, Sinclair QL — before settling down with the Atari ST and Amiga. Each of these computers had their advantages and disadvantages and each earned me a living, some better than others.

For the time being I stay stuck with the two current 18-bit machines. The BBC001 is a programmer's dream compared to £500, \$900 and £30. Both the Amiga and ST are here to stay, within a couple of years the software base is going to be enormous. I can see these two computers being much larger than the 8-bit, 16-bit and

Amiga are cheap enough to buy for games use and powerful enough to do anything that you could want a home computer to do. Next you can actually trial most programming on a C64 or doing financial planning on a Spectrum!

In the early days I preferred to work like most programmers (at night). However, with my own office, I do things differently. I think most people would agree that my output is fairly prolific. In 1987 I completed seven games, in 1988 I completed nine. I've also earned a great deal of money — but at a price. I now work around 80 hours a week, drinking coffee and Coke constantly. I smoke around 50 cigarettes a day and get drunk every night — not an ideal lifestyle for a statistician no wonder I have had a good time as a programmer, but now is the time to quit. Flight! Flight will be my last game, at least, under Steve's trademark.

What does the future hold? Well... I could buy an ice cream van, selling ice cream in the summer would be a nice job. Perhaps I might open a fish and chip shop in Paris. There is a third possibility which, at the moment, sounds the most plausible: I may well start a 16-bit software development house.



It's the entire graphics for one world in *Returns to Genesis*. This image (50% of data) gets shrunk and expanded to over 200K.

later after having written singlepages of similar stuff. Less more important are the small bugs that find their way into the game which don't really matter at the time. Stamp on them! Never camp on and write more code when there's something happening which is not meant to, no matter how unimportant it seems. Chances are that later on those bugs become major problems -- and also you've written pages of code that'll be much harder to fix. Imagine looking for a typing error in over 200K of text.

Progress should be reasonably smooth if you force yourself to work to the max, complete one part then move on to the next. This is where commitment comes in. A game can take a long time to write. Maybe a year, maybe more. You are likely to get sick of your program and before it becomes completed. Don't be discouraged. Stick to the plan and keep making progress, you'll get there.

Back to Front

Selling a game to a software house is the worst part of a programmer's life. In the past I, and probably most other programmers, have been cheated by those that had the existing software houses. Sometimes it's a matter of stupid payments, sometimes late payments. And sometimes you don't get paid at all! What can you do about it? Nothing! If a company is going to cheat you, they'll cheat you. What about the contract? That surely offers you some protection doesn't it? Well, it might... if you're willing to spend £10,000 in legal fees in the hope of recovering a few thousand in practice

you found that 'the standard contract' is never of any benefit to the programmer. Nowadays I'm very careful with whom I work. My terms are only set on a gentleman's agreement and without a contract. If you're new to the game there's only one piece of advice I can give you avoid an on advance on royalties. Make sure you get the cash before going too far with the game. That way you know you'll get something. If the company says no, go elsewhere.

Backup

People ask me time and again to recommend development tools. Here are my favourites.

Assemblers-wise I go for MGS's Devco 2. The main reason is its speed; far faster than any other package on the ST or Amiga. Nothing else comes close. Devpac happens to be a very complete assembler and comes with a heap of other useful goodies including debugger, libraries, sample code, etc etc. It also has a very nice manual which I'll read one day! For a text editor you cannot do better than Microsoft's *Conqueror* (Microsoft) it does everything that other text editors do and a whole lot more that others don't. Only once have I seen anything better -- find on the IBM PC (at £400).

As for a debugger -- I'm a bit fed up there, I never use them. MGS's *game 01* in the Devco package and Metaspore for the Amiga takes some beating.

For sound sampling, ST Replay and AMRG both available from Microsoft are the best buys. Amiga

FutureSound comes close to AMRG, but costs nearly twice the price. SAM is ideal for video digitizing, but is hard to get hold of and expensive. Borland's *Mid ST* is excellent value. Watch out for Amiga Guilder from MGS.

For reading material, try *Anatomy of the Amiga ST* or *Amiga ST Internals* (it's the same book) from ST Publishing. The Amiga's a different beast, it depends what you want to do. If you're happy diving the operating system then *Amiga Developer's Manual* is all you need -- it's the bible. If you're not happy being the OS, you sign your money and take your choice. Whatever you decide, you're guaranteed

BAK TRACK RECORD

My list of ST programs to date is *Land of Heroes* (Amiga), *Dark Side* (very scary), *Electronic Post*, *Travis Challenge*, *Warrior Kid 2*, *Castlebrave*, *Jupiter Probe*, *WarriorKid*, *Return to Genesis*, *Leatherneck*, *Smulley and Spinning Image* (on the Amiga I have completed *Warrior Kid 2*, *Castlebrave*, *Jupiter Probe*, *BattleShip*, *Return to Genesis*, *The Sentinel*, *Leatherneck* and *Spinning Image*).

Currently I'm working on my last one game, *Friger Night*. This one I am doing only on the Amiga. It started off on the ST in the Summer of 87! Microsoft decided they wanted the game for the Amiga first, and as good as possible. So I am using 32-year hard-grams with large spaces, 1000 by 64 pixels, operating at 28 Hz. I don't really remember this to be the ST -- it would be a virtual rewrite -- so I shall pass it on to someone who will enjoy the challenge (hopefully, *Tom Purves* is the one).

need to get no change from £100. Whichover system you have, the *Smulley Sport* is always a good buy for its brilliant investigative journalism.



Some fast processed but vertical scrolling shoot-em-ups on the ST. *Blue Castlebrave* (left) in gameplay. A game is undoubtedly fast and smooth scrolling.



BAK CHAT

The most big-headed thing I ever said: "I'm the best 80 Do player in the world." No apologies, though, I said that the most modest thing I ever said: "I'm not a great *Craver* player." (Once, just once, I completed the course without losing a single bit).

BAK HANDED

For me, one of the hardest parts of writing a game is thinking up a neat story to use as a cheat code. Here are some of my recent ones: *CASTLEBRACK*, *AMARIGUS* (as in Wolfgang), *W. A. MARS/ING* (?!), *666* (I must have really been struggling for that one) and *HELL'S FIRE* (the guy who handles out all those cheat strings). I'm not going to tell you which games require which cheat strings, that's for you to discover. All I shall tell you is that you need to type those strings at any point during the game. After that the *Smulley* boys come alive.

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FRIGHT NIGHT



Just look at those superb graphics (created by Peter Lyons) and the size of that split-screen (though assisted by Steve Bak!) It's Fright Night - the game of the month this - on the Amiga. By all accounts this is Steve's last project for Microfrontier, after that you may see him (and your sweet floppy disc) on screen.

The ST version won't be programmed by Steve, but possibly by Timothy Perrow in the States.

Price of the game, if you're interested, will be £39.99. Details on 0206 88000.



BAK PREDICTS

Sometimes this year at least one publisher will launch a range of 16-bit games priced at £2.99. Laugh if you like, but watch the news.

Steve's introduction

Digital Life is probably the best graphics utility for the ST. It does have one big drawback for games programmers and artists: it lacks L,Y co-ordinates making it almost useless for anything but drawing pictures. Normally I use Action's Paintworks, but having recently seen a very neat demo of AMD's Flux Paint I'm tempted. It could be what ST owners have been waiting for - it's worth checking out.

Amiga users are spoilt for choice. Most will get Paint free with their computer which is vastly better than anything on the ST. Before

Paint it is terrific, and there are a host of even better, and more expensive, packages out there.

Hardware-wise, the ideal program development setup for me is a Mega ST with mono monitor connected - via an 85132 which sports data at 18000 baud - to a 520 ST or A500. I did use the parallel port at one time when downloading to the C64, it's much faster, but I damaged two 104000s and two C64s - much too expensive a risk to take with Mega

STs and Amiga! For programming and test entry, the ST's mono mode is brilliant and very easy on the eyes. The whole setup is more reliable and faster than anything I'm qualified to have a running disagreement with. As San (he of Slaughter is lame) over the post, he uses A2000s for downloading data to either 520s or A500s. No matter what the price and class are from a programmer's point, he can't deny that his setup costs two or three times more.

BAK BITES BACK

The Steve Bak awards (in no particular order).

THE GOOD

- The guys who designed the Amiga hardware.
- Geoff Commercial for The Games.
- Andy Powell for Sengor.
- Jack Brandel - not just for the Start ST, but for being a Polish Jew who owned Acornsoft.
- Clive Sinclair for starting it all.
- Whoever wrote BuildWork.
- Williams for Defender.
- Konrad for Stryker.
- Jay Han for sheer knowledge.
- John Symes for never cheating programmers.

THE BAD

- The guys who designed the Amiga software.
- Whoever is making money from Amiga Sharefighter.
- Commodore UK's technical and marketing support.

THE UGLY

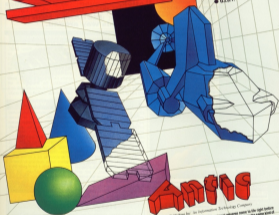
- Ex-Power House boss Anthony 'The Choccy' in the post! Whidevont.



■ Splitting images doesn't look like that Oh you it does. At least, to programmer Steve Bak. The entire background, the various animal objects and the positions of the graphic images are all portrayed in this shot which forms the building to the Paper rooms.

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Did you've visited stores, banks or airports with computer monitors displaying statistics or product information. Nothing special about that, but some of these displays have messages asking you to touch the screens in specific spots. Doing the dirty usually results in the display advancing or retrieving a page of information. What you're doing - in effect - is using your finger, nose or other unpalatable part of your anatomy to direct a pointer to a particular place on the screen. When the program detects that the pointer is in a certain area, it jumps

Already there's a choice of device for communicating with the computer: keyboard, joystick, mouse and graphics tablet. Now there's the touch screen. RICHARD MONTEIRO pokes his way around.

to a sub-frame which might display all rights to Australia that day, inform you how to apply for a mortgage or tell you why you should buy NascorWhite soap powder.

Eagle's Touch Window - which can be fitted to a see-through graphics tablet (see issue 16 that is placed in front of your ST's screen - gives you the option of moving the mouse pointer simply by pointing to any part of the display.

For real

Along with the touch screen, which clips to your ST with velcro strips and has a plug running into the serial port, you get a power supply and software. The software contains two drivers: for machines with old and new ROMs. Before running the driver you must copy the correct driver into a blank disk, rename it and run a configuration file.

With the driver up and running, the QDM pointer will now follow you wherever you press the touch screen. You can use your finger, a pen or some other stylus to move the pointer. An overlay at the bottom of the screen tells you where to press the touch screen if you want to simulate a single mouse click, a double mouse

click or a click and drag.

Most QDM programs like Design Plus, First Word Plus, Power SDC, C-Browser, Sports Factory and so on will work correctly with the Touch Window driver installed. However, it's very tricky to get the pointer to move smoothly enough, and since the screen can only work to 256 pixels horizontally, the resolution is not good enough for accurate work on a 540-pixel wide-medium or high resolution screen.

Any use?

Possible applications include in-store demonstrations, factory or process control, public information screens, points and teaching the physically handicapped.

In its favour, the Touch Window is very responsive when it comes to pointing at random areas on the screen. Unfortunately it's expensive, not as accurate as a mouse or the graphics tablet reviewed in issue 16, and reflects quite a bit of glare. It's a good piece of hardware, but too expensive for home use. Who's going to use it? Certainly not little Jeffrey for playing alone. Business, academic institutes, county councils (information points), yes.



Features

1 2 3 4 5

Performance

1 2 3 4 5

Ease of use

1 2 3 4 5

Remarks

Not seen

format value

1 2 3 4 5

for

- Responsive
- Simplest form of communicating with the ST to date
- Works in all resolutions

against

- Expensive - specialist interest only
- Resolution not good enough for accurate drawing

HOW IT WORKS

The touch screen consists of two facing, transparent, conductive layers (known as angrule sheets) which send the ST the co-ordinates of the point you indicated. The two layers contain one another only at the touched point, when with the volts applied across one of the layers the circuit is completed. The voltage at the touched point is measured and is taken as one co-ordinate of the touched point. This analogue level is converted to digital by an analogue to digital converter (ADC). The rates of the drives and non-drive-in relative levels are then reversed to determine the other co-ordinates. Simple, really.

Resolution of the touch screen is determined by the ADC. Eagle use an 8-bit ADC which can resolve 256 co-ordinates in both horizontal and vertical directions. Both axes are measured 75 times per second, and data is sent to the ST via the RS232C port at 4800 baud.

The window automatically averages the area of contact to give the co-ordinates at the centre of the contact area. This allows good resolution to be achieved even when touching with a large object such as a finger.



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ST environment under development - Please be patient!

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FUTURES

NET WORKING

In an ideal world every computer, printer and storage device in an office would be linked together (networked). Any device could transmit or receive information to and from any other device. RICHARD MONTEIRO discusses the current state of play and ponders the future of networks.

Whenever there's a body of computer users in a room, building, city or country who share information, storage facilities and expensive hardware, you're guaranteed to find some form of network in operation. A network is simply a fancy name for a communication link between two or more devices. These devices can be computers, printers, faxed desks, tape cleaners - indeed, anything that can receive and transmit data.

Networks are generally regarded as stuffy things for doing stuffy jobs - you know, tedious things. Like sending the end-of-day sales report to various offices in the building, dumping a file to a printer that's right down the other end of the building, transferring orders to various factories around the country, searching for information on a data storage device that may be in another country or even on a satellite orbiting Earth.

But there is a lighter side to networking: multi-player games. Imagine a maze game in which your opponents - represented on screen as graphic blobs - are controlled by intelligent human beings (what? Playing a maze game = full sitting, hundreds of mice, away behind a different make of computer).

Take a trip through the bewildering, but ultimately exciting, world of networking. *Next on:*

Spreading the word

The most common network is a Local Area Network (LAN), and is designed to serve a local establishment such as a factory, school or office. No. 2 Future Publishing has several networks in operation; the largest being the one connecting together the layout artists' computers - more on this elsewhere.

LANs have different layouts. Depending on methods of data transmission and types of cable connecting computers and peripherals together, twisted-pair, coaxial and fibre-optic cables are the three usual data-carriers.

Twisted-pair wires, which are used in telephone networks and local exchanges, consist of a single pair with an earth return. The cable pairs are twisted to reduce '串扰' with other wires. Coaxial cable has an outer shielded 'braid' which functions as a shield to reduce electrical interference and crosstalk. Optical fibre cable carries light pulses - and not electric current - which means it is unaffected by electromagnetic fields.

Knock twice

Network topology is the granddaddy term for the various types of network layout. There are three main types: ring, star and bus.

A ring network is formed by a continuous ring (hence, several of words - devices - each linked to the

next in line). Each device - which can be a workstation, terminal or printer - has a unique identification address. Messages are passed from one node to the next until the messages reach the required destination. Tokens - labelled packets which can have data read from or written to them - constantly whizz round the ring, which is why this setup is often called a token-passing ring. As tokens could be carrying data from any node to any other, it is essential that devices in a ring constantly check their sending data-carriers.

To ensure that signals sent from the transmitting machine have been correctly received by the specified machine, the transmitting wire checks the token after it has completed its circuit. The disadvantage of

GLOBAL COMMUNICATION

Whereas a local area network serves the requirements of an organisation for interdepartmental communication, a wide area network serves a wide geographic area and may encompass a country or even the entire world. WANs usually employ packet switching techniques. Packet switching is a method of collecting data in a block and sending it to a local packet exchange, from where the block is transmitted to its destination exchange.



NETWORKS FOR THE ST

At the moment you can choose from three Atari Network from Novell and PowerNet and PowerNet Plus from Software Point.

The extraordinarily cheap Atari Network follows the ring topology and can have 124 nodes. There's time restriction as to what can be installed on the network. The system lets you access and alter data on other machines - meaning the other machines give you authority to access almost with their files. Devices can be installed together at a cost of \$150 per item. There's also a one licence of \$100 for the software.

One thing to be wary of, the file server can't be Atari ST, A PC or an Amiga will do. All the gory details from Novell, 25 Greenwold, Waterlooville, Cambridge, 020 8590 0000 000000.

Two networking systems are available from Software Point, with a third awaiting completion. PowerNet is the more basic and is simply a printer sharing system. Net is transferred via the RS232 or 9600 bits per

second. Cost per user is £250. PowerNet Plus has data around the bus network at 18000 per second. It can naturally accept 12,000 users. Price per user is £400. PowerNet Plus networking network will work using Ethernet connections. It will operate at 2000000 per second and will cost a staggering £250 per node. Software Point are at 10 Hill Road, North Park, Liverpool, 017 209 9500 19999 are set to distribute a network system from \$600 to \$900 (around £1000) in March 1989. 000000.

Such company Connect computers to March 1989. 000000, as it's predominantly being called, will surface as a fast 8000 to 8000 per second ring network. According to Peter Bradford, STARC's education sales manager, the system doesn't appear to have any limit to the number of users, should cope with most devices and will let you alter information hard on another machine. Price hasn't been finalized, but it's likely to be near £1200.

ring networks is that if there's a break in the ring the whole network goes down. Most networks in the UK are ring-based, due to the development of the Cambridge Ring at Cambridge University in the late 30s. Of course, any network worth its tokens will have one or more backup-circuits.

Star performer

A star network has a central controller at the server - usually a computer controlling a storage device - to which all nodes are connected. Data is transferred to specific nodes when requests for information come in. This type of network is used in time sharing systems where the central controller is a host computer to which all terminals are connected via modems, multiplexers and telephone lines. If the main is in the middle (usually often then again) the whole network often fails to function.

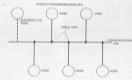
A bus network is a communication line or channel to which various workstations and other peripherals are attached. Any device can be added or removed without affecting the system. Each device has a specific address and messages are sent along the line until the communication reaches the specified device. The advantage of bus networks is that if one or more devices fail, the network continues to operate.

Bank Rover's Ethernet is a typical bus network; it uses a system known as CSMA/CD - Carrier Sense Multiple Access with Collision Detect. The bus can't use it to write short-circuits. The system listens to the carrier wave to



Star network.

■ A star network centres around one powerful/made computer.



Bus network.

■ A bus network doesn't need a central controller.

SPEAK TO ME

Consider the speed at which you can communicate your phone lines using a modem - 24,000 bits per second. At the highest speed that's 200 characters a second (just over a quarter of a B per second). There's no way you could run a network successfully using such low speeds, though you're not 10 or more users all wanting to update a sales ledger; the file has to be loaded into the user's terminal, altered and then sent back. Say the file is 10000; it would mean waiting just under half an hour for the file to arrive. Thankfully the average network starts with a rate of four million bits per second (4000000 per second). Advances in technology are pushing speed limits up, and it's expected that the transfer rate of 100-million bits per second will soon be reached.

PLAYING ALL OVER THE WORLD

Some players in the states have, for some time, been treated to the ultimate in interactive, real-time, multi-user games - Air Warrior. The game was created by the Kansas Corporation of Wichita for General Electric's sales seminar Mink. Subscribers to Mink can log into the system from anywhere in the States and fight each other over the skies of three full-time continents.

Players can club together to form squadrons, team together to crew bombers or fly on their own. It is possible to communicate with members in briefing rooms or exchange 'viewer' messages using airbases. The system uses a unique processing system, and can cope with 1000 players.

Commercial multi-user games like MUD and Shades can only give you a zone-month using description text. Air Warrior gives you full animated 3D graphics and sound that you'll expect from a normal game. MUD and Shades can be played using standard games software. Your computer just sends your data to the host - the rest or maintenance looks after the

game at the other end of the line - and displays any messages sent from the host, as far as your computer is concerned the best flying back and forth could be anything.

Air Warrior takes a different approach. It is a program that employs the separate operations of a camera package and a fully-blown flight simulator. The program creates the graphics you see on screen just the ordinary games; the information on the behaviour of other planes - that is, other players - is relayed via the host. The program also sends out information to the host about your position.

Not only are all computer owners can enjoy Air Warrior because the controlling software isn't available for all types of mainframes, you're pleased to know that ST and Amiga versions are available. In fact (and you're over in the States, you'll know who to call - and it isn't Shakespeare).

NETWORKS FOR THE AMIGA

Considered from Comdex Systems (where else?) seems to be the choice of many large organizations. Several cities dotted across the country and Super Gas (suppliers of licensed fuel) use Comdex's networking software and modified node hardware. The ring network usually consists of several 48600s and various printers. In practice the ring can accept around 150 nodes.

Although Comdex is relatively slow, only transferring data at roughly 0.5Mbits per second, it can expand into a wide area network. This is possible because the sys-

tem is connected together via the serial interface - and you know how easy it is to fit a modem to the serial port.

The hardware kits are available from Hercules (0635 862175), and cost £200 for the 4800 and £1000 versions and £500 for the 48000 version. Network software from Comdex (0953 77677), costs £180.

The Amiga Centre (located in distributing an Ethernet kit for 42800 machines. It's expansion though, coming in at £750-800 per node. Details on 020-857 4292.

detect if other terminals are transmitting data.

All terminals on the network can do this at any time because of the multiple-access nature of the system. If two terminals listen simultaneously and detect no transmissions, they may both transmit data at the same moment. Both transmissions will then collide, but both terminals will detect the situation, and both will wait a random time before retransmitting the data. Clever stuff.

Network 4000

Greater data transfer rates will be the next thing in store for networks. fibre-optic cables has opened so great possibilities: not only is the data free from electromagnetic disturbance but it also moves at incredible speed. The data bottleneck isn't with the cable type though, but with the hardware transmitting or receiving it. Advances must therefore be made in computers, before any appreciable speed increases can be gained in a network. Already there are networks at a 100 Mbits per second network - that's almost 10 times faster than the current fastest Link forward in the City that data can be sent and received at the speed of light.

Network administration is also necessary. Currently there are over 50 proprietary networks including Novell, Ethernet, Decnet, PCNet... And they all have different topologies, transfer speeds, connectors and so on. It is an ideal world, every computer, printer and other I/O device would have the same network port - call it Universal if you like. Similarly the soft-



■ Air Warrior on the Apple IIx. The planes you see from within your cockpit looking to other players that have logged on. You can blow other players out of the sky or defend them and take on larger forces.

ware for identical would be available for every machine. The result: transparency. Any computer in an office could speak or visit any other computer, storage device or printer.

Imagine also if the processing power of old machines in a network could be tapped by active computers. Transputers are based on this idea. But that's another story...

FUTURE NETWORKS

The art departments computers, laser printers and Laserfax. If you read last month's Future, you'll know all about these devices. Here at Future Publishing are looking forward using an AppleLink network. Although AppleLink can be used for communicating with other networks and sharing expensive hardware, it doesn't let you access files stored on other machines. The sharing is obviously desirable, but unfortunately AppleLink is not able. The box network's transmit data at roughly 18.5K a second, two pages of RT Amiga Format text and graphics take consumes 200K or more. Consequently Future Publishing's articles only use the network for greater sharing.

NEXT IN LINE

The current crop of computers aren't provided with any easy means of networking. Sure you can buy an interface and some proprietary operating system, but it costs. Many of tomorrow's super computers will be totally networked.

One you might consider is 'Steve Jobs' Macintosh machines. The 2MB 48000 (plus 64000 maths co-processor based computer will have, in its package, 8 Mb of RAM as standard, SCSI interface, real-time 3.5" optical disk drive, real-time) capable of 250 Mb of storage, SuperPaint (what you see is what you mean) ready to use operating system, DSP48001 digital signal processing chip offering 60-quality 44.1 kHz 16-bit stereo sampling, and the Ethernet port.

The standard Ethernet port means the Macintosh can talk to already existing (other PCs, small flexible-plated computers, etc), that kind of thing - it). The 487000 Ethernet transceiver chip drives the port at 10 Mbits per second. Don't hold your breath for the baby though, to start with it will only be used in education or establishments, will cost around £8000 and its other capabilities will be slow.

Also's multi-tasking, multi-user, 68000-based machine - which didn't

make an appearance at Comdex as first expected - is still undergoing development in the States. Along with heavy graphics capabilities, 4 Mb of memory and (ain't it, an Ethernet port will be included).

What about another Commodore had any plans for a network system for their new 68000-based line based, a supercomputer effort? I don't know of any work going on in that direction, but that doesn't mean nothing going on - I don't call Commodore.

The new release of Workbench includes limited multi-user support in the form of a new device handler called MUX. By connecting a dumb 8008 terminal to the serial port of the Amiga, it is possible to run text-based programs on the terminal while the Amiga continues to run other tasks. The Amiga sends the extra terminal as a single CUI task and support to the terminal will therefore only appear as text. While this may seem of little use to most people, those who will find it invaluable are programmers. Already Amiga developers can connect the terminal as a debugging tool - the Amiga computer is built in debugger called MUX-Work which, once activated, feeds debugging information to the serial port even when a program has crashed mysteriously.



■ A PC network kit - just plug in the extra hardware and get talking!

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PUBLISH AND BE SCANNED

What's the easiest way to get a picture onto your screen? Digitise it, of course. But you don't need to mess about with video cameras and studio lights - Cameron's new Handy Scanners provide instant graphics for the ST and Amiga. And you can read text from the printed page, too! **BEN TAYLOR** scans the facts.

COLOUR BLIND

Although the scanners will scan in black and white images, you can scan colour images too. The software, of course, is still converted into shades of grey, so you'd have to work in the colours by hand later. The scanner seems unable to distinguish between red and white, and between blue and black, so pictures with mixtures of these colours don't scan very well.

THE CAMERON HANDY SCANNER RANGE

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Low cost digitising has taken off in a big way in the PC world, with hand-held scanners providing a cheap and simple way to get artwork into the machine. Desktop Publishing, print packages and even word processing have all been revolutionised. The ST and Amiga, though,

have been lamentably under-served in this respect - until now. Cameron's Handy Scanner range allows you to digitise pictures and read text, quickly, simply and without a video camera.

The scanner is a palm-sized box about 10 by 8 by 3 centimetres. A variable length lead (about two metres) plugs into an interface box taking the signal to the computer. On the ST, the interface attaches to the cartridge port, and an external transformer provides the power. On an



review models, the power supply unit was supplied incrementally, mounted into a three-pin European plug, so you'll need a charging socket adapter to connect to a standard 3-pin plug.

On the Amiga, the interface attaches to the maximum eight connector. The Amiga provides a power supply through this port, so no extra transformer is needed. If you have an A2000, you'll have to take the scanner and your machine apart to get at the relevant slot, but it isn't too difficult.

There are two models of scanner at the moment - Type 2 and Type 3. Both each at 200 dots per inch resolution, but the Type 2 only recognises black or white while the Type 3 can cope with 16 shades of grey, making it much more suitable for scanning photographs. A Type 4 boasting 400 dpi resolution is promised for early in the New Year. Also available in the Canon range is the 'Personal scanner' - a failed scanner for complete A4 pages, but we haven't been able to test this with the AT or Amiga.

Grab that picture!

Only one thing remains before getting down to business - installing the software. Canon run sell their products in Germany, France and England, and

HOW IT WORKS

The Handy Scanners are scanning like a camera. A row of red light emitting diodes (leds) shine downwards into the image under scrutiny. The light is reflected back and gathered by a lens and light sensitive cell and the appropriate pixel codes are transmitted to the computer.

The clever part is that you don't have to be particularly careful to move the scanner at a constant speed & roller underneath the scanner, in contact with the surface being scanned, rotates as you drag the unit along. The processor within the scanner records the position and works out how many pixels worth you have scanned. Whether you move at a snail's pace or waltz faster if you get a reasonable scan.

As you have to install the program to get your menus and messages in the correct language. On the ST you just click on ENG,FR,PGC the first time you use the scanner, but on the Amiga the installation process is difficult. You have to copy your Workbench data then run a program from the GU which needs plenty of disk swaps if you don't have two drives. The manual's instructions are clear, so, as well as being pretty badly translated from German.

Once you've set everything up, scanning an image is completely straightforward. Just turn your original on a flat

The K2000 is an unnamed workstation for the power user. Aimed at the growing niche market of video professionals, it is based on the standard Amiga 2000, but includes extra hardware to satisfy the demands of processor-intensive graphics and animation programs.

The heart of the 2500 is a card with a 14 MHz Motorola 68020 microprocessor. A 68881 maths coprocessor comes as standard, with 2Mb of fast 32-bit RAM and a 40Mb hard disk. Workbench 1.3 is all in the deal.



Job: Picture book text file Extra

HandyScanner HS.1



Left: Original and other the drawings scan well, even with the Type 2 scanner - original shown, and scan below. The color edges of the screen show the menu of Handy Painter, the paid package upgrade.

bed surface, place the scanner over the start of the area and sweep it smoothly downwards. There's a control control to get the best results from a particular image - trial and error is the way.

What does 200 dots per inch resolution look like in practice? The Handy Scanners are 64 millimetres wide, which is 2.5 inches, thus making 500 pixels/worth. Screens are usually 400 pixels vertically, and doing some reverse mathematics it this means that you get a 2 inch 50mm image length. You can therefore get a scan area of 64mm by 50mm - but at that top, although you can build up scanned strips into a composite image with the supplied art package - more later.

The magnification factor is disappointing at first - 500 pixels on screen take up about 8 inches, com-

pared to 2.5 on paper, so things appear three times bigger than life.

SHADES OF GREY

If you've got a black and white monitor, you may be wondering how a scanner can produce 16 shades of grey on a 16-bit or 18-bit or your screen if it's still either black or white, isn't it?

The Type 2 scanner is a simple mono unit, working at 200 dots per inch. Each of these dots has to be either black or white, which is fine if you are scanning something like an etching or a cartoon. However, photographs are not black or white - they are made up of a continuous range of grey shades. When you scan a photo with a Type 2 scanner, the unit takes all pixels lighter than a certain shade as white, and darker ones as black. This gives a very unappealing effect.

The Type 3 scanner tackles the problem by measuring every pixel and assigning it one of 16 grey shades. Since ST and Amiga screens don't normally support grey shades, the scanner does a subtle averaging operation and converts the grey shades into a block of 4 by 4 pixels which it sends to the screen. 8 times 4 is 32, of course, the same as the number of grey shades, and thus the ST's or Amiga's screen can simulate the different shades of grey, giving a much better resolution of photos.



■ An original photo of a keyboard



■ Scanned in two four-mode



■ 18-gray scale mode (1)



■ 18-gray scale mode (2)



■ 18-gray scale mode (3)

■ The Canonian Type 3 scanner works in four modes - a black and white scan and three varieties of 18-gray scale scans. The first option is best for cartoons and line drawings; the last three are better for photos - the one you use depends on the photo.

Building up

The main scanning software on both ST and Amiga is a painting program, Handy Painter. This only runs on mono-screened STs, although any Amiga will support it.

If all you want is a single sweep scan - 64x320px - then life is simplicity. Select "Scan" from the menu, do the business, and when you're happy with the result save it to disk. If you want to scan a bigger picture, you'll have to scan it in strips and piece them together by hand. Luckily Handy Painter provides the tools.

There are seven buffers, or painting areas. Each buffer can be any size you like, memory permitting, so you aren't restricted to screen-size scans. A conventional set of cut-and-paste functions let you move data between buffers. So, armed with this knowledge, your task is as follows:

■ Work out how many pixels your total scan will take up - for instance, a 113 by 8 photo would need 2000 by 1500 pixels at 250 dpi - and set up one of the buffers to be slightly larger than this.

■ Make your first scan and copy the scanned image to the large buffer you just created.

■ Make another scan just overlapping the first, and copy it to another part of the buffer.

■ Using a magnified screen, find two exactly corresponding points on the two scans.

■ By looking at the coordinates displayed, work out the difference in pixels between the two positions, then move the second block so that it exactly matches up with the first.

Repeat this as many times as it takes to build up the entire image. You need to make absolutely sure each scan is exactly parallel to the last or you won't get a proper match.

There are no "preview" commands to show the complete image as you assemble it, so with images larger than the screen you're working blind.

Once you've got the best image you can, you may need to stretch it down to fit on a single screen, ie, 640 by 400 pixels, particularly if you want to export it for use with other

programs. On the ST, a utility to convert Handy Painter files to Degas format is provided - Degas can't handle images bigger than one screen.

If you've have gathered, it is hard work to build up a good image of a large scanned area, but the results can be excellent.

READING TEXT

But wait - scanning pictures off a page to store them in your ZIP package isn't all the Handy scanners can do. What makes them unique, certainly in budget scanning systems, is the ability to recognise text from a mass of graphics. In other words, you can feed it a page of writing, and after a bit of thought it will tell you what the words are. Just think of the potential advantages - if you've got a cupboardful of old archives, you could transfer them into computer disk and get them into your word processor.

On the system we reviewed, the Handy Reader software was only running on the Amiga, although Canon said the ST version should be available by the time you read this. IBM's of IBM is recommended when using Handy Reader.

The first stage is to scan your text page into memory. You need use a Type 2 scanner, or a Type 3 switched to two grey scale mode because you need definite on/off status for the pixels, so only-noisy greyscale.

Because the scanner width is only 64mm, you have two scanning options: vertical or horizontal. If you are reading magazine or newspaper columns they may be narrow enough to fit in one sweep, so just scan straight down the page. With a magazine of memory you'll be able to scan a column up to 400px deep.

However, an A4 page is 210 mm across, wider than the 64mm scan head. The solution for a typical typescript is to put the scanner sideways on the page and sweep it left to right - once you've gone the full width the

WHAT OCR IS

In case the difficulty of Optical Character Recognition - reading text off a page - hasn't yet struck you, here's the problem. Since you've scanned a particular bit of text, you can display it on screen. Now it may happen that what you printed was a message saying, "Lamas like honey", but to the computer all you've got is a pattern of pixels. It has no idea what the juxtaposition of one pixel here and another there means when perceived by the human eye.

So, what the computer has to do is take a scanned image and work out what it says. The first thing it does is try to isolate each letter in turn - working across the page it looks for blocks of black pixels on a white background, and labels that to be a letter. It follows that text you can input and be printed up at all, and the printed letters need to be of a high enough quality that they are unambiguous.

Once a letter has been found, it is compared with the first data used a match is found.

OCR software lives and dies by how well it can cope with subtle variations in typewriting, and how well it copes with variations in scanning quality.

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software stores the image, although you had scanned a column 210 mm across but 64 mm deep.

Once the page has been digitized, you can choose an area of the image and ask the program to recognize it — take it from a graphic screen into an editable text file.

How well text is recognized depends a lot on the font used — the body text of this magazine is in a font called "News Gothic", which is quite different from the typewriter-style "Courier" font. Handy Reader comes preset to recognize Helvetica, TimesRoman, Bookline, Typecase and Digis fonts. You pick the one closest to the style of your document and load the font into memory before starting the recognition program going. Unfortunately, the manual doesn't show you samples of all the fonts it knows, but choosing the right one is critical for good results. Typecase is best for typed documents, "TimesRoman" for book pages... try them and see which works best.



■ The black Type 2 Handy Scanner, and beige Type 3

Look and learn

Your first attempt at OCR is likely to be fairly dismal, with maybe only one character in two being correctly recognized. This is because the input fonts probably don't quite match the one you are reading — what you have to do is teach Handy Reader your own custom typeface.

Starting from the chosen of the built-in fonts, you select "Back-It-

Up" from the menu, and the scanner scans the page in strips.

ing wax, and when the BBC are going to go to the new series of Star Trek." wrote, from Lewis Carroll, is the key to

the key to the new series of Star Trek." wrote, from Lewis Carroll, is the key to the new series of Star Trek." wrote, from Lewis Carroll, is the key to

■ The text recognition screen for Handy Reader. The scanned image is in the top half, and the result of the attempted text appears below.

from the menu, and the tape the recognition process by connecting each suspect letter in a page of the target typeface. The program goes

back to scan an entire page in strips — probably five per A4 sheet — and save them as files to disk. They will probably be called SCAN.001 to SCAN.005. You can then choose the "Load and Recognize" option which automatically loads each strip, extracts the text from it, loads the next one, appends the text, and finally saves the complete text to disk. All this happens while you are off having a good time.

The other limits

So, in the final analysis, how effective are the Handy Scanners at doing their job?

Text recognition is a nice idea, and for a relatively cheap package such systems can run to tens of thousands of pounds is very impressive. However, the Handy Scanner with a too small to be useful. Once trained, the software is quite effective — if you were to invest in an A4 flatbed scanner and hard disk you would get a genuinely useful system.

As to general image scanning, without doubt you should go for a scanner with pre-voice support — our review Type 3 model will have been upgraded to the higher resolution Type 4 by the time you read this. The extra flexibility of scanning photographs is well worth it. The control controls on the scanners are very sensitive, and you'll be able to get near-perfect images out of a camera or simple lens (using your other model). The maximum 64mm scan width is small, and it's a pity that there aren't simpler commands for putting several scans together into a larger whole — it's a deal with the primitive editing provided, and the manual isn't very good.

Overall, a Handy Scanner definitely offers a cost-effective and profitable way of ingesting graphics or text into your PC or things.

IN-FRIMING

When you make a scanned image — particularly if it is a shaded grey scale image — you tend to get false patterns (you know them) if the scan factor is not an exact fraction, say 25%, 50% or 75%. Handy Reader offers a nice feature called "Pattern Zero" which recalculates the grey scales in a picture to ensure it sits within its new dimensions.

Features

1 2 3 4

performance

1 2 3 4

cost of use

1 2 3 4

reliability

1 2 3 4

format value

1 2 3 4

for

- Compact and simple to use
- Unique OCR software cuts typing out
- 3 types of grey scale for photos
- Can assemble images larger than screen size

against

- OCR software needs hard work for best results
- Small scan area
- Manual and installation hard work



STATE SIDE STORY



Wondering about the future of the new Atari ST or Amiga computer you just bought? Check it out with the American market. MARSHAL M. ROSENTHAL, our tireless (mostly) contributing reporter, has gone on a safari around the United States to bag the answer for you.

Let's start off with good news—both the Atari ST and Amiga are doing well though not great here in the States. And success breeds success—software houses don't bother making products for failing systems.

One of the most successful producers in the US is Lucasfilm Ltd's Games Division, one of the most successful in the US. Starting from their first entry, *Bullwinkle*, on to the most recent *Jim MacGruder* and *Alyse Bloodbender*—all their games have been clever and innovative. But they've never made any appearance on a 68000-based machine. "I don't see it," says David Fox, software designer and project leader.

Fox has been with the Games Division from the start, and knows what proper programming can do to enhance a product, even when it was originally designed on another computer. "We will shortly be making it Amiga debut, and the ST won't be far behind," laughs Fox. "There are enough machines out there to justify



David Fox of Lucasfilm's game division. A couple of their titles are on the other page—ST and Amiga users can expect solid support.

the conversions—and we're taking full advantage of the clever and sophisticated sound capabilities. "Additionally," says Fox, "we'll be releasing a good number of new programs on the Amiga and ST in 1989—we plan to become a strong part of the software for these computers."

Agreeing with that is AJ Redner, head of U's product development. "It takes time for a computer to become strong enough in the field to attract software houses," he remarks. "The ST used to be troublesome because of the single-sided, double-sided drive business; multiple-disk carts were annoying and a packaging problem. But Atari addressed the issue by dropping the single-sided drive." "Meanwhile," says Redner, "the 3.5" disk is now becoming a standard, reducing duplication costs as well. All this adds up to a greater viability in the health of both the ST and Amiga."

A pint in a quart bottle

Chris Crawford gladly listens to anyone discussing the opening of doors for 68000 programmers. He was one of the first game designers to devote

the advice of marketing personnel on what would and wouldn't sell to the public.

The results over the years have been impressive. Such programs as *Castles From 1941*, *Balance of Power*, and the *Legend of Blood* have shown him an unrelenting purveyor of games that push past the safe boundaries of most things. Crawford sees the complexity of software as the main issue facing the future of these computers.

"Here's one," he says, "machines had a total of 40K to play with. To make do with that required squandering every last bit out of the code. Of course, assembly language. Now we have plenty of room, 128K, 512K etc, and there's no impetus to fill it up. We're left with a big empty space that allows for 48K games. Or at the least, a number of 48K modules combined together."

"There's a real need in games for believable characters that provide human values," Crawford says. "Forget about city enhancements and huge manuals—programs need to have substance, and it won't happen just because the hardware does more things. Designers need to be aware of this because the audience doesn't really know what they're missing. It requires thought and consideration on the part of game designers, and they can't take the easy route by making cheap meaningless games even if they sell. The fact is that the potential is waiting here, and it needs to be exploited."

From the horses' mouths

Meanwhile over at *Power Without the Price* (B.™ etc.) themselves—Bingo continue to be fairly low profile.

1040S ON THE ROCKS?

"Buying 1040" picks up Bruce Mandel's story. He asks for Park James' views in New York, a dealer for the Atari ST line. "The Mega-IT's are selling real well, especially as an 1040SFS can be had anywhere," he says. Mandel agrees with Crawford about the demand for greater and greater memory. "People used to be satisfied with 68K, 630K—but now they just can't get enough." Mandel estimates ST software sales as being divided roughly into the middle, with 70% going towards desktop publishing and word processing, the other half being arcade and role-playing games. "The ST is a strong contender since you can get the negative gaming only Atari image," he says. "It would be nice if Atari advertised a lot more so that people here just want the ST could do."

In a side-note, the store has been carrying ST Amiga Format magazine since October. Mandel states that, "We only get in 25 copies, and they disappear real fast."



However, new products are appearing: The Mega File 70 has been replaced by a new 60MB model - there's a 60MB version appealing for those really big users - and there's a new 1200 cpi model for under \$1000. Atari's move to dealer-only retailing, seems to be paying off: clear support and word of mouth is making more people aware of just what the ST line is all about. Atari is also out to gather more attention through their SLM 804 Laser Printer which costs its low 100 to a more design that supports it. "We're out to shatter the myth that high-performance desktop publishing has to mean a high price tag", says Atari Corporation President Sam Tramiel. Not an easy task to reach, Tramiel goes on to note withy impatience that founding Mega 2's with the Laser printer is extremely cost effective, but that saving isn't doesn't mean getting less.

Much more accessible is Beth Morrison, Manager of Market Development - Amiga Products, from Commodore. Such a title may be a little long for a business card, but Morrison accepts the responsibility and inevitability of a future laden with increasingly more sophisticated software as a result of the attractiveness for the Amiga. "I see a greater commitment towards both graphics-intensive use and Desktop Publishing" he sees. Commodore has put their money where their's mouth is by releasing version 1.3 of the operating system, as well as two new versions of the Kickstart. The 2000HD includes a preformatted 60MB drive, and the 2500 can do just with 2 MB of RAM on a 68000 32 bit processor and 68881 matrix co-processor. "That's quite a mouthful" grin Morrison, "but it shows just how committed we are to fulfilling the needs of graphic intensive programs. Plus there's a lot of third party hardware developers out there willing to do it."

Too much of a good thing

Expert Services of Kentucky enters that feeling. Vice President Terry Terio says it's hard keeping up with the demand for Amiga 2000's - but you can tell he's not really complaining. He also notes that more and more users are interfacing their laptops with video, and that animation programs and 3D sets like RAJA4 are being stepped up. "Thanks the Progressive Peripherals Fabrication kit so powerful that they start to fly off the shelves," smirks Terio.

Meanwhile Ego Software is on the move - literally as well as figuratively. In Jim Miller, Vice-President of Product Development, watches his ship being carried off to his new office in the expanded space next door. He comments, "We're making a huge commitment to the 68000 mar-

ket." This calls to attention the fact that Ego not only markets 6.5 Good ST products in the States, but has also combined forces with the French software house Intégration. "The

68000 machines, the Atari ST and Amiga, will be around for a long time. It's also evident that the software designers, as well as the companies producing peripherals, are



software for the 68000 computers lets you create art maps that just couldn't be done on the 6800 machines. More and more new products are being designed to take advantage of the superior graphic abilities, not to mention the greater storage on disk." Miller makes clear that this is the beginning of the end for conversions - products on the 68000 computers will be oriented for them, rather than ported over. "Besides a greater richness, I see new categories of gaming entertainment opening up as a result," he says.

Broadbased quality

Bill Williams is a case in point. A software designer with such games as *Demolition* and *Mutator* to his credit, his latest release is an Amiga crack adventure called *Power Player* (Amic Software, or *Mutator* in the UK - it's also the first one to run in the 4.000 colour mode 'n' mostly graphic mode 64MB. Williams sees the continuing success of the Amiga falling into the hands of designers like him, who must produce entertainment that is challenging as well as fun.

"Everyone is trying for graphics that look as good as broadcast television, and sound like a movie video." "But," Williams states, "by trying to emulate other products, computers ignore their real potential. Software can never become another *Star Wars* with the kind unless it develops some emotional context, and stringing some events together and calling it an interactive story is silly - you have to do a lot more than that. The games must involve the player on an emotional level, so that there's an interest in the characters and what happens to them."

So what happens next? More software, hardware - more blurring of the boundaries between what could once only be done conventionally and has now become the province of the computer. There's really no question that

looking ahead into the next century with open eyes and a desire to excel. But what exactly is going to happen? What and when. After all, 2000 AD is just around the corner.



■ The 2500 - new 68000-based top of the Amiga range

TAKING ON THE MAC

David Small (Stratage by Small) takes a different tack on programming. He requires 3.5 cartridge enables on Atari ST to emulate an Apple Macintosh 90 - also based around the 68000 microprocessor - one letter earlier. Some might remember his previous ST Mac emulator *Apple II* which became outdated with the release of the Mac I (the 68000 based one) by just an emulating against the invention - extending it and moving beyond.

"There's a special feeling I get from using it," he says. "Sometimes on video games to you, you take it up with you, it just works. And the beauty of emulating just makes you a little better." To Small, emulating the 68000 computer means being good for all of them. He says this point is one that can justify more people into buying and using 68000 machines.



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DISK EXTRA



ST Amiga Format's unique dual format disk gives you the best of both ST and Amiga worlds! JASON HÖLBORN skims the cream from huge vat of PD-ware and reader-ware to get your new year off to a sizzling start.



a Purple Saturn Day - ST & Amiga

ST

◆ PURPLE SATURN DAY

You've seen the movie, you've read the advertisement, now experience Purple Saturn Day for yourself. Format and Intergames have joined forces to bring you this mega demo.

◆ DATABASE CONSTRUCTION SET

Realize the potential of your ST within the modern, electronic office with this powerful database system. Digest anything from your Amadeus breeding business to the local parish records.

◆ MESSAGE WRITER

Who says the ST can't handle smooth scrolling? Take a look at this program and you'll soon change your mind.

◆ MESSAGE

At last! All the Desktop functions you'll ever need in one amazing program. Forget your file copiers and your disk formatters, OS/ACC does the lot!

◆ SECRETS

We've got a bumper collection of cheats for you this month. SK in fact. Get sneaky and get the best of LIFE, Thunderbolt and others.

AMIGA

◆ PURPLE SATURN DAY

Yes, Amiga owners too can enter the magical world of Intergames Purple Saturn Day with this month's great cover disk demo. Sit back and be amazed.

◆ SCENERY

Explore the fascinating world of fractal graphics with your Amiga. Just sit back and watch as a whole new world unfolds before your very eyes!

◆ SCREENX

Need a screen grabber? A screen printing program? How about a clock? A free RAM display utility? ScreenX has got the lot!

◆ BOOTSAVER

Never again will you look at items of software because of virus infection. Keep those critical bootblocks fixed away for safe

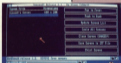
keeping with BootSaver.

◆ SCRUNCHER

Pack more programs onto your disks with this excellent file cracker utility.

◆ CUI HELP

A great 800 program for the CLIers among you. Whether you're a hardware hacker or just starting out with the CLI, CUI Help will give you all the information you need at your fingertips.



a Praxial Summary generator - Amiga

WIN A SHARE OF £800! FOR GOOD SOFTWARE ON OUR COVER DISK

We're looking for good quality software to fill our cover disk each month. If you're a fully-programmer you could earn big bucks from your labors - games, business applications, utilities, or anything of general interest.

Turn to the end of this section for more details on how to get your software onto the Format cover disk.



THE FULL VERSION

Purple Saturn Day for under £24.95 on both the ST and Amiga and is published by Intergames. Both versions should be available by the time you read this.

PURPLE SATURN DAY

All colour STs and Amigas
FILES: PURPLE.PRG, saved JED files

Intergames had a problem: what on earth could they do after the mind-blowing success of Captain Blood? When we saw the below-ly Purple Saturn Day, we were so impressed that we gave it one of our cover Format Gold review awards this month. And we just had to get a demo to you could see for yourselves.

Once every year, the stars above Saturn give with a mysterious Purple nebulae. This natural phenomenon is the sign for all the peoples of the neighbouring systems to converge on the ringed planet for the annual galactic olympics. You have been chosen to represent the people of the Earth to defend the honour of the human race.

The opposition is tough though, so holds barred is the order of the day. The devilish tactics used would even have Sir Johnnan throwing his hands up in horror. You must compete against 16 other finalists through four levels of increasingly difficult galaxies for the ultimate prize, a kiss from a beautiful alien maiden.

In the full game - reviewed this month on page 52 - your first challenge is the Ring Pursuit which takes you into the hazardous rings of the planet Saturn itself. You'll need space reactions and a keen eye to avoid the massive chunks of frozen rock and ice that hurtle towards you at a terrifying speed. Next up is the Toxic Slab challenge which has you racing around an intergalactic arena collecting energy balls.

Third is the Chain Breaker Challenge. The arena is set on a large alien brain that has ceased functioning. Your task is to get your hull functioning again by connecting all the chips together so that the brain picks your freedom of movement. Your opponent, disgruntled by your progress will occasionally wander across into your hull and attempt to destroy your hard work.

To save you the emotional trauma of being responsible for the human race's dignity, you don't actually have to do anything stressful in this demo. Just hang on to your hull and watch the stunning graphics of Purple Saturn Day.

Both ST and Amiga versions will automatically run when you insert your machines with your cover disk in the external drive.



SCENERY

Public Domain
All Amigas

FILES: SCENERY, SCENERY.DOC

Designing planets is a complicated business. What with mountains, rivers, valleys and seas, creating a whole new world can be a thing task indeed. If you're a would-be Spielberg remember the creditably laid-out Norway, Hitchhiker land? and you're starting to feel this creation lark is taking it out of you, then let your Amiga do the job for you.

Scenery is a program that uses some very complicated mathematics to create some very interesting results. The program uses fractal graphic techniques as used by super computers such as the Cray to create random landscapes of almost unbelievable realism. Fractal techniques are used extensively within the film industry to create graphics for sci-fi films such as Star Trek. If you've seen any of the more recent Blockbusters, chances are that the asteroids and other planetary objects were created on a super computer using fractal graphic techniques.

The landscape generation takes a random number as a 'seed value' which can either be randomly generated or chosen by you. Seeds of 1000 onwards seem to give interesting results. Other options include the ability to increase the height of the 'camera' from zero right up to 8000 feet. The water level and the height of mountains and hills can also be selected from the on/off menu.

Landscape generation is reasonably fast when you consider the Earth took millions of years to get to its current state! It can take as little as five minutes for a scene to be rendered - impressive when you con-

sider the complex maths in fractals. Once a landscape has been created, selecting 'Save Screen' from the Project menu will save the screen as 89 format for loading into a paint package such as Deluxe Paint or Aegis Images.

You can load Scenery either by selecting it from our cover disk menu program, Clickfile or by alternatively clicking on its icon on the Workbench. Instructions are available within the Scenery channel.



ST

First, copy and load the disk as described at the end of the Disk Entry section.

DATABASE CONSTRUCTION SET

By G. Montgomery
Colour STs (medium res.)
only
FILES: DATABASE.PRG,
DATABASE.DOC



Of all the different types of computer program ever written, the Spreadsheet, Word Processor and the Database have undoubtedly become the most popular. Throughout the world computers of differing shapes and sizes, and of varying complexity offer these three basic types of program in one form or another. You don't need a degree to guess what class this month's computer program falls into.

Database Construction Set is a powerful dBase-based database man-

agement system that boasts some impressive features. The program can handle up to 500 records in memory at any one time and a maximum of fourteen fields, all from a friendly dBase environment. You'll feel instantly at home with the Database construction set.

Once you've decided on your file format, Database Construction Set offers a whole host of tools for managing your data. Tools include sorting on any field, fast searching from any field and many others.

Full instructions and a demo database are included within the database folder. You may find the demo database of particular interest as it lists all names that appeared in issues 1, 3 of Format.



MESSAGE WRITER

By G. Pepler
Colour STs only
FILES: MESSAGE.PRG,
MESSAGE.DOC, TEXT,
MESSAGE

Calling all home video buffs! Have you ever fumbled using your ST for video editing but just couldn't find the right software? Look no further. Message Writer is here! Just type the text to be displayed and sit back and watch as the results are scrolled smoothly across the screen in a super high resolution font.

Even if you aren't involved in home video, Message Writer should still be of interest to you. Whether you run a shop or are trying to sell your own printing, Message Writer will give you that added advantage that will get your message across.

Using Message Writer is simple to install. When you run Message Writer, the text to be displayed is read from a file appropriately called TEXT. By loading this file into a text editor,

Before you attempt to use the program, the first thing you must do is to copy the database and its related files to a separate disk. (To copy dBase, drag the Database folder into its window onto the disk it sits on and follow the disk copy requests.) The program will work fine from our cover disk but as soon as you create a new database or edit the demo file, Database Construction Set will attempt to write to the cover disk which could corrupt our special disk format.

SCREENX

Public Domain
All Amigas
FILES: SCREENX,
SCREENX.DOC

It's the saying goes, "The small ones are the best," and that's certainly true of ScreenX. Hidden behind its seemingly big Workbench window is a myriad of wondrous features for all Amiga owners, from the most experienced machine code programmer to the casual Workbench user - everyone can benefit from ScreenX.

ScreenX is a collection of handy utilities bundled into one compact package. When you first run it, a tiny window title bar will pop up onto the Workbench screen displaying all sorts of useful information such as free memory and the time. To get into the program proper you first click the left mouse button on the window bar to activate it, then click the right mouse button also in the



title bar. The ScreenX screen will disappear.

All your active Amiga screens are listed out. For instance, you'll have a screen for SCREENX, a screen for the Workbench, and maybe a screen for the CLERK menu program if that is running too. Click on the screen name to select it, then by

choosing the appropriate items, you can dump the screen to an ST image file or to the printer, you can kill the screen to recover its memory - or just get information about the screen file size and number of colours - handy for programmers.

Full instructions are included in the program drawer.

SCREEN FACTS

Amiga messengers may be confused by the idea of a screen. Programs usually open a private area of memory for their own display (the panel), but since the Amiga is multitasking there might be several 'floating windows' open at once. Think of these as being stacked up on top of one another - you only see the top one. Use the left Amiga key and M to flick through the stack.

ScreenX gives you info about all active screens - not about all active programs. If two programs share a screen (eg. two CLM tasks outputting on different windows on the same screen) you'll only get one entry in ScreenX.



ST message writer.

KEYS

| | |
|---------|------------|
| Undo | reset cols |
| Space | pause |
| Escape | quit |
| Cursors | chang |

■ Message writer (ST)

you can customize the text to your heart's content. Different effects can be achieved such as changing the scroll type, underlining text and others by simply inserting control sequences within your text file. These control sequences are listed with the program's documentation file.

You can run Message Writer by either clicking directly on the MESSAGE WRITER icon, alternatively to give the old mouse button a rest, Message Writer can be run by clicking on the Message Writer icon on the Desktop. Full instructions are available within the MESSAGE WRITER folder.

DOSACC

By G. Kneeling

All ST's

FILES: DOS.ACC,
DOSACC.PMG,
DOSACC3.PMG,
DOSACC.PMG

So you've got a disk formatter accom-

pany, a free memory allocator, a file copy accessory and a whole host of other accessories. Well, all these have failed, what else have you got? No free memory and no more space for more useful accessories? If you

don't use GC STUFFER that is.

DOSACC is just bursting with features. From just one program you can have Free memory and disk status, date and time setting facility, a fast disk formatter, a file display utility, a file copier, full featured file management and a whole host of other wonderful features.

DOSACC, as the name suggests, is a desktop accessory and will not therefore run from the Desktop. To use DOSACC, copy the files DOS.ACC and either DOSACC.PMG or DOSACC3.PMG depending on the resolution of your machine, to the root directory of your hard disk. If you've got a high resolution mono monitor then DOSACC.PMG is the one to use but otherwise DOSACC3.PMG will do the job.

Once copied, reset your ST and DOSACC will automatically be loaded into the desktop by GEM. The program can now be run by selecting it from the DESK menu. Complete

DON'T GET LEFT OUT!

As you may have noticed, we often refer to programs published in past issues of Format but unless you've been with us since issue one then you could have rather left out if you want to get your hands on any of our back issues then you'll be surprised to know you can still buy past issues at their original cover price. Write to: ST Single Format Back Issues, Format Publishing, The Old Barn, Somerton, Somerset BA11 7BY.



■ DOSACC (ST) giving you the use of the disk

CRUNCHER

Public Domain

All Systems

FILES: CRUNCHER, CRUNCHER.DOC

Data is never quite big enough, are they? Here's a great program which takes your program files and crunches them down so you can cram more on to a disk.

The compression utilities are certainly nothing new, and look in the PD libraries and you'll find a whole host of different utilities all claiming to be the best available. The disadvantage of nearly all these file compressor utilities is that a compressed file is of no use to anyone unless it is passed through a decompress program. Cruncher, however, is different. Just crunch your program and that's it, no decompression programs required. When you try to run a program that has been compressed, the loader will automatically carry out the process of decompressing before your very eyes as it loads the program into memory. The program then runs normally after a couple of seconds wait. Cruncher crunches program files

only; it cannot handle data files such as text from a word processor.

Cruncher works both ways - if you ask it to crunch an already crunched program, it will clearly realize that and de-crunch it for you. This way you can recover the originals from crunched versions.

Full instructions on the use of cruncher are available within the cruncher drawer.

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CHEATS

By C. Kingsley and L. Derbyshire

All STs

FILES: SLUTE.TOS, ICECHEAT.TOS,
NEBULUS.TOS, THROUGHT.TOS,
THUMPGHT.TOS, ZYNCHHEAT.TOS



Who says cheating is unfair? When the fate of the universe is at stake, there's no option but to use every tactic at your disposal to stop the advancing alien hordes, mutant tomatoes and armadillo steamrollers from doing unseemable things to your pet cogas. A little tricky now and then is a small price to pay to bring peace and justice to the universe.

Two months' cheats are in *File*, beyond the Ice Palace, Thundercat, Zynex, Nebulus and Throat. Most include full instructions within the program itself but if you're baffled by the hint, we've included a short documentation file within the cheat's share.

Instructions are available within DOSACC files.

AMIGA

First, copy and load the disk as described at the end of the *Disk Extra* section. These programs run on all three Amiga models, we have been unable to test them on the early version of the Amiga 1000.

BOOTSAYER

By S. Warden

All Amigas

FILES: BOOTSAYER, BOOTSAVER.DOC

One of the most annoying traits of virus programs is the damage that they can inflict on games and other protected software. If you've ever had a game die to virus infection, BootSaver will be of great interest to you.

Most commercial games have special copy-protection which in the form of "custom boot blocks", which tell the machine how to load the game. Unfortunately viruses tend

virus killers tend to work by altering these boot blocks, and this will usually trigger the copy-protection and prevent the game loading even though the actual program itself is still intact.

BootSaver is a simple utility written to recover from such an event. The program works by loading the first two sectors of a disk (the boot block) and storing them in a file. If the unseemable happenings and the boot block of a game disk becomes corrupt, by simply reading the boot block file back from disk and then re-writing it to the corrupt disk, the game can be restored.

If you own a large collection of games then it may be a good idea to protect your investment by keeping a library of all the boot blocks on a separate disk.

You can load BootSaver from either of your disk start-up programs, Click.Me, or by stating on the BootSaver icon on the Workbench. A full description of the technical details of the program complete with a tutorial are available within the BootSaver share.

CU HELP

By G. Searcy

All Amigas

FILES: HELP, HELPA.HELP, HELPB.HELP, HELPC.HELP

Fighting your way through the com-

plexities of the Amiga's Command Line Interface (CLI)? Are you baffled by buffers, floppies by the files and confused by the commands? Do not fear, CU Help is here!

CU Help is a handy little program that provides online help facilities for CLI users. Whether you're an experienced CLI'er or just starting out, CU Help can provide you with instant information on any CLI command at the touch of a button (well, a couple of buttons to be honest).

Before you can use this incredibly useful utility, you must first install the program on your CU disk. The file HELPA.HELP must be copied to the 'C' directory of your boot disk and the file HELPB.HELP must reside in the top level or root directory of the same disk.

To use CU Help, enter the CU Help command, `cucli:` followed by the name of the command you require information on. For example, to obtain information on the DIR command, you would enter:

```
cucli: DIR
```

Due to the fact the CU Help is CLI based and needs parameters to function correctly, the program cannot be run from the custom disk menu or from the Workbench. This program is aimed at those of you who have a certain amount of experience with the Amiga's CLI environment. Full instructions are available within the same share as the program.



CU Help offers Amiga users memory support

HAVING TROUBLE WITH THE DISK?

We have done our best to check that the programs supplied on this month's disk are simple to use, error free and have no known viruses. However, we cannot answer telephone queries on using the software, and we do not accept liability for any consequences of using the programs.

If your ST Amiga Format disk is faulty - and out of 40,000 duplicated copies are unfortunately bound to be - you should send it back for a free replacement to:

ST Amiga Format February Disk, Mailbox Lane, 30 Gayle Close, Brentwood, Essex S16 5JY.

AMIGA WARNING: If your Amiga refuses to accept the disk, try using the DISKCHECK utility on your Commodore Workbench disk to reason it better sending off for a replacement. We covered DISKCHECK fully on page 48 of issue 1. Don't worry if every track gives you a "hard error", this is the Amiga being unable to read the ST software on the disk.

HOW TO USE THIS DISK

The ST Amiga Format cover disk is a special format disk which both the ST and the Amiga can read. Even if you are a seasoned computer user, please read these instructions carefully or you could permanently damage your copy of it.

The first thing you must do is make a backup copy of the disk. Because of the special format, the normal double-click copying methods, as recommended in the Amiga and ST manuals, won't work. Instead you will need to format a blank disk and copy the files manually. Don't panic, this isn't as difficult.

ON THE ST (assuming a single drive machine)

1. Take a blank disk and format it in the usual way.
2. With the blank disk still in the drive, double-click on the A: drive icon to open up the (blank) contents window.
3. Now drag the icon for drive B: into the open window of disk A: This will copy all the files one-by-one off the master disk to your new disk. Make sure that the master ST Amiga Format disk is write protected (the sliding tab should be back so the hole is open) and put it in the disk drive when asked to do so.
4. You will now be prompted at various times to insert disk A and disk B while copying takes place. There will be a lot of fussing to do on a single drive ST! Disk B should be the master disk, disk A your newly formatted copy.

If you want to cut down on disk space, you can use the (normal RAM disk program provided on issue 9's disk as an intermediate step.

ON THE AMIGA (assuming a single drive AS50)

1. Start your Amiga up with your normal Workbench boot disk.
2. Take a blank disk and initialise it in the usual way.
3. Make sure that the master ST Amiga Format disk is write protected and put it in the disk drive. Double-click on the disk icon that appears. Drag any icons you see in the contents window onto the 'old disk' icon.
4. When the disk activity light has gone out, put your newly formatted copy-disk in the drive instead. Double-click on the RAM drive icon to open its window, and drag program icons

from that onto the new disk icon. This copies the files one by one.

The programs won't all fit in the RAM drive at once on an AS50 - do whatever will fit, then after step 3 delete them from the RAM disk by clicking once on each one, holding the right mouse button down, selecting from the Workbench menu. Repeat steps 2 and 3 for the rest of the icons.

USING THE PROGRAMS ON THE ST

When you turn the ST on and put your working copy of the disk in the drive, you will see a window opened with the contents of the disk displayed.

One of the icons is called **CLICK_ME.PRG** - just do what it says, double-click to run it. Up comes a list of the disk contents. Type the number of the program you want to run, and you are asked whether you want to read the disk help file or not.

You will now be asked whether you want to run the program or not. As an alternative to using **CLICK_ME.PRG**, if you know enough about **DEM** you can click directly on the icons for individual programs. These normally end **.PRG** with their documentation files having the same names but with **.DOC** file suffix. Always read the documentation before running the program.

ON THE AMIGA

Most of the programs on the cover disk are run from the Workbench, which must be loaded first from your normal startup disk, as described in

the Amiga manual. Once at the Workbench, put the ST Amiga Format disk in the drive and double-click on its icon to open it.

You should find on the disk an icon for a program called **CLICK_ME**, do exactly what it says and after a few seconds the cover disk menu program will have loaded. If you see a single drive Amiga then your machine will prompt you to swap disks a couple of times before the menu is loaded, just follow the on-screen responses and everything should load fine.

Most of the programs on the disk can be executed from **CLICK_ME** by choosing them from the menu and selecting them to view the program's documentation or load the program, if a program fails to load from this menu (this sometimes happens through shortage of memory on unexpanded systems), you can load it from the Workbench instead, by clicking on its icon.

To load a program from the Workbench, you must first Click open the drawer which contains it. For detailed comments from the program's author click on the **DOC** file icon in the same folder. To run the program click on the main icon.

When you click on a documentation file, a new window is opened and the text is displayed a scrollable at a time. Press any key to move from one screenful to the next, or click on the close gadget in the top without corner of the window to close the display. The **READ_ME** icon gives you a brief summary of the disk's contents and how to use it.

WE WANT TO GIVE YOU MONEY!

1. If you've got any programs for either ST or Amiga which you think other readers would find useful, interesting or amusing, we'd like to know. Please write to us about sending international forms for your use!
1. Only send in programs on 5.25" disks; we cannot accept printed software.
2. Make sure your disk is clearly labelled with your name and address and the program name(s), and is marked 'ST' or 'Amiga'.
3. Make sure there's a documentation file on the disk called **README**.
4. Enclose a clear covering note explaining what the program does, and if you possibly can please also send a printed or any in-disk documentation files. Remember your address and telephone number (include a stamped return envelope for the disk if you want it back).
5. **SEND NO MONEY!** There must be a signed note that the program is yours and that you are prepared

to assign publication rights to ST Amiga Format. Use the following wording:

"The program(s) under the title below is/are submitted for publication by ST Amiga Format magazine. It is my own work and has not been submitted for publication elsewhere.

Signed ...

If we accept your program, we will get in touch with you before publication to agree terms and payment rates. We will evaluate all submissions in a batch once a month, so please allow up to 40 days for return of your disks.

If you send us a disk with a virus on it, we reserve the right to send round the heavy metal in our mail boxes and to suspend all submissions in your got! Copyists, seriously, since we're already supplied Virus-killer programs (in issue 1), do check your disks very carefully.

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WHAT WE'VE DONE

Using our Cameron Handy Scanner, we've digitized a fascinating picture of our favourite slothmate and 'enhanced' it in an art package with some appealingly placed peripherals.

WHAT YOU DO

Simply study the two drawings reproduced on this page. You'll find that the subtle changes have been made to the second picture - when you think you've found them all, let them on a postcard or the back of a sealed envelope; for example, you might write "Has two teeth" on one of them.

Finally, add to the postcard which machine you own, ST or Amiga, send it off to us at Cameron Scanner Competition, ST Design Forum, 4 Queen Street, Bath BA1 1BJ and keep your fingers crossed. Easy really.

WHAT YOU WIN

The first two entries entry accepted from the editorial desk on Sunday 21st February - one for ST and one for Amiga - will win a complete Type 3 Cameron Handy Scanner system for their machine. Have a read of this month's review starting on page 24 to see what you'll get - not only a superb grey scale image scanner, but a handy set of 'optical character recognition' software to save you a bit of typing trouble. Each kit is worth £350 at retail prices.



WHAT YOU CAN ONLY JUST READ

1. All entries must be received by the post on Sunday 21st February 1988.
2. The editor's decision is final, and will not be argued with him.
3. Employees of Future Publishing and Cameron may not enter the competition.
4. AmigaMag and other publications may not enter, as they would have an unfair advantage in spotting the differences.



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VOICE BREAKING

There can be little doubt that in terms of quality the best speech synthesizers are the ones which play back complete sentences of a digitally recorded voice. Unfortunately, apart from the expensive software, these require large amounts of memory even if only a few short sentences need be stored.

There are two extreme alternatives. One is to store a number of digitized common words in ROM and build sentences up from them, but the vocabulary is usually limited but the results are less than convincing.

The second method is really an extension of the "bit and gate" technique, but the digitized speech is only basic words such as "later" and "and". Provided there are enough of them, any desired words can be made up. You need to have some understanding of the basics of speech to get the best from this system, and although results are something short of full on the simplicity and versatility of these speech units makes them an attractive proposition. The latter sounds are stored in ROM in the speech unit, and quite long sentences require no more than a short program, plus a few dozen bytes of data storage at the computer.



SPEECH SYNTHESIZER

Do you feel lonely? Wouldn't you like an understanding voice to talk to you once in a while? **ROBERT PENFOLD** explains how to add a speech synthesizer to your ST - or indeed any computer.

On being the Amiga can boast what the ST lacks is a speech synthesizer - the ability to take a string of English text and speak it aloud. As it stands, on the ST it is just about possible to produce speech (as games like *Captain Blood* do by using digitized samples) but it needs a lot of expensive hardware if you are to capture your own

voice.

The above speech synthesizer for the ST gives it something close to capabilities of the Amiga. It may not always pronounce words and as you would like them (even allowing for the American accent), but it is capable of remarkably good results given a bit of

thought, and can handle any English word or sentence.

Speaking volumes

The ST Amiga format speech synthesizer is a box which plugs into the serial interface (module port) of the ST. You can then use a programming

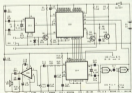


Figure 1: The circuit diagram for the technically minded. IC1 is the speech chip, and IC2 is a small power amplifier that enables a miniature loudspeaker to be driven at reasonable volume.



language to send commands to the unit which will dutifully speak to you through its own speaker - it doesn't use the ST's own sound chip at all.

In fact, the speech synth will work with any computer which has a serial interface, and that includes the Amiga of course. Disregard the possibilities using multitasking - you could get the Amiga to talk to itself, one voice through the built-in synthesiser, and one through the external loud.

The speech box could have been designed to connect to the parallel or serial port of the ST - since many people will already have a printer connected to the Centronics, the serial port seems a better bet. The synth is powered from an internal battery as there is no convenient (and useful) way of tapping power from the ST itself.

Building the unit

Details of the printed circuit board are shown in Fig 2 - assuming you've bought the kit from Magenta Electronics (see the parts list elsewhere) all you have to do is identify the components, bend their leads to fit into the corresponding holes on the board and solder them in place.

A warning about the integrated circuits: apart from IC1 they all require anti-static handling precautions. This boils down to fitting integrated circuit sockets on the board first of all, and not plugging the ICs in until everything else is finished. These MOS integrated circuits are usually supplied in some form of anti-static packaging (such as conductive foam or plastic tubing). Leave them in until it is time to fit them into their sockets, and then handle them as little as possible. Obviously you should keep away from any sources of static electricity when fitting these devices.

The pins of integrated circuits are usually spaced out slightly, making them difficult to plug into their sockets.

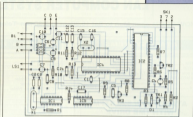


Figure 2: Slot the components fit onto the printed circuit board supplied with the kit. Refer to the Parts List later on for which colour corresponds to which component. Push the component leads through the holes so that the wire poke out of the copper side of the board, then solder and trim them.



Figure 3: Now the completed circuit board looks with its connecting leads.

ers. Pressing the row of pins against the top of a table to bend them is slightly easier than using a vice.

to fit. Make sure all the pins are going into place before pushing them home - buckled pins can easily snap off as

THE ALLOPHONES

| Dec no. | Hex no. | Allophone | Sample Word | Dec no. | Hex no. | Allophone | Sample Word | Dec no. | Hex no. | Allophone | Sample Word |
|---------|---------|-----------|--------------|---------|---------|-----------|-------------|---------|---------|-----------|-------------|
| 0 | 0 | PH1 | Silent pause | 23 | 16 | SH1 | sh | 44 | 2C | NO | no |
| 1 | 1 | PH2 | Silent pause | 24 | 17 | AO | ought | 45 | 2D | LA | less |
| 2 | 2 | PH3 | Silent pause | 25 | 18 | SO | so | 46 | 2E | WH | what |
| 3 | 3 | PH4 | Silent pause | 26 | 19 | FO | fo | 47 | 2F | SH | sheep |
| 4 | 4 | PH5 | Silent pause | 27 | 1A | AO | ought | 48 | 30 | WH | what |
| 5 | 5 | BT | BT | 27 | 1B | SH | sheep | 49 | 31 | TA | tea |
| 6 | 6 | BT | BT | 28 | 1C | SH | sheep | 50 | 32 | TA | tea |
| 7 | 7 | BT | BT | 29 | 1D | SH | sheep | 51 | 33 | TA | tea |
| 8 | 8 | AA5 | same | 30 | 1E | SH | sheep | 52 | 34 | SH | sheep |
| 9 | 9 | PP | power | 31 | 1F | SH | sheep | 53 | 35 | SH | sheep |
| 10 | A | SH1a | sheep | 32 | 20 | SH | sheep | 54 | 36 | SH | sheep |
| 11 | B | SH2 | sheep | 33 | 21 | SH | sheep | 55 | 37 | SH | sheep |
| 12 | C | SH | sheep | 34 | 22 | SH | sheep | 56 | 38 | SH | sheep |
| 13 | D | TT | tea | 35 | 23 | VV | vertical | 57 | 39 | SH | sheep |
| 14 | E | SH1 | sheep | 36 | 24 | SH | sheep | 58 | 3A | SH | sheep |
| 15 | F | SH | sheep | 37 | 25 | SH | sheep | 59 | 3B | SH | sheep |
| 16 | 10 | SH | sheep | 38 | 26 | SH | sheep | 60 | 3C | SH | sheep |
| 17 | 11 | TT1 | tea | 39 | 27 | SH | sheep | 61 | 3D | SH | sheep |
| 18 | 12 | SH1 | sheep | 40 | 28 | SH | sheep | 62 | 3E | SH | sheep |
| 19 | 13 | SH | sheep | 41 | 29 | SH | sheep | 63 | 3F | SH | sheep |
| 20 | 14 | SH | sheep | 42 | 2A | SH | sheep | | | | |
| 21 | 15 | SH | sheep | 43 | 2B | SH | sheep | | | | |

SLURRED SPEECH

The speech speed is controlled by a 3.2768 MHz crystal. This is a readily available and cheap item which is intended for use in quartz clocks. The crystal frequency recommended by the speech chip manufacturer is actually 3.2768 MHz. The marginally higher than-recommended crystal frequency results in a slightly higher audio pitch and very minor speeding up of the speech output. Neither effect is great enough to be noticeable though.

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they are straightened out. Make sure of the integrated circuits are fitted the right way round, with the notches in the packages indicated in Fig. 2.

Orientation course

It doesn't matter which way round the electrolytic capacitors, resistors, and electrolytic capacitors are fitted, but the electrolytic capacitors and diode D1 must be fitted the right way round. In the case of the electrolytic capacitors '+' and '-' signs should be marked on the components to identify their lead ends. The transistor has perforated leads which should extend from the diode into place in the correct oriental slot easily.

Several fine wires are needed, and trimming from resistors/capacitors for trued wires may suffice for these. If not, some 22 AWG tinned copper wire will be needed. Fit 10mm single-sided printed circuit pins to the board at the places where connections to SW1, W1 and the other off-board components will eventually be made.

Minimize loudspeakers, more meant to have any provision for panel mounting, so just glue (51) in place. Any good quality general purpose adhesive should do, but try to avoid covering any onto the diaphragm. The printed circuit board is mounted on the base panel of the case using both end spacers, W10 and S1 are connected in a standard volume control and on/off switch.

There is a small amount of point-to-point wiring to add in order to finish the job. This is mostly straightforward, but Figs 2 and 3 show how to get the wiring to W1/S1 right. Fig. 4 shows an alternative for the 25-way D socket which connects to the ST's 'master' control pot. This shows the socket as viewed from the rear, i.e. the side on which you make the external connections.

A supply voltage of about 5 to 6V is required, and this is provided by four HF7 size cells in a plastic holder. These holders have standard HF7 style connectors incidentally—do not use a 9 volt battery as this may damage C2 and C4, neither of which are particularly cheap.

The output signal is 0 and +5Vdc rather than the standard 0/50/100 levels of -12 and +12 volts. However, the ST's vocal level like most others will operate perfectly well with these reduced voltage levels provided a connecting cable of no more than a metre or less is used.

It is advisable to get the computer up and running before switching on the wire box, or there can be problems with spurious signals from the computer generating noises. Once the unit is switched on, with the on/off pump up, it should be possible to hear a certain amount of background buzzing if you place an ear

close to the loudspeaker. If not, switch off all noise and give the wiring a thorough check.

Speak to me!

As you'll have gathered from the 'voice blocking' box, to produce a word you need to send the correct series of sounds, or allophones in the jargon, to the speech chip. A list of all allophones available is provided in the box, together with an example word which should help to clarify the exact sound of each. The key to getting realistic speech is understanding how a spoken word is composed of these sounds.

It would be nice and easy if each letter of the alphabet had a corresponding allophone, but there is no easy match of this kind. Any software which tries to turn written English into the right allophones for a speech synthesizer certainly has a difficult task.

So what are the basic rules for selecting the best allophones? The most important one is to think as much as possible in terms of the way a word sounds, rather than how it looks in writing. This is true for someone selecting allophones for themselves, but is beyond the scope of most computer programs!

Looking down the list of allophones you will notice that there are often two or three allophones for what, on the face of it, is just one sound. These are, for instance, three 'G' sounds. The difference between similar allophones is mainly one of duration. Allophones 'GGG' and 'GG' are relatively short at 100ms and 50ms respectively. These are normally used at the beginning of a word. The longer 'GGG' allophone at 150ms is mainly used at the end of words. The allophones for use at the end of words, or in the middle of them, also tend to be softer. Those for use at the beginning of words are generally much sharper, with a high initial volume that rapidly subsides.

With most of the sounds it is not possible to effectively stretch them out by using the same allophone two or three times in succession. This is due to most of the sounds changing in volume quite significantly from their beginning to their end. Using several of them in succession gives a sort of echo effect! There are some exceptions though, and these are marked with a '*' in the list. In order to get a good sound it is often essential to use two or three of these sounds in succession. Note that 'FF', 'TH', and 'SS' allophones are normally only doubled-up when they are used at the beginning of a word.

Pause for thought

The inclusion of short allophones makes it easy to insert the pauses that occur during speech. This is another aspect of the speech synthesis that needs to be given careful

thought if really good results are to be obtained.

When selecting the places for pauses it is only natural to assume that there should be short intervals between words, longer ones between sentences, and none at all during words. In reality, in normal speech you often run one word into the next, leaving in what are really phrases

PARTS LIST

| RESISTORS | | |
|------------|------|----------------------------|
| R1 | 10k | brown, black, green, gold |
| R2, R3, R6 | 20k | green, blue, red, gold |
| R4, R8 | 47k | yellow, violet, red, gold |
| R5, R7 | 5k | red, red, red, gold |
| R9, R14 | 10k | brown, black, orange, gold |
| R10 | 100 | brown, black, black, gold |
| R11, R13 | 22k | red, red, orange, gold |
| R12 | 100k | brown, black, yellow, gold |

| POTENTIOMETER | |
|---------------|---------------------|
| W1, S1 | 47k log with switch |

| CAPACITORS | |
|------------|------------------------------|
| C1 | 100n ceramic |
| C2, C3 | 10µ electrolytic |
| C4 | 47µ 10V radial electrolytic |
| C5 | 10µ polyester |
| C6 | 100µ 10V radial electrolytic |
| C7 | 100µ 10V radial electrolytic |
| C8 | 100µ polyester |
| C9, C10 | 47µ 10V radial electrolytic |
| C11 | 47µ 10V radial electrolytic |
| C12, C13 | 22µ polyester |
| C14 | 100µ polyester |
| C15, C16 | 22µ electrolytic plate |
| C17 | 10µ polyester |

| SEMICONDUCTORS | |
|----------------|-------------------------------|
| IC1 | 4000MS |
| IC2 | 8400 |
| IC3 | 14555MS Amplifier for speaker |
| IC4 | 8770MS The speech-chip itself |
| IC5 | 4011MS |
| IC6 | 1565MS |
| TR1, 2, 3 | 8054s |

| MISCELLANEOUS | |
|---------------|--|
| SW1 | 25-way D connector and cover |
| R1 | 4007P batteries in plastic holder |
| LS1 | 8cm impedance 80mm diameter speaker |
| D1 | 1.2V alkaline miniature wire-wound crystal |
| SP | 2.4V 900Hz wire-wound crystal Formed silicon board Case about 10mm x 10mm x 5mm Control leads 1 metre of 0.15mm cable 2.1. Integrated circuit holders: 8 each of 8 pin, 14 pin, 18 pin, 28 pin, 40 pin 80 each, both end spacers for PCB mounting Lower diameter printed circuit pins Solder |

GET KITTED OUT!

Ordering parts from electronics catalogues is a hassle, and if you haven't done it before you'll get really fed up. Don't worry, 54 Single Format in conjunction with Magenta Electronics is offering a complete kit of parts for sale.

The kit costs £29.95, inclusive of a pre-drilled box complete with elegant lettering, and hopes as pictured on these pages. Send your orders to **FORMAT SPEECH SYNTHESIS OFFICE, MAGENTA ELECTRONICS, 136 MARION STREET, BURNFORD, OXFORD, OX5 1SE** or phone 0265 854105 with your credit card details.

Please allow 21 days for delivery.



OPERATING SPEEDS

If you use the unit with a programming language that gives handwriting options, choose the no handwriting mode. This will allow for the default mode. If handwriting has to be used, select hardware handwriting and choose the CDS and WTS terminals of the monitor port (S1, WTS) to allow ensure that the hardware does not interrupt the flow of data from the computer.



Figure 3: Where the leads from the board (Fig. 2) connect to the On/Off - Volume switch.

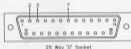


Figure 4: Wiring the plug to go in the ST's serial port, as seen from the side you solder.

rather than individual words. Perhaps more accurately, multi-syllable words often have short gaps between one syllable and the next. Some words have a natural flow and are pause-free while others do not top off the longer or needs. Think about how sentences are spoken, and not how they are written down.

As a general rule, pause 3 is used between words, and pause 4 or pause 5 are used between sentences. The two shortest pauses are occasionally used within words, and are primarily added before 'ff', 'ee', 'gg', and 'ff' sounds. Pause 3 can be used in a similar manner before 'ff',

'ff', 'ff', and 'ff' sounds.

Writing a speech program

This particular speech synthesizer uses a simple form of 'software handwriting' to communicate with the computer. Each time the speech box has processed one piece of data and is ready for the next byte it sends a 'dummy' byte of data to the ST. Looking at things from the computer end of the system, after each byte is sent to the speech box a software loop has to provide a feedback until it detects the 'ready' byte.

Set your ST's serial interface to

9600 baud, with eight data bits, no parity, and one stop bit. You may be able to set all this from the programming language, or from the standard ST Control Panel data accessory. These settings are the default on the ST array.

So particularly complex software is needed in order to drive the unit. The accompanying ST BASIC listing gets the unit to say '10, 9, 8, 7, 6, 5, 4, 3, 2, 1...ff,ff'.

The first alphabetic value is read from the BASIC statements, and then the program goes into a loop. This reads an alphabetic value from the data statements, waits for a value of 255 to be received from the speech synthesizer to indicate it is ready to receive data, and then outputs the alphabetic value to the serial port. Note that the first alphabetic is sent to the speech synthesizer before entering the loop - failing to do this will result in the system hanging up while it waits for a 255-code from the synthesizer that will never be sent. The loop continues until a value of 64 is encountered in the BASIC statement - an impossible alphabetic value. This final value is sent to the speech synthesizer, but with only the bottom six bits being read by the speech chip it is effectively an alphabetic number of 0 rather than 64. This is a 'pause', which ensures that the output from the unit is properly terminated. Many of the alphabets continue to be spoken until a new instruction is received, and without a final pause alphabets the output from the unit may not end properly.

After the final byte the last transmitted byte from the speech synthesizer read into 'memory' so that it is not left in the buffer. Leaving this byte unread would cause a malfunction at the beginning of any subsequent speech output routine. This ready signal to ensure that the serial input buffer is cleared before attempting to communicate with the unit, but ST BASIC has no simple way of doing this. Other languages often do.

When selecting the alphabets for your own sentences, remember the basic rules detailed previously. Look at the alphabets used in the examples, and try imitating on them. Note the use of double-up sounds in places, the short pauses added ahead of the 'ff' sound in 'ff', and the lack of any pause between 'ff' and 'ff' which tend to be spoken as if they were a single word. The obvious alphabets do not always give the best results, and it is often the short words that give the greatest difficulty. The word 'one' comes off badly, and the obvious alphabets 140, 15, and 111 'ff', 'ff', 'ff' don't sound at all right. An 'ff' sound added after the 'W' alphabetic seems to improve matters, but perhaps you can do better?

GET YOU GOING

If you find your speech synthesizer is being unacceptably slow - in other words it doesn't work - you'll be relieved to know that the 68 computers Magpie Electronics are offering a 24-hour pricing service.

Send your completed unit back to them with a £5 cheque to cover costs. Make sure it is properly labelled, and address it to Speech Synthesizer Repairs, Magpie Electronics, 123 (Station Street), Boreham, Essex, South (SS14 2ST). Allow a couple of weeks for return.

THE SAMPLE

Type the listing into ST BASIC and run it to hear a slowing message. If it doesn't work, check your serial interface is set to 9600 baud, 8 bits, 1 stop bit and no parity before suspecting a hardware fault.

```

10 read alphabets
20 set 1.alphabets
30 read alphabets
40 set output = 140 then set 1.alphabets
50 set alphabets = 64 then goto 30
60 dummy = repeat
70 data 10, 7, 7, 10, 4, 7, 10, 4, 11, 4, 20, 4, 14, 10, 10, 7, 7, 10, 10, 10, 7
80 data 10, 10, 10, 10, 10, 10, 4, 10, 10, 4, 10, 10, 4, 10, 10, 10, 10, 10, 10, 10, 10
90 data 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10
99 data 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10

```


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NEWS

SCREEN PLAY

With the remains of the Christmas cake festering in a tin at home and all the best of Santa's games now beginning to look boring, what better than a glance at all the new releases? **MARK HIGHAM**, games reviewer extraordinaire and resident Chuckle Egg addict, spent Christmas locked up in the Format offices to provide you with a list of the up and coming games.

PREVIEWS

DRAGON'S LAIR

READYSOFT/ENTERTAINMENT INTERNATIONAL ■ Amiga
£44.95 ■ End of January

This mega adventure game which extended across three now comes only the Amiga. Dragon's Lair will come on its disk (happily justly-

SILKWORM

RANDOM ACCESS/SALES CURVE ■ IT & Amiga
£15.95 ■ End of March

Leads and leads of events in the home co-op conversion, Silkworm is a horizontally scrolling game in which you have the choice of playing from either a chooper or a land-based pup. Both of these have equal firepower, but with a two player option you can make use of the different features of both. The objective is to be pursued to land away the fleets of mouse launchers, tanks and percherons against an impressive backdrop of smoothly-scrolled desert landscapes. Great fun for the shoot-stomp addict.

INTERPHASE

IMAGEWORKS/MIDASOFT ■ ST & Amiga
Price TBA ■ One February

Interphase is definitely not your average game. It's set in an unpopulated future where people spend their

leisure time playing DreamHack, a recording of fantasies and pleasures you plug into for a virtual thrill. A bit like ST's Duelle-wally.

Unfortunately the DreamHack Corporation are putting subliminal messages at their fingertips to control people. It's your job to locate the security controls of the mainframe and find and retrieve the lost DreamHack.

Interphase promises the fastest and smoothest 3D tiled video graphics yet seen, featuring striking topographic terrain and the most dazzling light and light sequences ever. That's a lot to live up to.

GEMINI WING

IMAGEWORKS/SALES CURVE ■ ST & Amiga

Price TBA ■ End of March

This vertical-scrolling shoot-em-up is described as 'organic' game. Gemini Wing leads you through seven different levels of organic backgrounds filled with lots of weird alien, such as mutating butterflies, flying beetles and giant Saturns.

With weapons ominously named the Windscreen Wiper of Death, boring missiles and a frontal which

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CHEAT ZONE

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ing the enormous plot and offers 1,000s of graphics and sound file control. It's the thing as he wanders through the ruler's maze-like corridors in search of the fat Prince. (Ignore the relation to the mythical "cave" that is being held in the old clothes of Serge the Dragon and you have to rescue her from a bag of bones).

ST users may remember the rather gimmicky version to their machines which needed a keyboard player to operate, but the Amiga version looks set to be very much better. The game can only be run on a 1MB Amiga but its release is likely to prompt many people to upgrade.

SHOCK BOX

When the door of hell opens only and a party of evil goblins emerge to breathe their foul smelling breath over the world you just know that Amiga has stepped up with another release. Mark Whittaker returned to the shiny silver zone in their latest game, but also was nothing compared to the majority of the titles arriving through the portals in the Format office this month.

Among the 3D ST releases and 3D Amiga games was *Armageddon - Revenge of Sam* which has finally appeared on the Amiga. Unlike *Dragon's Lair* (which offered the reasonable opportunity to watch two enemies engaged in shoot-fighting - and getting killed) was another shoot-fighting game from Barmak but instead of two enemies besides fighting each other you could play in winning Mrs. Thatcher from the Prince in his most holy arena - great fun for all of the reasons. *Crash's* much-awaited *Operation Blud* was not only done but being, it arrived on the ST for about a quarter of an hour before it was cancelled off in favour of more fun with a database library *Dead*, also from Ocean didn't even last that long, poor graphics and a worse plot than our reluctance to the limit.

On the better side there was the brilliant *Super Hang On* for the Amiga - not the ST version in issue 1. *Micropro's* *The President's Missing* was another good release but didn't make the grade in this one. On the interesting game side we get hold of a copy of *Micropro's* *The Great Adventure* but again the *Telepath* comes on still? If you want to find out more about this see the next-extended listing. I will have appeared but we've given - honest!

Finally, *Lords of the Rising Sun* is getting closer - we received a demo which looks as if it promises a really great game. Watch this space.

spread out to the sides of the screen, her ribs up and torches everything, it's going to be hectic.



▲ An alien - VERMINATOR isn't out soon

VERMINATOR

RAMBER/TELECOMSOFT ■ ST & Amiga

£19.95 ■ Early February

When did you last see an alien for Verminator? Six months or more it may have been, but the game looks like it was worth the wait. Set inside the trunk of an ancient sub time-traveling over 250 colourful locations from top to bottom, you have been employed by the Time Council to rid the sub of spurious vermin. This is your chance to make some decent dough - taking what you might not



▲ Final COMMAND

coming from the Mob.

FINAL COMMAND

SSI SOFT/ELEC. ARTS ■ ST

£19.95 ■ End of February

The last words uttered by Hyperstation Alpha were: "It's under attack." Being a pretty cool guy and a space adventurer as well you've been selected to go for mission impossible. This action-packed adventure will lead you to the limits of

space as you communicate with friends and foes in your quest for information. With interactive plots, funny features and humour at your heels, you'll need lots of skill and great ingenuity to discover what happened to Hyperstation Alpha.

DANDY GRANDSLAM

ST & Amiga

£19.95 ■ End of Feb./Early March

Grandslam have snatched up the rights to the Dandy comic adventures - exploits with Brass Neck, Desperate Dan and his coo pals, and Kofy the Cat. Brass Neck is employed in a strange cake factory loaded with the Objective to bake as many cakes as possible. But with overflowing dough and conveyor belts that break down every time Brass Neck tries to put a cherry on the cake, the task is hard



▲ Can you bear the challenge of

such becomes very busy.

TRAINED ASSASSIN

SSI SOFTWARE ■ ST & Amiga

£24.95 ■ Beginning of February

The promise of super-smooth movement and animation should combine to turn this shoot-'em-up into a game of true arcade quality. With five levels of action featuring instantly animated monsters and pick-up enhancements for your ship, you'll need to defeat wave upon wave of ugly aliens as you take a trip through twisting tunnels. At the end of each level you'll need to blast away the largest monster you ever did see.

SWORD OF SODAN

DISCOVERY/GAMSTAR ■ Amiga

£24.95 ■ February

Recursive sprites are moved around the



▲ Sweet DRAGON'S LAIR on the Amiga

screen of SuperReal graphics in the game already seen in the UK. You move through different levels incorporating parkas scoring and a range of enemies which can only be defeated by walking your sword and making sure they get to know who's in charge. Sampled sound effects and great graphics make it a game you'll want to add to your collection.



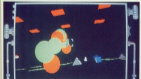
▲ The sophisticated scenes of SWORD OF SODAN

TINTIN ON THE MOON

INFOGAMES ■ ST & Amiga

£19.95 ■ Early February

Tintin and his fluffy white buddy, Snowy, climb into their red and white space-ship and set off to the moon. Being in control of their destiny, you have to pilot the ship through meteor storms, survive attacks by outer-space aliens and land the ship somewhere in the deep craters of the moon. But you're problems don't end there. You'll need to outsmile nightmarish aliens and deal with Captain Haddock, Professor Calculus and the bumbling



▲ Can you stay awake for TINTIN ON THE MOON



▲ TINTIN ON THE MOON



PURPLE SATURN DAY



EPIC/INFOGRAAMES

ST - Reviewed. Mouse, Joystick, \$24.95

Amiga - Out by the time you read this. \$24.95

When it comes down to it, the burn-in is a pretty pathetic bunch of yobs. But it's only when the odd superhero wanders into the Universe that we really start feeling incompetent. Purple Saturn Day is Infogrames' follow up to the mind-blowing Captain Blood, and offers mere mortals the chance to vent aside inferiority complexes and give a thorough drubbing to all our ugly alien neighbors. They might all have faces strongly resembling a two-day old tripe, but they're skilled enough to make daunting opponents.

AIM

One day a year the stars of Saturn turn purple and the inhabitants of the neighboring planets come together to the galaxy (Simplified And believe me, they're almost as ugly as the alien ourselves - and that's ugly when it comes to E&I titles. Two strategies designed to test your skills of speed, strategy and endurance you're going to be faced to your loss.

You have the option of having or going for the full challenge of the competition. Having allows you to play the four games in any order and to offer as you like. The competition offers 25 opponents and four games to complete. It's pretty clear you'll never see the three races of each event - primarily, sequential and final - but if you do, then the winner is headed to a list from a previous game's bonus through someone else's hands. This means for a good once more powerful than a credit card will get paid once things offering are the result.



4. Flying signs of the red markers and left of the yellow ones soon take up the old score.

4. The idea is to fly through Saturn's rings taking a red energy particle from around the planet.

THE CHALLENGES

RING-PURSUIT

You'll end up with some marks on the chosen map if you're going to finish the challenge. The objective is to fly a Saturn course around Saturn's external rings avoiding collision with a series of markers. So long as you're ahead of your opponent you can build up the old score by coming right of the red markers and left of the yellow ones. This gets going and they change you, but a flag at the corner of the screen gives you some idea of what's on its way. Stop the wrong side of the markers and bonus points are awarded to your opponent.

TRONIC SLIDER

Gathering eggs was additive in Double Egg, but Purple Saturn Day takes it into the future - minus the Saturnella. You're in a race against the clock to take around the four jacking up energy globules. A super-fast energy ball travels around the screen, and by firing at it you can release the power that it holds. The ball will then return and react off something else within you have to go back and pick up the glowing orange ball, left behind. If you don't get back in time your opponent clears ahead.

BRAIN DOWLER

Fancy a test of brain capacity to lighten the long winter evenings? With two sides of a brain currently not functioning towards the the American election, don't let your task is to get your ball working again by connecting all the chips together and ensuring that the moving ball has a free path to the center of the brain. You need to collect balls of energy and fire them at the chips in order to join

them up. Your intuitive opponent makes this no easy task, when he wanders across to your playing area and stops out all your hard work.

TIME JUMP

Jumping into the future is the idea behind this game - don't expect to meet your sides as the eggs for 2000 birthday though. You slow the destination to gather energy and then release it to jump forward in time. This produces a cluster of squares which you have to shoot. You go through the process three times as you wind up the temporal spring, after which you shoot through the screen stars at the end of the galaxy. Hold on to your position or the real looping speed will send you straight into a cosmic sink.

Ring Pursuit

Brain Slider

Time Jump

Tronic Slider

Time Jump

Tronic Slider

Time Jump

Tronic Slider

Time Jump

Tronic Slider

Time Jump

Tronic Slider

Time Jump

Tronic Slider

Time Jump

Tronic Slider

Time Jump

4. Select the different games - the ugly batch are great opponents.





▲ A red ship can be taken out of your viewing field but once the pulse has changed it is green then you can miss.



▲ Collecting energy is the obnoxious your finger in the bar and of a computer laser - you give that until you fire the pulse.



GRAPHICS AND SOUND

All the games except the Brain Buster provide a view out of the front window of your vehicle. This has the effect of really making you in the gameplay even though it often makes manoeuvring considerably more difficult.

Ultimate Captain Blood had its entire graphics sequence buffed in a few mins. An excellent has gone for a superb sample. The graphics efforts in *People Saturn Day* are strong enough to keep you playing for hours. The animation in the *Time Jump* game is kept impressively smooth, which is no mean feat considering the size of the giant people molecules being moved around. Keeping the carting like objects in the *Time-Jump* game could have been covered by a faster response to the fire button, or even an auto-respond to the controls.



▲ As this is the winner's prize, it is 87. Looks good in it.

Colour sequencers are great at an effective screen colour and sound effects help to have you wondering if somebody has just pulled the legs out from under your nostrils. Other sound sequencers have been as well considered as those in the new leg-striker *Cap'n Blood*.

▲ It's up to you reassemble the brain-ship's controls. Make use of your grey matter to re-align all the controls to the centre of the brain and etc. Don't expect your opponent to stick to his side - when the chips are down he'll come along and snipe at your hard work. *Alien* - pass!

CONCLUSION

People Saturn Day is a brilliant game with something for nearly 5000. The four challenges are designed to appeal to the widest possible audience, so you're certain to find something worth playing - unless you also of a good time is transporting of outrageous status from the dangers of *Brainbuster* to the traditional shortcomings of the *Time Jump*, you'll be fairly committed to your seat.

People Saturn Day is arguably the best release of 86 for the 16-bit scene, and it contains a formidable challenge to the games of '85.

with graphics



moving graphics



overall look



testing software



overall 98%

▲ *Alien* is a really excellent on-screen game area sounds like a great idea but you have to use movement and timing (try) much of your energy which can be an exhausting



▲ The you don't lose too quickly but on the wrong edge of the and he'll use his brain rather to knock off your energy bank.



▲ Just the purple movement and only do this until you progress but they don't do much for your score etc.



▲ The *Time Jump*. For the spring and make way for a blast to the stars. When the works appear you'll need to show for but you're made of sterner stuff.

BAAAL



PSYCLAPSE/PSYGNOSIS

BT — Jaystock, Reviewed, 4/18/98

Amiga — Out by the time you read this, 4/18/98

A rcheology is a pretty weird way of earning a living, but when you're dealing with a strange character rejecting in the name of Baal you know things are going to get creepier and creepier. Baal

is the follow-up to the hugely popular *Manserv* but is it any good? Exploring the underground lair of some guy with serious body-odour and a fetish for walking off with your four limbs is the order of the day.



■ This weird-looking planet gives you access to the rocket pack and provides a painless way to do a tour of the landscape.

■ The rocket pack might do a great job of moving you around the screen but you need to find another platform for landing, so it's those James



■ Landing on one of these platforms is the only way to lose the rocket, ahead of creating a painless way to do a tour of the landscape.

■ This right-clip is one of your enemies. Thankfully you're armed with the might of laser-power.

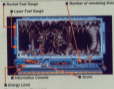


AIM

The real Baal has threatened to take over the world with his army of the undead. Now he's got a lot of kazoos lying in wait for his last mission to begin to get hold of a 100-point war machine if he's going to get *AmigaBaal*. This is where you come into the story, the only way to get on and to Baal's lair and getting it to look the thing before he gets his grubby hands on it. Easy you say? You got been fooled yet.

Some seriously clever guys (and girls) got the war machine into two different parts which have been scattered across Baal's secret-lair for "you've now got to get hold of these separate pieces to win the game."

As you're probably pleased by this point, the task is hard, it's not really as easy as you think. Baal's lair is a maze of jagged corridors, some built from different materials having the same or weak points, some built from various materials for the low-tech for your state of health, the machine built into you. You're going to have to survive all kinds of ugly creatures to collect the yellow-fighting war machine pieces scattered across Baal's lair. All these separate elements, two of which are hidden on the size of our games, you know you're certainly got your work cut out for you.



■ Rocket Fuel Gauge
■ Number of remaining items
■ Laser Fuel Gauge
■ Information Console
■ Score
■ Energy Level
■ The laser-refueling point.

STRATEGY

Locating different parts of the war-machine is a tricky task. The Baal element is arranged in the form of a multi-level maze, the same set as *Odinator*, with one level after another of weird monsters and disturbing fire-fields. Unfortunately the monsters are pretty resistant and took up a lot of firepower before dropping—very much like *Gamma Curve*. Since they find this robot's centre to get crushed at you'll be surprised to see these real spaces.

The *AmigaBaal* are less likely dealt with. You need to locate the generator (scattered around the maze of floors and ladders) and fit it to them and they're usually easy to find. Each floor field has a corresponding generator for at some other part of the maze and by destroying this generator you can switch off the field. At certain points in the game these generators take up the entire length of the maze making it impossible to pass until you have destroyed the generator. Weapon cartridges are scattered around the maze and by collecting them as you go you can increase your firepower. Rocket refueling points, usually found on the opposite side of an area, located by using your rocket-pack. It is essential if you're going to make any far

As the war, the rocket is in a real trouble. It is essential if you're going to make any far. As the war, the rocket is in a real trouble. It is essential if you're going to make any far. As the war, the rocket is in a real trouble. It is essential if you're going to make any far.



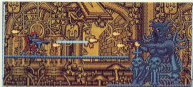
▲ No, this isn't a scene from *Tarzan*. This little blue fellow is about as friendly as the rest of the gnomes down here.



▲ This beast has the manners of your furry friend and is probably about as friendly.



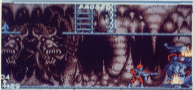
▲ This vicious stry of blue-light is the force field. Beware - it can't be switched off, even by using your leeches at it.



▲ Peering into the laser cavern to confront Gool.



▲ It takes a lot of firepower to zap this one, but it's got to be done if you're going to disable the force field. The generator disappears in clouds of fireballs and the field has been disabled.



▲ Well, Bull Bull isn't too hard. At least it can't talk back.

CONCLUSION

If you liked *Menzob* then you're sure to love *Ball*. Its multitude of levels create a maze of problems. Monsters, force-fields and one machine party take in the same place with each game to coming back again and again finding ways to tackle each obstacle in what helps it add more. *Ball* is the sort of game that has you coming back for more... and more. Each time you turn off the machine you know that there's something you still haven't managed to complete. The different levels offer new stages which will keep you hooked for months.

3D graphics

1 2 3 4 5

moving graphics

1 2 3 4 5

sound/music

1 2 3 4 5

loading interest

1 2 3 4 5

overall 91%

GRAPHICS AND SOUND

The graphics in this game are remarkably similar to its predecessor, *Menzob*. Definitely one of the major reasons of last year. The monsters are luckily associated with some less sounding mouthfuls of hungry moles which they aren't too reluctant to get out. But lots of other menacing animal creatures straggling around you, everything quickly becomes pretty hectic.

On-screen objects are not as colourful as those which were used in *Menzob* but the Amiga version looks certain to remedy this fault. The different levels, accessible via a walk-in transporter, offer gamblers against yellow or green backgrounds. These have been as effective as the

first screen effect is where you'll probably spend the majority of your time. Explosive effects might not look entirely realistic, but they certainly convey the right cuts to when you've knocked out the game's boss and come back to them late on to feel that they're still something that you realise the whole game has been painstakingly designed.

Sound effects are not exactly mind-blowing, with simple explosion sounds and sparse effects scattered elsewhere. There's a really annoying clunk, similar to what you hear on top of a ball of Corvilles, moping with your leeches your character takes.

GALDREGON'S DOMAIN

PANDORA

Amiga - Macos. Reviewed £19.99

ST - Out soon

Once upon a time - in the deepest, darkest depths of the Levels of Mazon - there was this

wizard guy wandering around with the weird name of Azazel. Old Az belonged to an elite occult

movement and generally did evil things. His wrongdoings didn't make him a happy man though.

GAMEPLAY

As a wandering, Searching for the five special gems of Azazel. It's up to you to get hold of the gems before his. These little gems aren't like the diamond earrings in your mum's jewel box, they actually do things like giving you special powers.

This might seem like a fairly easy task - after all, it's only five sparkly things. Unfortunately there's a twist to the tale: the gems are scattered across 2500 different locations. The problems don't stop there. You see, there are also a range of horridly ugly beasts who've taken it upon themselves to guard the gems. This would be fine if they made

some attempt at being friendly, but do they? Do they? Well if you're going to get hold of the precious gems then you'll need to make lots of stealthy moves and do some quick thinking.

Help can be obtained by peering down to the local towns where you can communicate with the natives. The friendly chaps will give you information on the bad guys and clues as to where the gems are hidden. But beware, these guys have the mouths of a shark - and steel just as hard. If you're not careful they'll make moves to destroy you.

INTERACTION

Communication with the sort of game is always dubious. Ideally you could sit in front of your monitor and chat verbally to all the different characters. Galdregon's Domain doesn't offer this, but the range of options available are extensive.

Along the bottom of the screen is a box which gives you an extensive choice of options for each situation. By pointing the mouse onto one of these and clicking you can select the feature. To the side of these are icons used to provide access to all sorts of spells and fighting options.



There are no blank walls in this game.

Inside the domain. Select which spell you want to use and try and wipe out the ugly creature.

GRAPHICS AND SOUND

The graphics set the game aside from its fellows. Brilliant detail can be found in every background, and the characters look menacing enough to have you quivering in your boots. One of Domain's best features is that you'll never come up against a grey wall - every single screen employs a wide range of colours and detail.

The sound effects have not been forgotten either: different sound effects accompany each location and a range of grunts and groans fill the air during combat. You begin to feel involved in the action. Switch off the lights and turn up the volume; you'll soon forget that you have to be at work the next day.

CONCLUSION

Galdregon's Domain is similar to the now infamous Dungeon Master, but is set aside from the rest by its great graphics and atmospheric sound. You'll be wandering the territory for ages. And with a Galdregon I promise, you just know what you'll be doing every night for the next decade. It's a good game and well worth the challenge. You'll be hearing a lot more about Galdregon's Domain from now on.

| | |
|--------------------|-----------|
| spell graphics | 1 2 3 4 5 |
| interaction | 1 2 3 4 5 |
| sound/music | 1 2 3 4 5 |
| testing interest | 1 2 3 4 5 |
| overall 87% | |



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GAME BUSTERS

ARKANOID II

BT

While Arkanoid is loading, press down the right-hand mouse button and keep tapping the left button. Stop tapping the left button when the program loads. You will see a picture advertising Nintendo.

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TEST DRIVE

BT

If you fancy a high score without actually having to play the game, simply carry out the following steps:

- Load Jet World or some other BP and insert game disk II
- Get the directory to - -
- Open the highscores file and edit
- Save the file once you're finished

Note that the high score shouldn't exceed \$6,999 and the name must be 25 characters or less. If you want to change the car for a particular score simply use any of these codes (must be in lower case): p[11] - Porsche 911; Turbo; v[11] - Corolla; Lotus - Turbo; Eagle; mouse - Ferrari; Indefinite; cursor - Lamborghini; Control.

Start Buchanan
Prestonpa, Aberystwyth

INTERCEPTOR

Amiga

Following is a listing that, when run, lets you choose which mission to take part in. Load Amiga BASIC, type in the listing below, save the listing to a label disk, run the program and insert the big disk when requested. Run Interceptor and select option six

When the foot steps sound so very close to you; when you look around and they're all after you; where ya gonna go? Gamebusters! Ya don't get egg on your face here, matey.

on the menu for selectable mix sizes.

- 10 EVERY THING'S "BOMB-CARTRIDGE CASES"
 - 20 BOMB, BOMB "GASSET"
 - 30 BOMB "BOMB BOMB"
 - 40 BOMB "BOMB BOMB BOMB BOMB"
 - 50 BOMB "BOMB"
 - 60 BOMB "BOMB "BOMB"
 - 70 BOMB "BOMB"
 - 80 BOMB "BOMB"
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 - 120 BOMB "BOMB"
 - 130 BOMB "BOMB"
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 - 150 BOMB "BOMB"
- Game Notes**
Working

If you are getting bored flying around and shooting at frogs, you might be pleased to learn that the flight simulator makes a very palatable ground car simulator. If you don't start off on the circuit, that is.

Just don't take off. Make sure you avoid the sea and the darker coloured grassy areas (so that it remains level and you get stuck). When you go over the bridge you'll find out that it is level to fly.

Andrew Burns
Manchester

GAUNTLET II

BT

Providing you have the original Gauntlet, you can get up to some great fantasy. Load Gauntlet II on a good, clean floppy and start the game. Let all the players die. Place the Gauntlet II disk disk in the drive and start a new game with the same characters. The

screen you start on will look a weird, but it will be full of magic potions.

There is one problem; you have to wait for the walls to turn into walls before you can leave the room. Remember to replace the Gauntlet II disk before exiting.

Carl Rigaud
Huntington



AAARGH

Amiga

At the start of each screen you'll find various different buildings. Blow the cover them and then hit them; this will make them fall down a lot faster. When you burn a knock down a house you get to fight an egg; at the beginning of the fight make sure you put your finger on the fire button first and pull the joystick towards the opponent.

Carl Feme
Bristolington

CARRIER COMMAND

Amiga

Start an action game and pause the game straight away. Type in THE BEST D VLT TO BE (including

spaces). 'Chest mode' action will appear. Press + on the numeric keypad to protect marines and Aili's from enemy missiles.

To complete the game with the cheat mode, set your carrier straight to Storm (south-west of Thermopylae). On the way aim at marines and get their individual courses so that you cover all sides of the island. To speed to Storm head down 7 on the numeric keypad. On arrival, just outside Storm, reverse your carrier so there is 'no island in range' reading. If you've been quick enough, you'll be in position before Tades is over an enemy island' appears. Restart if it has already appeared. Press 7 until the message says up (you'll hear a ping). Select the message screen and hold down 7; after a minute you'll hear a second ping. Let go of the 7 key. The message 'Storm is being attacked' will appear. Launch all marines at full speed to their pre-set destinations when this occurs. Take manual control of marines one and circle the island. You should see the enemy carrier; fly very low and into the carrier (the - key will protect you, but not into the sea).

You should destroy the carrier after two seconds contact. After five seconds you will be asked whether to continue or not. If you select no, you'll see the complete bonus screen.

Pressing + or - on the main menu cycled through all game objects.
Andrew Reader
Maidstone, Kent

Instead of re-informing your supply lines go straight for the enemy base; island, Bermuda, as it houses the enemy supply line and disables the enemy carrier.

Scott Hutchings
Bishop's Cleeve

ST DISK CHEAT BONANZA

Lots and lots of them this month:

ELITE 905 for, naturally enough, **Elite**. Lee Davidson's hack provides you with an introductory strip. Simply run the program and enter the original Elite disk when requested.

NEBAUL 905 - another of Lee's hacks. This one provides you with a whole Pages in the game Nebulae. Simply insert the game disk when asked.

The next four cheats are provided by prolific publisher Chris Knapton and only work with the games that form part of the Autumn 1987 IBM Super Pack.
03000407 905 - for **Pelican**.
70011201 905 - **Trojan**.
70000001 905 - **Thunderbolt**.
77000001 905 - **Dynas**.

These games only work in the resolution. Make sure you insert the original, write-protected, game disk when requested.

GRAIL QUEST

BT

The complete solution to Microsoft's mentioned after MFC.

On the first screen there is a bag of gold hidden in the bushes - don't pick this up yet. Use magic on the dragon on the next screen, but spare its life. Go to the castle and kill the goblin at the entrance. When inside the castle, sleep on the stool for three nights. When the man awakes up to you, on the third night, give him some of the cure found in the bottle in the window at the top left hand corner of the screen. Go back to the forest and give Bilit the gold from the bush and return to the castle. Leave Bilit at the inn while you sleep in the street. Return to the forest. When you meet a hooded man return to his house with him and cure his mother. Return to the castle and go to the upper level. Use magic on the fountain, but spare his life. You will then be transported to the world of eyeguards where you must find the Grail. In the forest there is a

man crouching on the ground, crouch low and then go west to a pit in the ground (enter the pit and approach the light - you will come onto the game).

Paul Spencerley
Crawley Down, Sussex

FAERY TALE

Amiga

One of the trickiest things to remember when first starting the game is how to avoid doing items what to do.

Make the crystal palace on the Isle of Sancy your prime target with the first character, Julian. When you confront the good witch, click on ask. She will give you a gold statue and a clue. Now keep clicking on ask your luck bar level will rise from 20 up to 40. This makes you impossible to hit. You can always return to the same spot and do the same if your luck runs low.

Walter Lane
St Mirans, Stirling

ROCKET RANGER

Amiga

Don't bother wasting valuable game time trying to increase the professor, you will always be too late and it wastes valuable Lunatics. Instead use the agents to find robot factories and destroy them.

Scott Halsings
Bishops Cleeve, Herts

CHRONO QUEST

BT & Amiga

The solution to the first level...

You need to pick up punch cards to get to further levels. Go upstairs and examine the bottom of the statue - eat the pills. Examine the corner of the capot. Open the stand of drawers and get any items. Drop the key that you want to do this. Go through the north east door. Examine the gap between the two cushions. Examine the gap under the bed. Examine the small cabinet nearest to the central panel and get the item in the drawer. Now go out and close the stairs. Go west and get the round item on the book shelf. Go east and get the object on top of the left pillar. Go east and then north west into the kitchen. Find the safe and use the piece of paper on it.

Get the lighter. Get the bottle and empty the wine from it. Go to the start position of the game and go through the door. Stop light the lighter and go up. Turn the lighter off. Go west. Examine the table and the top of the cupboard and light the candle with the lighter. Now go east and down twice. Go east and down twice. Now go west.

Drop the first three cards that are nearest to the central panel. Examine the drawer above the chair. Examine the mirror on the top right until a switch appears. Flip the switch. Stop. Go west

and up. Now go South West and get the ball from the pillar on the left of the stairs, drop it. Go through the door, down and west. Go through the door... at the first time machine.

Flip the lever - that is on the wall next to the two low upwards. Put the flowers in the four bins. Now get the watch. Now go up and you're in the machine. Put the card that you are holding into the card slot and flick the switch... The next level.

Andrew Jackson and Carl Evans
Napton, Liverpool



BAAL

BT

So enemies are not enough to bogged the wizards, or to do any serious damage, in the game. You are awarded an extra warrior every 1000 points. To gain points you must destroy monsters. It is possible to find a Command reflecting illusion that's got members nearby. Simply by moving between the falling object and the monsters looking here you shoot the members, you can build up points and warriors quickly. The process is tedious, but having scores of enemies makes the game less frustrating. Each place needs at least 100-400 on the first level.

Alan Hayford
Milton Keynes

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Happy this month are **ANDREW JACKSON** for giving the game away in *Carrier Command*, **ANDREW JACKSON** and **CARL EVANS** for their combined efforts in *Chrono Quest*, **BT** followed in the way to them. We, too, we would like the rest of the solution. **LEE DEVEREAUX** also gets a special prize for his superb *Elite* and *Nebulae* disk hacks. **CHRIS KNAPTON** also gets a special prize for his *Ice Palace*, *Trojan*, *Thunderbolt* and *Dynas* disk hacks.

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LED STORM

US GOLD

ST - Joytech. Reviewed. £19.95

Average - Under development

These futuristic, high-powered cars are all very well but they're not particularly well supported. Underpowered turbo-boosters certainly give you incredible acceleration, and the ability to fly may well come in handy but what do you do when all you want is to speed a car of beams and can't find a trigger?

US Gold have hardly resolved this fundamental question, but if you can do without your precious car of Nova beams then there's nothing stopping you from venturing into the city streets on an empty stomach. Your mission is to reach checkpoint Arthur at the City before your energy level runs out and you're turned into a scrambled egg. With nine levels, taking you from Capital City across seas, tunnels, desert and valleys before you finally get to 'Ar

as your destination, make sure you pack your thermal armor and bombastic starts.

This game is very much like an advanced version of Major Motion. You need to drive your vehicle along narrow roads, through tight spaces and avoiding gaps in the road. Clicking on the fire button allows you to leap into the sky - a necessary evil when the road ahead has been completely obliterated. Wouldn't that be handy as you navigate the roadworks on the M25?

Energy difference

You need to avoid enemies ranging from pageants to unfriendly thugs who can't be turned into a persike quite as easily as their marble counterparts. They affectionately cling on to you and prevent you from jumping into the air.



▲ Okay, where are the flags?
When the action gets tough the flags make it tougher.

Additional powers can be picked up by collecting the different energy tokens. Flying tokens can only be retrieved by jumping, when in the road.

LED Storm is a vertically scrolling game with sporadic action. The graphics are not exactly mind-boggling, and the sound effects will certainly ensure you keep your fingers in your ears, but the action is great. Leaping through a multitude of different levels gets extremely addictive.

still graphics 3.0
moving graphics 4.0
soundtrack 3.0
testing interest 4.0

overall 71%

NIGHT HUNTER

ELECTRONIC ARTS/AEBI SOFT

ST - Reviewed. Joytech. £19.95

Average - Due in March

Pick up your pistols before you take hold of the joystick and get hitting it out for domination of the Venezuelan underworld. This game from EA's AEBI unit requires you to run around the different rooms of a house retrieving parchments and keys to get through the 30 different levels of 20 screens. You assume the role of a Vampire who must tackle all kinds of weird creatures which range from a brain-eating spider to the Norman lord to the unlikely character of a Robin Hood character who appears on the screen a little too often - which wouldn't matter if he didn't keep firing arrows at you.

Back blood

You can look of life in two ways

either you're a really decent guy vanquishing your enemies by approaching them and sucking their blood or, alternatively, you can transform into a bat or a werewolf by making use of an odd joystick conceit. The werewolf

has extraordinary strength which is activated by pressing the fire button - one punch and you'll smash any creep dead quicker a battery chicken.

Becoming a bat doesn't give you any special features but it does allow you to zip through each screen.

Smooth mover

Occasionally you can come across a magical door which glows blue and red, rather like an

Selfield Bay mackerel. This is the door through to the next level, but when you're accumulated three parchment and five keys then you're stuck.

The game's animation is colourful and fairly smooth. It's a slight hangup as you move from one level to another becomes frustrating at times but you soon learn to get on with it.

Sound is limited to blood sucking noises and bits of odd effects which quickly become monotonous, but when Escote extends his arm and goes for a bit of blood-sucking he actually looks as if he's enjoying what he's doing.



▲ Go for a bit of blood-sucking in your spare time.

still graphics 3.5
moving graphics 4.0
soundtrack 3.0
testing interest 3.5

overall 69%

INCREDIBLE SHRINKING SPHERE

ACTIVISION

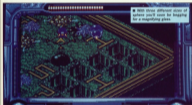
ST - Reviewed, Joystick, £19.95.

Amiga - Out February, £29.95

What gets bigger when you're excited and goes when it's on a mission? Me, silly - it's the

Incredible Shrinking Spheres. With spheres, icons and a range of beasts you'll need at least

six eyeballs and a multi-tasking brain to keep track of all the action. Considering the quality of Activision's recent major releases - Afterburner, R-Type and TES - you know you're in for a treat.



■ With these different sizes of spheres you'll soon be mapping for a magnifying glass.

GAMEPLAY

Temple-maze might sound like an Italian recipe for baked pasta with added wine but it is actually the Sphere Corp's training arena, affectionately known as the Death-Run. Matt Sides, a frustrated desk-bound officer has lost his marbles and gone in, but he couldn't handle it and is marooned somewhere in the middle. The only way he's going to survive is if you get to him in time. Unlabeled, you climb into your fighter spheres and follow:

The spheres within the training arena are arranged in tiers, low deep. Tactico spheres lie within each tier and these affect control of your fighter spheres. Passing over a file activates a timer which causes it to vaporise later - if you pass over a hole you fall through and die.

The real problem with manipulating your spheres is changes of size and mass. Passing over certain files causes your molecular structure to alter, so your weight changes. Some files are fragile, so passing over them when you are heavy causes them to collapse and you're plummet to destruction. Wanderng around the maze when you're large is like wheeling a skip through Sainsbury's - certain walls come so close together that it's impossible to pass through.

Shield icons and firepower are available which are pretty essential when the screen begins to fill with aliens and the dark looking hoppers. White holes and black holes provide access to other levels, and should you lose a life then you begin again on the same level with the ammunition and shields which you'd had at the start of the level.



▲ You can position ammo dumps at the start of the game, allowing you to get your hands on a range of firepower.

CONCLUSION

This is the sort of game which'll leave you more hooked than an acid house party, so betting through to a pinhead of success only to find that you can't save the high scores is such a major blow.

Controlling the sphere takes a bit of practice because this isn't just another Pacman. With its non-changing maze, firepower and more than ten differently colored SAs, you know you're in for some real excitement.

ST VS AMIGA

Graphics in the two versions are virtually identical but it's in the sound department where the changes really show up. The Amiga has far better sound effects, from the simple bouncing of your sphere through to an impressive loading music. The Amiga version is also very much faster although it's debatable that this is an advantage. Certainly the ST game is far easier to play and it is already difficult game that's got to be a bonus.

GRAPHICS AND SOUND

The action takes place in a window surrounded by information about your speed, lives and state of your shields. Progress through the levels is met with different styles of music and increasingly impressive files. Your wanderings are often hampered by collisions with the binary borders, which has the effect of bouncing you between two points fast enough to have you thinking you're on an inter-City speed rail - probably the 7.18 to Clapham Junction.



▲ The range of firepower.

Sound effects are fairly basic on the ST version. Limited beeping and beeping spot-effects accompany your progress round the maze and emerge as you move between levels or encounter aliens.

with graphics



moving graphics



sound/music



loading interest



overall 80%



WHO FRAMED ROGER RABBIT

BUENA VISTA SOFTWARE/GAINSTAR (TEL: 0252 877431)

Amiga - Reviewed, Joystick, £29.99

ST - no version planned as yet

Hollywood, 1947. You're walking down the main-road of Tootsboro when some smart rabbit in a polka-dot tie dashes up and gives you a big kiss. Yup, you guessed it, Roger Rabbit has been a path onto the 16-bit scene.

GRAPHICS AND SOUND

Instant graphics ensure that the characters actually talk and act like cartoons. When Roger gets drunk he starts running, spins round eventually collapsing on the floor. Realistic, or what? Even the cars look exactly like the Disney vehicles.

Even though huge graphics battle round the screen, the game is remarkably speedy. Action is fast with Roger taking round tables so quickly you'll think you've just come back from a night on the town. Sound effects haven't been forgotten either; a terrific stereo soundtrack gets your feet tapping.



■ Just tell 'em Walt and you. The Ink and Paint Club - the only place where toons and humans can hang out together!

GAMEPLAY

Tootsboro is a unique area of 1947 Hollywood where cartoons and humans share the same sidewalk. The star of the show is Roger Rabbit who's just an ordinary guy (don't you mean rabbit? - Cal who's been framed for killing Marvin the Gag King. Marvin's will mysteriously goes missing at the same time. Consequently the heat's on Roger. The heat in this case is from hunter, Judge Doom. Doom's not to be messed with: he carries Dip which creates cartoons. Roger's got to be quick if he's going to keep out of Doom's grasp and find Marvin's will.

The game is split into three parts - Benny the Cab, Ink and Paint Club, and the Gag Factory. Benny the Cab is more than just a racing game. 1940's style cars head towards you in both lanes; you must jump over the cars, avoid green Dip and cope with the strange joystick control. No easy

task for a rabbit.

The Ink and Paint Club is the only place humans can go to enjoy live performances by toon stars - but you're not interested in any of that. Marvin's will has been written on a receipt in disappearing ink, so you have to dash round of the tables, picking up receipts and avoiding glances of suspicion. Whatever you do, don't let Roger touch a drink 'cos once he gets drunk he's destined to be drowned Dip.

The Gag Factory is where the toons are made. Unluckily the receipts are waiting for you and you'll need to make them laugh themselves to death. This tricky feat is achieved by picking up as many gags as possible. Once again you'll need to master odd joystick combinations to pick up and use the gags - get it wrong and a gag could backfire.



■ Shhhhhhhhh! Be vvvvvv quiet. I'm hunting rabbits. Benny might not talk like a saint and his driving often has you wheeling around on the top of buildings avoiding dip but he does his job (sings) Holy Mother Mary! Who if you think I am, Shirley Temple! Finding the Ink and Paint Club ain't easy ya know.

CONCLUSION

For all its brilliant graphics, sound and speed, Roger Rabbit has one major fault. The game sits at illegal number of disk swaps. The packaging claims that two drives are an advantage... they're a necessity! It takes eight disk swaps to load the game, four times with two drives! It's ten minutes before you're playing. The frustration doesn't stop there - every time the game comes to an end you have to reload it - great if you have microchips terminals.

Buena Vista is a subsidiary of Walt Disney and the superb graphics reflect the high-standards you'd expect from them. Joystick controls are likely to take a bit of mastering and with only three levels you could find that the addictive factor doesn't stand too much battering. The game strongly resembles the film so it'll be so well received.

| | |
|------------------|-------------|
| skill graphics | 0 1 2 3 4 5 |
| moving graphics | 0 1 2 3 4 5 |
| soundtrack | 0 1 2 3 4 5 |
| loading interest | 0 1 2 3 4 5 |
| overall 70% | |

COSMIC PIRATE

PALACE

Arriva - Reviewed. Joystick. \$19.95

ET - Available beginning of February. \$19.95



▲ The tall gate is the place to be - it's surrounded by mines making it easy to build up the score.

Blast 'em all away, show 'em who's boss. Become a space-pirate and watch the universe tremble at the very mention of your name. The days of the goggle-eyed alien are numbered. Cosmic Pirate comes from the same guys who created Barbarian (remember that? It was the game which displayed a lot of Maria Whitaker).

GAMEPLAY

You take on the role of the infamous Sea Marv who, after leading an unprovoked life, has decided to become a space pirate. Can you blame him - pirates get all the girls and most of the profits!

You begin the game by selecting a mission and heading into hyperspace. By moving around and blasting at alien you can build up your score. Eventually if you're going to pass through the tall gate (a tall of black hole) with a pass fee of 1000 credits. Once through the gate a cosmic sector map appears and you choose a new sub-sector destination. The objective is to find a ship to steal and drag back home for massive bonus points. The sector map lets you pinpoint the correct sector to move into and you then follow an on-

screen marker leading you to the ship. Destroying it requires a concerted blast until it gives up trying to hurt you - very useful!

Assuming you manage this awesome task without your ship exploding into something resembling the quadricider hills of Arctico (your home) the next step is to tow the ship back to Planet0 (your base). Do this and you'll receive an excellent pay packet, but unfortunately you're not allowed to keep it. The council, a sort of futuristic, boy government, takes between 90% and 95% of your profits.

With your remaining wealth you can purchase extras for your craft which give additional firepower or increase your speed. Then it's out into the cosmos for another earth-shattering session.



▲ You'll need to fire at the ship for some time to destroy it. Dragging it back to base is not only greeted with financial rewards but wins an extra point for it a useful way of raising your credits.

CONCLUSION

With your progress and additional ship equipment being saved to disk at the end of each game you soon learn to like Cosmic Pirate. It's a bit like Dargnat Master with action, locating the different planet ships and watching your score climb, knowing that in time you'll be able to buy a marketplace some rather, is like saving your pocket money for an amiable treat.

The speed of your pirate ship is mindboggling. Everything moves so quickly you'll feel like bringing up your zipper. Graphics and sound are impressive, but best of all it has an addictive gameplay. The only time you coming back to often your pocket will beg for a treat.



▲ The cosmic sector map - find a ship and then make some attempt to get to it.

GRAPHICS AND SOUND

The game has been written in medium-bit but by making use of the Amiga's hardware the range of colours has not suffered. Dragging ships into back to base is almost spellbinding. The background is scintillating in multiple colours, even for an alien, and it's no time at all you'll be back home.

The pirate ships might look good but the other space craft don't bear much resemblance to those

in Star Wars. Drawn up as sub-telescope bubbles they'll leave you questioning the variety of the universe, but they do look hell when blasted.

Sound is good too. Great stereo effects and covering tones ensure the game is well supported musically. The usual tapping and white noise of most outer-space shoot-em-ups has been replaced with far better spot effects.

CDI graphics



moving graphics



soundtrack



fastest interval



overall 79%

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TALESPIN

First there was STAC then STOS and then there was SEUCK. Microdeal, in the name of common sense, have released the more conventionally-named Talespin adventure-game creator. MARK HIGHAM steps into the vaults to tell you a tale.



£49.95 ■ ST & Armitage ■
Microdeal, Box 68, St
Austell, Cornwall PL25 4YB
(0726 68020)

So you want an adventure which can take you all the way from the cryptic poems of an Arthurian legend to the smirking faces of the Acid House gang? Microdeal's Talespin is a design-oriented adventure game creator designed to let you build whatever universe you like and maybe learn Microdeal even call it!

Unlike some systems, you won't need a degree in mathematics and 2000 years of programming experience to master Talespin. Even the end product, more of a role playing game than your usual text-authority-driven-adventure game, is entirely mouse-driven so you don't need to have a secretary's called typing fingers, but just a good idea.

What you will need if you're going to create anything half-decent with Talespin is the ability to draw good pictures using either MacDraw or Degas Elite - not a simple task.

Spinning a yarn

Once you've decided on a basic design, the first step in creating your game is to design lots of relevant backgrounds and characters using Degas or MacDraw. You can easily alter the colour of images, reverse them so that they're facing in the opposite direction, change or edit colours once in Talespin later on.

Armed with all your picture files, your next move is to load Talespin



■ Talespin is entirely mouse-driven so designing a game is easy. Images are used throughout the program allowing you to import graphics, images, sounds and colour your pictures. Talespin comes with its own character-editor but you'll need to have created your pictures using Degas Elite or MacDraw for best effect.

and import them. By making use of the screen editor, incorporating such options as scaling, fill, line and an unusual 'lock' feature (a sort of frozen-painting constraint), you can do all the essential 'finishing' to make sure your sketches look great. If Create Page option then allows you to introduce your images. Talespin allocates a separate colour palette to each page - this feature comes in useful if you want to reuse pictures from other screens and make them look different by altering the colours.

Organ donation

The adventure you're aiming at is of the type where the user clicks on a character and up comes a speech bubble saying what's going on and

providing game choices to click on.

To construct your games you simply 'walk through' the plot, starting from an initial screen, you import a graphics screen, choose which of your characters should be shown and position them accordingly. Each character can be allocated a speech bubble which the player will click on - you need to enter the text which is to be displayed, and set up 'variables'. By assigning variables to text entries they're automatically turned into clickable options, determining where the game goes next. You then design the following screens, and the ones they lead to, and so on until the end. You can mix and match backgrounds and characters from other screens so you don't need to design a complete Degas screen for each game position.

As an example of variables, you could create the variable `DOOR` and set it up so that it would exist in three places: HEART, JUNGLE and SEAWAYS. Clicking on a certain character when playing the game could then bring up the message "Double which door?" followed by the possible options. Clicking on heart would set the variable `DOOR` so that it held the value HEART. In this way when you reached another point in the game you would be able to see if `DOOR` held HEART and display specific messages or go

TALESPIN VS STAC

STAC (not available has been around for some time and will now fit them the only contender to the adventure game creator market. STAC games tend to be far more of the usual run-of-the-mill adventure game containing pictures with text. Talespin, on the other hand, offers a role-playing adventure with characters to click on.

By the very nature of STAC's non-clicking interface the resulting games will all seem similar, but this is not so with TALES. It offers a better built in graphics editor which can be used to create pictures as well as working up Degas or MacDraw files. In addition, the end-product can be entirely mouse-driven without the need for a text-file creation program.

Which you prefer depends on the kind of game you want to produce. Traditional text descriptions with typed replies are STAC's domain, a more 80% picture-oriented system is Talespin. They both work well.





TRIED AND TESTED

Microcad released *The Great Adventure* last year which was designed using TALENT. The game took 18 months to create but the programmer only worked part-time, so there's hope for you too.



■ Designing speech bubbles using the text editor gets tough while words tell you. But just a few hours after loading your images you can create a game to be proud of.

to a different point in the adventure. You need to set up one scene for every possible set of options the player might choose, specifying back-

ground images, characters, speech text and options for each. Every page has a name, and different strands of your adventure join up at a later stage by going to the same page.

Sound effects can be imported from Microsoft's Play4, so in theory you could set up a game to use any user's own's streams coming out every time you click on a grinning mouse. The EP9.95 Play4-4 is a costly but good sound-sampler. TALENT uses sampled sound effects in their 'raw-data' format so it should be possible to use samples created by other packages too, although Microcad are reluctant to specify which ones. It might have been worthwhile to include simple sound effects designed using TALENT but no such feature is on offer.

Kind of the task

TALENT is not a quick way of creating games. It's undoubtedly take hours to design enough backdrops and characters essential to a good adventure.

Up to 50 completely distinct screens may be included in one game largely as a result of clever file compression methods. An image used on a page can be re-coloured, resized and re-used in another without counting as a full new screen. The game screen is potentially thousands of separately different locations.

As with all non-prog writing game creators, the resulting adventures have limited possibilities - with the TELLTAL program essential for installing a game, there is no way of designing the fact that you've used

BACK TO PAPER

Before you load up TALENT and start drawing all your characters it is a good idea to sit down with a pen and paper and decide what you want to do with the game. Laying it out as a tree structure with a start and end point is probably the best way to go about designing your adventures. Inserting lots of breaks, lines and arrows will all save the phase in what keeps this sort of game alive so make sure that the branches linking up the tree-structure are as contained as possible.

Using the way you can pick up lots of different objects which can then be used in the final part of the game. For example, the first of a wizard who wandered through forest and towns to collect the magic sought after Holy Grail. Unless his hat performed certain magic-like feats and proved himself a worthy wizard he could not pick up the first even if he reached it.

Designing screens using Digas or Resounders is undoubtedly going to take an age, but it is the graphics which make this type of game popular to its users, spending the time here. One of TALENT's best features is the ability to create a very simple adventure game and then expand on it more and more to turn it into something really brilliant. Maybe even a Format full outsider?

The adventure ended

When you've finished designing your adventure you can use the autokey option to move through the different screens, testing all your variables and following the path of the game.

Once you're completely happy you can save it onto disk and run it up to run as an auto-key program by copying it into an AUTO folder and renaming the game to START.TEL. The player program TELLTAL.FDS is freely redistributable, which means that you can give it away with adventures you write and sell.

Microcad say that they are currently developing a multiback feature so that you'll be able to stretch your game out across two disks. The facility will really expand on the possible number of screens and could allow you to create an adventure of truly mega-proportions.



■ The Format Disk was designed in just three hours. Up to 50 screens can be made up using Resounders or Digas and then imported into the program using the same characters on other screens or similar backdrops you can end up with an adventure across 1000 different screens.

TALENT. However, TALENT does offer the opportunity to create an RPG type of adventure game, which SIRC and SFDS certainly won't. It can't improve your drawing abilities and it won't check your spelling but if you're prepared to spend hours creating good graphics then you can achieve something really impressive.

features



performance



ease of use



reviews



cost



format value



for

- No programming knowledge required
- Graphics inherently raised for variety
- Can incorporate extensive sound FX

against

- Minimal graphics editor, no sound editor
- Only one basic type of graphic can be created



PROTEXT 4

Protex has been through a number of incarnations to reach version 4, and this latest version has been released for the first time on the Amiga. Could it be the first great word processor for the A500 and above? SIMON WILLIAMS gives his view on posterity, and whether Protex is destined for it.



£99.95 ■ Any Amiga. **£7** version also available (currently **£79.95**, will rise to **£99.95** soon) ■ **Amor Ltd.**, 611 Lincoln Road, Peterborough PE1 3HA (0733 689404)

EARLY VERSIONS

The first version of Protex was written for the Amstrad CPC-602B and CPC-404 under CP/M Plus. There was also a version in ROM for the same machines. The early version lacked many of Protex's current features, like macros, table editing and many of the more advanced internal commands.

Back on the way a version for the Amstrad PC1600 word processor, which rapidly became the main alternative to Lotus/123, with some 25,000 units. This in itself was quite a feat, as Lotus/123 is supplied free with the PC16.

Version 4, first released for the IBM PC, contained a number of improvements, and was then adapted for the ET and now the Amiga—how say they will only be building on these three implementations from now on.

ers all the features of the program through, though it's a pragmatic mixture of textual and reference which can make it difficult to find information in a hurry. More annoying is that the manual is written for the PC version and the Amiga-specific sections are relegated to an addendum. While appreciating Amor's arguments for speedy updating of future documentation using this technique (and their internal consistency) it does make some sections of the manual quite awkward to read.

A new installation

Installing Protex on an A500 (or a single drive A2000) is simple enough, and basically involves copying the two master disks onto working floppies or a table of your hard disk. On a two drive A2000 with an external drive things are not quite so simple. The Amiga boots an external drive as DF2 not DF1: so you have to know enough about the Amiga's CBI to 'bootstrap' DF2 to DF1; in the startup sequence and then set the Protex configuration for two drives. Not an easy process, but one which Amor sets to correctly probably by the time you read this. The Amiga program

comes in two versions — a full version for machines with 512k and above and an A2000 version. The appropriate version for your machine is automatically selected when you start up the program. On the PC, a single version runs on all models.

Once installed, Protex will load from cold to its main display screen. Usually this is divided into three areas, a few line status bar at the top of the screen, a text area and, below a horizontal bar, a row the command area. Pressing [ESC] switches between command and edit modes, when the command lines disappear to make more room for text. The status bar shows the normal page, line and column numbers and indicators for edit mode, justification, word wrap, the type of printer installed (there), a scale (rings) and the time. This last indicator is quite a novelty as a display of real time (assuming you have a battery backed clock) and have set it up with Preferences and SET-CLOCK.

Edited highlights

Immediately below the status bar is the ruler line and below that lots of space for your makeshift proof.



■ Protex command mode includes the detailed CBI command for taking a full backup of files on a disk (the CP/M and MS-DOS-style DISK does the same thing).



■ A typical Amiga Protect editing screen, showing pull-down menu system

Protect doesn't offer any fancy to zoom fonts but concentrates instead on fast text entry and editing. This is quite a change for an Amiga word processor. Many of them go overboard on fancy fonts and other pseudo-DTP features which may look half decent on screen but are only ever printed out as screen dumps. Without exception, graphics based printing on old matrix printers, is very slow and for many purposes not necessary.

Where the program is very good is in providing really editing control you could reasonably ask for. As well as being able to move the cursor in steps of character, word, line, paragraph, screen, page and document, you can transpose adjacent characters (handy for correcting the common slip error); change words into capitals or lower case, delete to start or end of a line as well as deleting the whole line, and underline a span if you need to.

Protect provides a number of markers you can set into the text. You can set place markers to return to specific points in a document and

also a multiple marker so you can cycle through a series of markers, perhaps to fill in text at each point. There are also special markers to let you highlight a word and exclude it from a subsequent spell check - useful if there is a proper name or other word you know won't be in the dictionary.

Foreign accents and some foreign letters, such as the German ß, are pre-installed in all key combinations, and you can insert them directly into your text. A line drawing mode is also included which intelligently inserts junctions and crossovers as you draw, in line with the cursor keys.

Tab's are well handled, with straight and decimal tabs available anywhere within a ruler line. You can insert a number of rulers within a document, which is just as well as layout such as a hanging indent can only be achieved by setting a new one up and reformatting the original one at the end of the hanging paragraph. Reformatting can be switched from manual to automatic, but an automa-

tic reformat only takes effect when you have a cursor key or return. If you're trying to move through an unformatted paragraph in a specific edit point the words shuffle from one place to another.

On the menu

Most versions of Protect include a pretty thorough menu system which covers most of the features you are likely to want from the program. The Amiga version makes use of the standard pulldown menu system, and a click on the right hand mouse button brings up a menu bar in place of the window header, as usual. Running through the menu headings gives some idea of the scope of the program.

Project - covers loading and saving files, erasing them, displaying a sorted directory, renaming to a second text file (Protect can work on two files at once quite happily) and switching from document to program mode, which affects features like word wrap.

Text - includes search and



replace functions and a word count (Screen), as well as catchers for word wrap and justification.

Block - provides all the block functions and a 'lock mode' switch. Box mode lets you mark off any rectangular area of the document and move it around independently of the rest of the file. Great for tables and multi-column text.

Line - gives longhand ways of deleting and inserting lines, joining two together, splitting them apart again and copying them.

Print - provides all sorts of printing options and includes typewriter mode, where you can type direct to the printer for envelopes and things (Digits get your heart soft)

Spell - calls up the spelling checker to check a word or all words in a file. A sub-menu also offers dictionary utilities, including a word and again finder for misspelled words (though, of course, it will only find single words).

Special - deals with markers and footnotes, which Protect will fit to your text for you automatically.

Style - offers an easy way to



ON THE ST

Protect has been available on the ST as version 2 for around six months, and was covered briefly in the word processor column in issue 1. Most of the user needs made in this month's earlier entry in the new ST version 3 as well as the Amiga one, leaving in mind the differences in the two machines' operating systems and the fact that the ST version doesn't run under GEM. This means that the only pull-down menu you can access from the ST version is the Desk menu to get at your other accessories. You can run any ST program from within Protect though - programmers need only a source code file, compile it, run the program, then add the traps but without ever seeing the ST's GEM desktop.

What isn't there in the pull-down menu system for controlling Protect functions. Instead, there's a separate help screen and menu; system for many control and layout functions and this can be called from command or edit modes. The same low-level actions, a provided and TOS commands can be typed from the command line in the same way (UI commands can be typed in the Amiga version).

ST Protect works with medium resolution colour and high resolution monochrome displays and compares well with its main rivals. (If there's one ST threat, though, both these GEM-based packages can incorporate graphics. Protect goes for speed and looks there both on editing and spell checking.

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GRAPHICS

SCULPT 4D

The Amiga has a startling range of animation packages. The latest money-is-no-object package is comparable to heavy-duty professional affairs. Joe Benzing, creator of many fine animations, looks at this monster package.

JARGON BUSTER

If you don't have a clue what rendering is, then Sculpt 4D probably isn't for you. But here's a quick layman's guide:
2D (2D) (RAM) - The first stage of a model of a 3D object. Every edge is drawn as though it were a model made of wire.

3D (3D) (RAM) - Filling in the surfaces of the wire frame model with solid colour.
TEXTURE - the body of a surface, metallic, glass, matt etc.

RAY TRACING - the final stage of a 3D model. You specify where the light source is (eg, the sun in the sky), and the program works out where all the shadows and reflections should fall.

GRAPHICS BIBLE

Fundamentals in Computer Graphics by JD Foley and A Van Dam, according to every professional computer artist and animator, is the bible when it comes to explaining graphics terminology. The book is published by Addison-Wesley, 0201-0201 (14600 S, and costs £26.95. It can be difficult finding the book by Computer Manuals Ltd on 021-720-6000.

£166 (upgrades from Sculpt 3D - PQA) ■ Amiga with 1Mb and two floppies required (2Mb recommended) ■ 800Kb by Byte by Byte/Amiga Centre Scotland, 4 Hart Street Lane, Edinburgh, EH1 3PH (031-557 4242)

Here's the latest in the Sculpt ray tracing range from Dr Eric Brunton. You're probably wondering what extras - apart from the obvious price hike - have been added since the 3D version. Well inside the attractive box is a new manual (which includes tutorials), 68000 and 68010 microprocessor versions of the program and a data disk. Sculpt Amiga was found part of the package, you no longer have to finish extra work for this.

Review windows - which represent your 3D world and first become famous in Sculpt 3D - are present. Loading and saving facilities save benefits from a proper file requester. There are one-step operations with drawers, file, and disk volumes. It is even possible to resize or delete

files within the requester. Edit Mode Faces now handles object wire pickouts including colour, texture and smoothing. A lot of the more commands now have a key equivalent. And there's the facility for setting up key strokes to set your requirements. (This is simply done by holding down the [Alt] key then pressing the alphabetic key of your choice.)

To place fonts in Sculpt 3D's In-view system required lots of time - even if you used Fancy 3D Faces - because the fonts had to be lined up in your substitution. Not so with 4D. The Project menu has a requester called Project Load Font. Pressing any key that has a graphic symbol assigned to it - or on the font has loaded - causes the required character to load into the current window and the cursor is advanced to the right by a character space. The scale is automatically adjusted by the height of the current window, so you can still use your fancy 3D fonts as well. The whole process really is neat.

Script files are also provided. These are extremely useful for creating programs that generate very sophisticated scenes. You will have to have solid programming skills to use this facility though.

The image modes have had some major changes. There are still painting, sketch, snapshot, and photo options. But the snapshot, photo and rendering modes have been improved twofold. This goes for both the 68000 and 68010 versions of the program. Several scenes that were originally created on the old Sculpt Amiga were rendered using 4D; in some cases, the time to produce the picture was cut in half. Of course, there is a price - a scene with 6000 faces requires nearly 4Mbytes to render to photographic quality!

Smart rendering

'Scene painting' and 'scene rendering' are two new options. Scene painting yields a result much like the original painting, scene rendering is useful for objects that cover a relatively small portion of the image or that have many intersecting faces. Scene rendering is also provided. This is best used for speeding up 4D's mode operations. Realism is added by placing shades smoothly across faces. The only feature that works in this mode are matt and glass. The ultimate mode is still photo mode or snapshot and the file can be included.

4D's rendered scenes fall out superbly; the rendering produces lovely smooth images. There is still the option of using up to 24 bitplanes, which gives you up to 16 million colours and resolution of up to 1000x1024. Naturally your Amiga can't display this, if you can find someone with a Hitachi PCL or a 32bit imaging system, some really neat output is possible. A frame buffer will be needed for 4D's data animations.

In the Edit Faces menu there is a new texture called 'metal', as expected, it combines the properties of a shiny and reflective surface. Some of the light is reflected and some is scattered, giving it a metallic effect. Within the scattering menu, Phong shading is now provided - good for curved surfaces.

Things to know

The menu load into your world objects with helical or spiral symmetry. In



Joe Benzing's Lamps animation - a fully rendered, fully ray traced still produced with Sculpt 4D shown here - was at the wire frame stage of the August 1988 Amiga Centre Scotland Animation Show. Joe took a 4 hour job and produced a runner-up prize at the time even though the work was scattered over seven plots. The full scene consists of two lamps performing a choreographed dance.



It's just a matter of Jaz's creativity. This was took 45 minutes to render and tap trace - still, you, that was on an accelerator Amiga. The Hurricane Laser (and most computers a 68030 and 68881 multi-processor. Cost is around \$1144 from the Amiga Centre. Jaz's over 4000 colours and is displayed in full screen mode.

includes, a screw thread, Catherine wheel or coil spring. This is all handled by a central curve. The control curve is made of a series of linked edges and vertices. Each edge of the control curve corresponds to one complete revolution, or least, of the helix. The length of each edge of the control curve will determine the length of the corresponding helix.

Placing the centre of an object has been made easy with the new snap-to-center command. Along with many conventional items like snap to nearest vertex and snap to grid, there's snap to the centre of gravity. It's useful stuff.

The manual contains handy sections on creating animations for walking from hard disk and floppy. It also includes which lets you move animations from hard disk to floppy. Essentially the utility replicates animations at convenient locations. Really nice if your work is on the large side. If you have a joystick then there is a trap for mapping you to retain 60 background-objects. There's also the facility for using full video if you intend recording to tape or using a graphics. There are drivers for both single frame recorders and frame buffers. Both the driver and source are obtainable from Byte by Byte in the States.

Set your sights

With the Coordinate menu there is an automatic tape measure. You can use the tape measure to scale objects precisely. There are two and a half gadgets, one per side. Clicking on one gadget will place one pair of markers at the current cursor position. If the vertex is moved the tape measure read-out will be updated. The Protractor is used in much the same way, but it measures angles and not distances.

Grid Test, which provides a three dimensional grid, is of great help.

Grid size can be set and configured to suit your needs. You can even use it in animations - are guaranteed to enjoy Script 4D.

ANIMATION ON A SHOESTRING

Not everyone has £100 or more to spend on an animation package. Here are some alternatives and where you can get hold of them.

SCRIPT 4D (London: Robert Millett and Corvair). The object editor is very robust and does not lose the flexibility of 6D. Very fast update times are obtained though. The program provides texture mapping and a reflective table mode. It also hosts a terrain mode. Inputs: 512 Marketing to 0295 444433 with a fee of £129.95.

MONTECARLO 3D doesn't provide updating facilities, but does support RGB and highlight modes. Moving results can be produced reasonably easily with Modeler 3D you can create object, textures, and motion files. Videoware really shows where you can get hold of it. Available from Apple-UK Marketing for £147.95.

CHARACTER APPRENTICE is a Disney-style animation package that doesn't use triangles to create objects. You could quite easily create Roger Rabbit and animate him. By the way with 4D. The character is created, its action defined and then direction and rehearsal are added. Its obtainable from Herb Enterprises/Amiga Centre Scotland (031-937 4342) at £195.

FORMS IN FLIGHT 2 is another 3D/3C animation package. This package supports hierarchical animation, plane shading, texture mapping and 3D support of backgrounds and foregrounds. 199 is excellent value for money and is a great way to get into 3D animation. It costs £79 from the Amiga Centre Scotland.

your own measurement systems.

The only major fault with 4D - and, frankly, it's not that major - is the lack of texture mapping.

Script 4D is much smoother and faster than earlier versions. Even in its standard 68030 mode the improvement is noticeable. Though, as is to be expected, the '029 version is more productive. The tools have been improved and, as mentioned earlier, there are a lot of useful new utilities.

But the question has to be asked: who is going to buy it when it's priced over £150. Certainly not the casual user. If take 3D design seriously and require high performance regularly then 4D has got to be the one. It's a first class product from the object editor to the animation side of the software. Universities and profession-

for

- Object editor is fantastic
- Rendering range good
- Support for Amiga 68030/3C accelerator boards
- Comparable to 6D/3C package

against

- No texture mapping (using picture planes unusual habit)
- No reference index for ray tracing work

PHONGY STUFF

Phong shading is a method of smoothing curved surfaces visually on screen using ray tracing. It was the first really clever algorithm to tackle the shading problem, and was devised by a Japanese mathematician, Dr Phong Bui-Tong, circa 1975. Phong shading isn't 100% successful as the very top edges of the spheres or cones are flat-topped. Another popular method of sphere shading was produced in Scotland around 1987. Each method has its pros and cons and each point - it means the first filling routine needs to be a combination of the two techniques.

OBJECT DISKS

Byte by Byte of Arbroath, Angus, 10, Gairns 179, 644-C, Castle of Texas, Kingsway St, Dundee, TX 92758 in the States sell several disks full of object data. For instance, there's the Orbiter/Space Station set which allows you to create your own shuttle scenarios. A whole range of objects disks are planned which might be distributed in the country by the Amiga Centre Scotland (031-937 4442).

Features

5 4 3 2 1 0

performance

5 4 3 2 1 0

ease of use

5 4 3 2 1 0

response

5 4 3 2 1 0

format value

5 4 3 2 1 0



PROGRAMMING

SCREEN TRICKS

If you want to write a Starglider II beater, then you'd better pay attention. RICHARD MONTEIRO and JASON HOLBORN provide you with all you need to know on how the ST's and Amiga's screens work, plus loads of tips and tricks. Not to be missed.

Ampigade high processing speeds and large memory configurations, the most fascinating aspects of the ST and Amiga computers are their spectacular graphics capabilities. At its highest resolution, the ST can display 640 by 400 pixels. Only two colours - black and white - can be used, but that's all you need for word processing, DTP and CAD. The ST also has two colour modes: medium resolution (640 by 300 pixels) which can display four colours on screen and low resolution (640 by 200) which manages 14 colours. A glorious palette of 512

colours is available.

The most common resolutions on a PAL Amiga are 320 by 256 pixels and 320 by 312 pixels with up to 32 colours on screen. If you have the number of on-screen colours, you can have resolutions of 640 by 256 pixels and 640 by 312 pixels. Extra modes such as overscan, extra buffers and hold are mostly (BASIC) are also supported, but the actual mechanics are too complicated to cover in these pages.

A screen on the Amiga is built up using a system similar to that used by the Atari ST - namely by using bit planes. However, unlike the SE, the Amiga programmer is able to specify four many bit planes are used by a specific screen. The number of bit planes allocated to a screen dictates the number of colours available. For example, a single bit plane screen has two colours whereas a five bit plane screen allows a maximum of 32 colours. The equation is simple: 2 to the power of the number of bit planes equals colours available.

Each screen memory is organised with immediately obvious resolution is fairly easy to handle, but at times of complications arise when colour arises on the scene.

High resolution
Immediately after turning the ST on, an area of 32K is initialised at the upper memory border. The memory address starts at \$F00000 (\$F00000 on a 500, \$F00000 (\$F10000 on a 1040 and \$F00000 (\$C64000) on a Mega 2. Check the panel for more details on this.

High resolution mode is the most well to deal with: it only has one bit plane. This simply means that colours cannot be represented on screen. A pixel can only be black or white (on or off). Each pixel in this mode is represented by one bit. Hence each byte looks after eight pixels. It's not hard to work out that the total memory used, in bits, comes to 256,000 (640 multiplied by 400). Exactly 80 bytes are required to display one horizontal line of screen information in this mode.

To plot a single pixel - say the first pixel at the start of screen memory - you must use something like:
POKE \$,128
POKE \$,256000000
where \$ refers to the start of screen memory. If you want to plot a pixel one position to the right of the extreme left, use:
POKE \$,64
To plot a pixel another place to the right you must use:
POKE \$,32
Check the panel on the binary counting system if you can't see how this works.

Plotting memory location \$+1 with 128 for decimal (\$A0000000) plots the ninth pixel on the top row of the screen. The following short BASIC snippet starts by plotting a pixel at the top left of the screen; the pixel slowly travels across the screen. See if you can follow the logic (high res only).

BINARY COUNTING SYSTEM

Data of any kind which is stored in a single memory address is referred to as a binary byte, and can be represented by any number between 0 and 255.

Each of the eight digits in a byte is termed a bit. Each bit is a binary byte that either 0 - in which case it has no value - or 1. Its value depends on its position within the byte: if the bit is the extreme right of the byte (128 or least significant bit) is set to 1 then it has the value one. A bit set in the second position has the value 2, the next 4, and so on through 8, 16, 32, 64 and finally 128 (the most significant bit, or MSB).

(Bit values)

128 64 32 16 8 4 2 1

1 1 1 1 1 1 1 1

7 6 5 4 3 2 1 0

(Bit numbers)

The total value of a byte can be found by adding the individual values of the set bits. For instance, binary 10110011 equals 179 (128+64+16+4+1) in decimal.

ST SCREENS

The amount of memory used for an ST screen display remains constant no matter what resolution you're in. This seems reasonable because high resolutions have little colour and low resolutions have lots of colour. You should have guessed by now that both colour and resolution determine screen memory requirements. The equation is: resolution times colour equals memory.

Reduce the resolution and you can increase the amount of colour. The opposite is just as true: if theory this is possible, but so you know in practice only three ST resolutions exist.

Total screen memory requirements on the ST amount to 32K. The

```

*High res only
SCRW00=UPR001484E3
FOR L1=0 TO 79:PAUSE
FOR L=7 TO 0:STEP -1
NEXT L
NEXT SCRW00=L1=0,1771
NEXT L
NEXT L
NEXT L1=0
NEXT L1=0

```

Medium resolution

From now on things get a bit trickier. You can use a code to determine what colour the pixel on screen assumes. Such a system is said to have two bit planes. Things get complicated in the mode memory still arranged as expected and colours are determined by pixel combinations.

Memory matters first. The first and third screen bytes look after the first eight pixels, the second and fourth bytes look after the second eight pixels, the fifth and seventh bytes look after the third eight pixels.

Each pixel has two bits associated to it, two bits can be arranged in four combinations (hence four colours are possible in two modes). The BASIC program below demonstrates the effects on a pixel by setting bits in two bit planes.

```

*Mid Res Only
Screen=Screen+100000
COL=0:ROW=0
FOR L=0 TO 79
FOR M=0 TO 7
IF COL=1
COL=1995
NEXT L
IF COL=1
COL=1000
NEXT L
IF COL=1
COL=1000
NEXT L
FOR SCREEN=1 TO 100000
FOR SCREEN=2 TO 100000:STEP 2
NEXT L

```

Low resolution

If you thought medium resolution was a pain, you will soon realize yet. Low resolution has four bit planes which means four bits are used to determine the colour of one pixel. And the way memory is arranged is even more confusing.

The first, third, fifth and seventh screen bytes look after the first eight pixels, the second, fourth, sixth and eighth bytes look after the second eight pixels. Four bits - which make up one pixel in low res - can be arranged in 16 combinations (or colours). Armed with the knowledge that bits can be on or off, 1 or 0, here are the possible combinations. Assume the bits are labelled A, B, C and D.

```

A B C D
1 0 0 0
1 0 0 1
1 0 1 0
1 0 1 1
1 1 0 0
1 1 0 1
1 1 1 0
1 1 1 1
0 0 0 0
0 0 0 1
0 0 1 0
0 0 1 1
0 1 0 0
0 1 0 1
0 1 1 0
0 1 1 1

```

HUNTING FOR THE SCREEN

The ST's screen isn't fixed in memory - that is, it can move about without upsetting the system - but as power up you are guaranteed to find it in a certain place. Whether this holds true with machines having 720 X2 800s remains to be seen. When an ST is powered up you can find the start of screen memory at location \$A70000 on a 520 and location \$A90000 on a 1040.

On most machines you'll be safe using the memory locations mentioned above. However to make absolutely sure of the screen's position in memory, you should use a GEM call which returns the screen location.

There are several ways of going about this. The illegal way is to do a breakpoint PEEK at location \$A700 (memory address here is reserved for system variables - so be careful). If you use GEM \$A000, for instance, you could use `CALL GEM($A000,$A700)`. Most versions of BASIC allow you to call GEM routines of three commands to emulate ROM routines. Working with GEM you could use `CALL GEM($A000,0)`. Assembly language programmers can call the routine PHYSLOC to return the base of physical screen RAM in register 00.

```

MOVE R1, #0
LOAD R2
ONLY D $A-up

```

The program below goes to prove just how much work is involved in plotting a block (eight by eight) of pixels in a random colour at a random location. This type of operation is useless when programmed using a high level language due to the vast amount of processor time consumed. Only assembly language users will gain any noticeable benefit from accessing the screen directly.

```

*Low Res Only
Screen=0
FOR R=0 TO 10
FOR C=0 TO 10
IF R=0 OR C=0
FOR M=0 TO 255
FOR L=0 TO 255
IF L=0 OR M=0
IF C=0
IF R=0
COL=L
ROW=M
CALL GEM($A000,$A700+$C+$R*256)
NEXT L
NEXT M
NEXT C
NEXT R

```

```

SCREEN=SCREEN+10
NEXT R
SCREEN=SCREEN+171600:GOTO 10
NEXT C
NEXT M
NEXT L

```

AMIGA SCREENS

Each bit within a single bit plane can only have two states, 1 or 0. Therefore to use more than two colours within a screen the system needs to find the value of the pixel by combining bit planes. This is best viewed as a binary number, where each digit within the number represents a single bit plane. For example:

```

BP4 BP3 BP2 BP1
  0  0  1  1
= Colour Number 11

```

In the above example, bit planes 4, 2 and 1 are all set to one while bit plane 3 is set to zero. Looking at the

ST SCREEN TRICKS

The ST bit plane display may have located at \$A70000 and \$A90000 starts when the screen fits in memory. All sorts of things are possible when you start

```

POKEING around
FOR L=0 TO 15
NEXT L
FOR M=0 TO 15:STEP 2
NEXT M
FOR N=0 TO 15:STEP 2
NEXT N
FOR O=0 TO 15:STEP 2
NEXT O
FOR P=0 TO 15:STEP 2
NEXT P
FOR Q=0 TO 15:STEP 2
NEXT Q
FOR R=0 TO 15:STEP 2
NEXT R
FOR S=0 TO 15:STEP 2
NEXT S
FOR T=0 TO 15:STEP 2
NEXT T
FOR U=0 TO 15:STEP 2
NEXT U
FOR V=0 TO 15:STEP 2
NEXT V
FOR W=0 TO 15:STEP 2
NEXT W
FOR X=0 TO 15:STEP 2
NEXT X
FOR Y=0 TO 15:STEP 2
NEXT Y
FOR Z=0 TO 15:STEP 2
NEXT Z

```

CHANGING PIXEL COLOUR

The latest ST resolution can cope with 16 different colours on screen at once. These 16 colours can be chosen from a 512-colour palette. Together they can give 16 pairs (numbered 0 to 15), each pair can be fixed with any bit of which there are 512 to pick from.

BASIC has several commands to do all the hard work for you. Indeed, even if you use assembly, GEM is blessed with commands for altering one bit. For speedy colour changes, though, your best bet is to hit the hardware directly. You can do this by reading or writing to the video colour registers. There are 16 word (or double byte) registers starting from location \$A90000. It is only possible to access these registers in supervisor mode. My access is near mode results in a few errors. Location \$A90000 looks after the bit in pair 0, location \$A90002 looks after the bit in pair 1 and so on up to location \$A9000E which looks after the bit in pair 7.

For instance, to change the background colour (pair 0) you might use the BASIC command `SCREEN $A90000=10000`. The variable value takes the form:

```

AAA: SCREEN=SCREEN+10000
      SCREEN=SCREEN+100000
where the 0 bits determine how much red is in the final colour, the 8 bits how much green is in the final colour and the 8 bits how much blue is in the final colour. Hence even SCREEN $A90000 $A90000 $A90000 $A90000 would give a deep red background.

```

The program below shows how it's done.

```

*Low res only
FOR L=0 TO 255
NEXT L
FOR M=0 TO 255
NEXT M
FOR N=0 TO 255:STEP 256
NEXT N
FOR O=0 TO 255:STEP 256
NEXT O
FOR P=0 TO 255:STEP 256
NEXT P
FOR Q=0 TO 255:STEP 256
NEXT Q
FOR R=0 TO 255:STEP 256
NEXT R
FOR S=0 TO 255:STEP 256
NEXT S
FOR T=0 TO 255:STEP 256
NEXT T
FOR U=0 TO 255:STEP 256
NEXT U
FOR V=0 TO 255:STEP 256
NEXT V
FOR W=0 TO 255:STEP 256
NEXT W
FOR X=0 TO 255:STEP 256
NEXT X
FOR Y=0 TO 255:STEP 256
NEXT Y
FOR Z=0 TO 255:STEP 256
NEXT Z

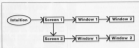
```



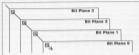
bit planes individually doesn't tell you a great deal, but if you combine them as a binary number the colour value of the pixel can be ascertained. This explains why all pixels of a particular colour are changed when you alter the value of their colour register. Old planes cannot tell you the colour of an individual pixel, only the colour register number that that particular pixel will fetch its colour information from.

The Amiga's screen memory is dynamically allocated as and when it is needed. The only certainty with screen memory is that it is always somewhere within the first 512K of RAM. So how do you keep track of your screens and windows? Portents of course.

The Amiga uses two types of pointer for screens and windows. The *RectPort* is a pointer to a screen and a *WindowPort* is a pointer to a window. Two types of pointer are required as windows are always displayed within a screen, while it is perfectly possible to open a screen with no windows, it



■ Figure 1 - How the Amiga's 'toolkit' views a screen with two windows.



■ Figure 2 - Think about bit planes this way and you may be less confused.

is impossible to open a window with no screen. All the screens and windows are linked using a linked list.

For example, if you have two open screens that each have two windows within them, initially the Amiga's RAM pointers would view them as in figure 1 above.

All drawing functions within the ROM kernel need to be told what screen or window they are to work in. The most common pointer used is the *RectPort* pointer as all windows and screens must have one. All the following examples are written in Amiga BASIC; the theory is exactly the same for most other languages such as C and Assembly.

Positioning pointers

The simplest, and most legal, way of writing a single pixel to the screen is to call the ROM kernel function *WritePixel()*. Use all drawing functions within the ROM kernel, *WritePixel* needs to be told where to write the pixel. In this case a *RectPort* pointer is required. In *AmigaBASIC* this is easily found by creating the value using the *WINDOW* command. The value returned is *WINDOW* which means the variable that holds it must be declared as *long*. This is done by attaching 'L' to the end of the variable name. The *RectPort* address can be read using the following:

```
RectPortL = WINDOW.L

You can now write directly to the window using the ROM kernel functions. The following Amiga BASIC program will write data randomly on the screen:
```

```
LIBRARY "graphics.library"
SCREEN 1,400,250,1,1
WINDOW 1,"Tools Window",1,1,
400,250,1,1
RectPortL = WINDOW.L
FOR COUNT = 1 TO 1000
  X = INT(400*RAND)
  Y = INT(250*RAND)
  CHML $X,1+INT(15* RAND)
  CHA Y,1
NEXT COUNT
LIBRARY CLOSE
```

GETTING IFKY

One nice feature of the Amiga is its standardised file format called IF. IF covers nearly all types of data files ranging from picture files and animations to text and compiled code.

The actual structure of IF files unfortunately is rather too complex to cover completely within these pages. Look out for that in a future issue of *Parasit* so we'll only look at how IF *IBM* (Interoperable File Map - picture files to you and real time load the actual colour information of a picture.

All the colour bits of information needed to construct a picture are held in specific chunks. The advantage of this system is its extensibility. The IF *IBM* file in particular has been updated several times since it was first adopted, but still remains compatible with the original version. Each chunk within an IF file has a four byte header containing the name of the chunk. If you view an IF file as a hex dump then you'll be able to spot these chunk headers easily as they are English text bytes.

The chunk that holds a picture's colour is called the Colour Map and has a chunk header called *CMAP* loading the colour information is therefore only a matter of searching for the string 'CMAP' within an IF file. The actual colour map chunk is made up as follows:

- 4 bytes Chunk Header 'CMAP'
- 4 bytes Chunk Length
- 1 byte Red value of colour 0
- 1 byte Green value of colour 0
- 1 byte Blue value of colour 0
- 1 byte Red value of colour 1, ..., etc.

The three bytes holding the red, green and blue information need to be read to find the colour contained in a particular colour register. The next step is to divide each by sixteen. The reason for this is that only the last four bits of a byte are used, the first four must be ignored.

The program below shows a simple method of changing the value of a colour within a picture file. The program allows you to change the value of the background colour (colour 0) and then save the results written to a separate file. The program uses

a rather long time to read the entire IF file or don't worry if your Amiga seems to be taking an age to

```
CHUNK "IBM read (IBM200000)"
DEFINITION = "Load.1188"
OUTLINEMODE = "Hexm.P1P"
OPEN InFilename FOR INPUT AS #1
CLOSE OutFilename FOR OUTPUT AS #2
PRINT "PLEASE ENTER OLD VALUE (0-15) ",
  0;
PRINT "PLEASE ENTER NEW VALUE (0-15) ",
  0;
PRINT "PLEASE ENTER BLUE VALUE (0-15) ",
  0;
Print:GOTO 2
CHUNK = "CMAP"
WORLD SIZE 4096
CHUNK = INPUT $1,10
CLOSE CHUNKCHUNK
END
IF FoundCMAP = 0 THEN
  PRINT "Couldn't Find Colour Map"
ELSE
  PRINT "OK, Job Done."
END IF
CLOSE 1
CLOSE 2
END
ChunkName
CHUNK = CHUNK + CHUNK
CHUNK = INPUT(CHUNK),4
IF CHUNK = "CMAP" THEN
  FoundCMAP = 1
PRINT #2, CHUNK
WORLD UpdateFileLocation
END IF
PRINT #2, CHUNK
RETURN
UpdateFileLocation
CHUNK = INPUT($1,1)
PRINT #2, CHUNK
CHUNK = INPUT($1,1)
CHUNK = CHUNK(CHUNK+1) + CHUNK(CHUNK+1)4
+ CHUNK(CHUNK+1)4
PRINT
```


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£149.50 ■ ST only, all models ■ Next Base, Unit 18, Central Trading Estate, Staines, Middle TW18 4XE (0794 660677)

MAINLAND ONLY

Autocode claims to control all roads in Great Britain. This means, sadly, that roads in Northern Ireland and the Channel Islands are not included. By rights, it should also mean that the title of *How to* is restricted too, in fact, you can start from any of 1400 or more on the island, and the program will also include the ferry crossing.

Talking of ferries, the time for crossings is included in journey suggestions, but any sailing times or special cases (e.g. no ferries) will need to be set taken into account.

OS SENSE

Autocode is the first software package designed to make use of the Ordnance Survey's digital map data. The government body which started the mapping of the country for the military war told some years back to start making money. It set upon the clever idea of marketing its map data in digital form (the map it currently stores is 16mb).

Next Base licensed the maps from the OS and had to download them from the 'books of maps' tops on which they were supplied, onto many floppy disks. The next stage was to integrate the maps into the program itself, tying the data in with the search algorithms. Finally the data had to be heavily compressed to reach Next Base's target of running the program on a single drive PC, and hence 120K.

The way the maps have been fitted is means that new versions can be integrated out as easily as that Autocode can be kept up to date with the latest versions of OS maps.

Autocode can claim to be a unique product. It's purpose is to work out the best routes between any two places in Great Britain and provide detailed directions for driving from one to the other. In addition, it can display and print a map of the suggested routes, and zoom in on any area of the country. You can identify cities, towns, villages and roads on what is effectively an electronic map.

The program is supplied on three single-sided disks, with a slim but comprehensive manual and a map station card. Two of the supplied master disks contain the digital map data, while the other contains the pro-

gram and is keyed as a form of protection. This means that even if the program is installed on a hard disk, the floppy still has to be used to start Autocode. Although Next Base offer to replace a damaged program disk for a 'nominal fee', it's still annoying to have to use the master every time the program runs.

The map data can be contained onto one disk if you have a machine with a dual-headed drive, and the program then requires no disk-swaps while running. On a 3 Mb



■ Details of a particularly narrow junction

ST or above, the map data is loaded and run from memory, which speeds things up considerably. Autocode automatically senses the machine and drive configurations, and installation on all machines is well explained in the excellent written manual. Although only a few hundred, it is full of illustrations and written in an informative style which never patronises.

Naming of paths

The program runs under IBM and starts with an impressive-looking Main screen and four full-bleed menus. The Data menu shows the roads, and it's interesting to note that parts

of the code are copyright Mark Williams, author of one of the best known C compilers on the ST.

The Options menu lets you pick measurement units (miles or kilometres), types of route (shortest, quickest, cheapest, etc) and one of the typical vehicles. The type of vehicle is in fact a shorthand for your own speeds, as each of the headings (CV, normal, full, fast, ST) and (M) corresponds to a set of speeds on different types of road. These can be edited separately from the Journey menu and saved from the Actions menu.

The Journey menu provides most of the meat in specifying your actual route. Journey Details calls up a separate window where you can specify starting point and destination, up to four places to visit (with optional stopover times), four places to avoid (including nearly road junctions) and a required departure or arrival time. These times are significant when it comes to printing out your directions, as Autocode will supply a timetable working forward from departure or backward from arrival.

The Road Preferences menu lets you declare any strong likes or dislikes for Motorways, A roads, B roads and changes of road. These preferences can dramatically effect the routes the program selects. The Speed Test window displays the speed attributed to each of the five sample vehicles in the *Autocode* menu.

The third menu, *Address*, is where the work is done. Calculate sets the program searching for the routes you've requested. Route Test displays detailed directions for any of these routes. Route Map displays a scaled map with the route marked on it and Post code prints directions.

There and back again

So much for the theory. Having entered several typical journeys, it was impressive to watch the speed with which Autocode calculated each route. Even on a 1200K with a long route Lundy Isd to John O'Gaunt each route was found in well under a

ROUTING ROUND

minute. There's a bar indicator to show how the calculator's progressing - a nice piece of user friendliness showing how long you've got left to wait - and each route in a multiple route calculation is displayed as soon as it's found, with its time and distance. You can interrupt calculations at any stage.

Once complete, the main screen blanks to the menu bar again and you can select any of the other options from the Actions menu. The

three own best loved routes, and most post-patched the suggestions provided by Astoroute. There was genuine disbelief that some of the suggested routes were quicker, shorter or cheaper than the routes chosen from experience by the regular drivers among us. On longer hauls the routes were generally much more preferable, either because the long distance information is more accurate or because nobody knew the country as well as the local ones. There was no

pick started, queried or thought-out. Instead you can obtain the maximum advantage from the program's suggestions. Next Base offers a maintenance contract for £24.50 per year, which provides an update of the map data taking in any new or altered roads.

Taking the price into account, Astoroute is unlikely to feel its way into many home user libraries. Its main attraction must be to professional use, who can offset the price of the program against the savings it can make in fuel costs. The obvious markets are travelling salesmen, lorry drivers (and their employers), financial executives and journalists. It's a very well designed package and deserves to sell well in the sectors at which it aimed.

IN CAMERA

A detailed evaluation written by several members of the Format team was Astoroute's lack of a 'Personal' route option, covering the most paths between any two places. Next Base couldn't comment on any possible tie up with CAGADA or Equi Theory for digitised post-codes.

JOINING THE DOTS

When you stop and think about it, how would you set about determining the shortest route between two points on a map? Your first thought might be to work from one point, taking a bearing on the other and picking the road closest to that bearing. A little more thought, though, will lead you to several flaws in this technique. The most obvious is that you might miss a much faster or more direct road which happens to leave your starting point in an odd direction.

In fact, Astoroute uses a combination of two techniques, which can generally be termed 'left hand' and 'right hand' combinations. The 'left hand' technique begins at the starting point and moves out equally on all possible roads until the destination is reached. All routes which haven't reached the destination are then discarded.

The 'right hand' combination marked some of the roads and combinations of roads looking for the start and destination points on them. It again eliminates any roads which don't meet these conditions.

most interesting of these is Route Map. A fresh screen shows a scaled section of the British map with start and destination points marked and the suggested routes flashing between them. Roads and places not directly on route can be displayed by clicking on the dots and lines on the map, and areas of the map can be enlarged from a maximum scale of 450 times for full a window width to a maximum scale of 1 mile. It's a pity the whole screen couldn't be used for the display, with the control panel popping up over the top when needed.

Taking advice

What about the recommended routes? Any program like this brings out the point in motoring dogma. It certainly created more interest around the office than any program since MacPlanner (aren't you what that one does?). Everybody wanted to try out

time to test the suggestions for the Land's End to John O'Groats route!

The other problem with the program was the general confusion in the suggested routes lines, while at the road speeds are within current speed limits, the average times assumed driving at those limits. Since you spend a fair bit of time in traffic jams, to average 50mph on a motorway you'll need to cruise at a hefty legal 90 to meet Astoroute's times. That said, it's only a matter of moments to take the speeds to those you think you can achieve safely.

Going the distance

Since you've tailored the package to your own speeds and requirements you can get sensible help from it. A set of printed directions is a lot easier to follow than a map, particularly if you're on your own and need to stop each time to consult it. The facility to



Part of Astoroute's directions for the quickest route



Astoroute's map of the routes suggested roads

for

- Complete electronic map of Great Britain
- Can be customised to your own speeds and road preferences
- Adjusts itself to get the most from any 640 configuration

against

- Map screen could be bigger
- Default speeds over-optimistic

Features

0 1 2 3 4

performance

0 1 2 3 4

size of use

0 1 2 3 4

comments

0 1 2 3 4

format value

0 1 2 3 4



GRAPHICS



DELUXE PRINT II

£49.95 ■ All Amigas ■
Electronic Arts, 11-45
Station Road, Langley,
Slough, Berks SL3 8YH
(0753 49442)

Deluxe Print II sets out to help you create colourful signs and posters on your Amiga - so much you can think of it as a front-end stage for a paint package. A typical scenario would be this: you decide you want a poster advertising your Valentine's Day Barre Dance. Using your paint package, you can draw all the discrete parts that will eventually be used: a stylised ballerina, a few love-hearts, and a miniature City Stock Exchange frame, you see - Etc. You save all the elements individually and then compose them with Deluxe Print II.

OBJECT LESSON

There are four types of objects you can put on a page: text, text, letters and backgrounds. The background is simply an image that we've previously prepared in a paint package. Texts are what Deluxe Print calls its basic graphic elements. As for data provided you with a fair variety of 16-bit art, but it tends to be a little off-kilter. Bunnies, penguins, slices of IBM's Apple Pie... You can place any of these on your background, or import ones you've prepared elsewhere. Icons are always 44 by 52 pixels, although they can be rescaled once in place.

The difference between Deluxe Print and a standard paint package is that the icons are stored as discrete objects. In other words, if you place an icon over a background, the current background will disappear if you move the icon later on. This is particularly useful for text.

features

1 2 3 4 5 6 7 8 9 10 11 12

preferences

1 2 3 4 5 6 7 8 9 10 11 12

view all icons

1 2 3 4 5 6 7 8 9 10 11 12

messages

1 2 3 4 5 6 7 8 9 10 11 12

format value

1 2 3 4 5 6 7 8 9 10 11 12

for

- Automatic calendar generation
- Good range of large text fonts
- Text/graphics stored as "objects" for easy modification

against

- Doesn't directly support 24-pin printers or HP Postscript
- Can't edit in full-size view
- No point-package type print editing tools
- Nothing a good paint package can't do

Art packages are wonderful things... but while they're great for painting pixels, they're usually pretty weak on adding text to your creations. **BEN TAYLOR** colours in the grey area between paint packages and DTP.



■ Making up a calendar is DTP's. The text for the dates was automatically calculated by the program after being told the month and year. Other graphics were then superimposed. The border (not shown) is the same font, size being reflected.

When you start, you are faced with a blank work area (filling the left half of the screen). You can choose whether to work on a single sheet, a 'bunnet' (2 sheets placed end-to-end), a disk label or a 4-96 card. This last format sets up a page of four panels so that when folded in quarters you get a greetings card. An extra fancy

print it is very time-consuming. Once you've placed text on your background, you are free to change its size, font, colour and position.

Finally, you can set a border around your image - this is effectively an icon which is repeated and printed around the outside, so you can frame your composition.

Putting out

Once you've got the various elements just right, you can print your masterpiece. Modifying, the printer drivers supplied are based on the desktop version 1.2 set. There is no support for the HP PaintJet colour printer, nor any 36 pin-dot matrix. It's true you can copy other drivers onto your hard disk, but the manual doesn't give any clues.

It is only possible to view the page in its entirety on screen - very annoying as everything is about 60% of actual size. You can zoom in for point-perfect proofreading, but you can't do any editing unless you return to the full-page view.

Deluxe Print II is a neat, unambitious program. You can't flow text around graphics, you can't rotate text, you can only statically work with imported pre-created graphics. It offers little you couldn't do with a good paint package and a selection of public domain fancy fonts.



■ Some of the poster-size fonts supplied with Deluxe Print II

format is 'Calendar' - a page printed with the dates of any month you specify.

Deluxe Print's main area of interest is that it provides good text fonts suitable for use in large posters. Curiously the fonts are called Carnelia, Patricia, Iva and Deluxark - there must be a story behind that. Characters up to two inches high with no jagged edges are possible; larger than that and the edges don't look too smooth. You only have one line of text at a time onto your poster. Free for headlines, but if you want any small



TIPS

Stand-alone STOS
Users of STOS BASIC will find that they cannot make stand-alone

STOS
The Game Creator

Professional
Software



© 1988 by Professional Software

DESKTOP

When the frost sets in and your ST starts to shiver then there's only one thing for you to do - stumble down to the Format saloon for all the latest tricks and tips to keep your ST warm through the winter weeks. This month's winner is R. Henderson from Liverpool for his STAC tips. £30 will be on its way once we find the editor's wallet.

PRG programs but there is a way around this problem.

1) Copy the STOS folder from your Language Disk onto another disk using the desktop copying procedure (do not use the STOSCOPY command).

2) In this new folder delete the

files COMPACTED and EXORINP to save space. Performing this operation will cause the standard Desktop cabinet to be used as your program.

3) Save your program with a PRG extension from the Editor in

the normal way.

You can now execute PRG files from the Desktop.

Also, if you want to load from drive B then type in `mount B:`, `1` and press the reset button.

By Steve

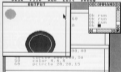
White, Haverhill, Mass.

BEGINNER'S CORNER

Back in the good old days when all you had to do was turn on your Dragon 32 and up popped Microsoft BASIC (those aren't the old days - 88), programming your machine was almost as easy as pulling the hair out of your fall sweater. Then suddenly some bright sparks came up with the idea of making a 24-bit machine which can be used to play some brilliant games and launch a really powerful BASIC. Now this would be fine if they didn't make it so complicated that you need a degree in BASIC to be understood how to load in the program.

If BASIC comes loaded with your ST and although you might not be able to enter Starblaster II as it, it's still a fairly powerful language. Its windows are considered by many to be one of its best features especially when it comes to sorting out what's gone wrong with your program. One what makes ST BASIC useful is also its major disadvantage. The windows are notoriously difficult to manage. Both how windows are opened to editing, listing, outlining and command-line entry, not only is it hard to get them all on screen at once but it's also damn near impossible to remember which one it is that you've happened to be looking at.

Back File Run Edit Help



WINDOW MANIPULATION

The COMMAND window is the one into which you type your program. It doesn't really seem to be very hot so it's often a good idea to size it up in a wide but short window. As you enter your basic instructions these all appear in this window. When you want to see the program the next step is to hit `l` on. Listing occurs in the LIST window. Often, placing this one above the command window so that you can see as much of your program as possible is a good idea.

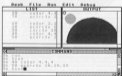
Selecting `EDIT` causes the EDIT window to appear. All other windows which were in front of it will be sent behind this window, making it possi-

ble to see the relevant section of your program and move the cursor around for editing.

Finally, the output window responds to all directly-entered commands and handles all the output of your programs. This might seem confusing but by sizing up this box you can edit your program and view all the program output at the same time making it easy to see the necessary changes (assuming of course that your program doesn't run perfectly first time).

CONTROLLING WINDOWS

Each of the separate windows are allocated a different number. Window 0 is the EDIT window, 1 is the LIST window, 2 is the OUTPUT window and 3 is the COMMAND window. There might not seem to be much point to this but it comes in very handy when you want to clear a window. The `CLEAR` command when followed by a number from 0 to 3 will clear the corresponding window. This can often be useful when it comes to obtaining a clearer listing or if you are making use of the `OUTPUT` window.



Another command, the `FULL` statement can be used, when followed by a number from 0 to 3 to increase the size of the specified window so that it takes up the full screen. This is often useful for looking at a listing or when you wish to run a program and be able to see the full screen in operation. Should you ultimately the COMMAND window with a full screen then it will reappear when you next type a character.

These commands can also be used in an ST BASIC program but since you can only display in the output window then there's not a lot of use in doing with any display other than 2.



Mousetrap Business

The ST mouse is a boring creature, really. A simple arrow head with an interesting feature or two is the only thing on offer to ST mouse users. But here's a program which can change the appearance of your mouse to make it far more interesting:

```
50: OPEN (CATALOG).DO:FR
30: OPEN (CATALOG).L1:1-1
20: OPEN (CATALOG).L2:1-1
40: OPEN (CATALOG).L3:1-1
50: OPEN (CATALOG).L4:1-1
60: OPEN (CPT).F1:1:10
70: ENDPROC
```

By allocating values of 1 to 10 to 5 you can change the mouse pointer to all sorts of different shapes from a suitable data to the much-loved bat.

A. Kennedy
Dunstable, Peterborough

Making the most of BASIC

ST BASIC is a brilliant program but loading Deques and

Neochrome pictures can be a real pain at times. However, there is a way to overcome this problem very simply.

On a 50000, the ST BASIC screen resolves at location 570000 (that's the number I use on page 38 for the full story of screen handling) in memory so if you need to do a load picture into the area, having subtracted the relevant amount of memory for the file header, Neochrome pictures have a header of 128 bytes whilst Deque pictures have a header of just 32 bytes. Therefore, to load a Neochrome picture onto the screen all you need to do is load your image into address 570000-580. Remember to make sure that you only load Neochrome pictures onto lower screens and Neochrome onto Neochrome screens otherwise you'll get all sorts of strange things appearing on your monitor.

Mary Shyster
Warrington, Surrey

WE'LL MAKE YOUR DAY

Yes, you lucky devils. Format, in its letting generosity is offering one hundred short stories to you. Have by first look if you know both the meaning of the word of a perfect package, or a hundred possibilities or how to use the Deques more effectively or anything else that you might think will interest you.

And what exactly do you get for this small cost? Instant fame and ad, if yours is the star, 50, ten times worth (and almost limitless - £30 to be precise). As soon as you follow ST users, make the most of your page and visit one of great tips to looking, ST (single Format), 4 Queen Street, South East 20.

File depression

Remember, files on the ST is a poorly understood concept. Some people have possibly claimed that all you need to do is change the 516 value at the start of an erased file in the directory back to a code from 31 to 327 and it will magically appear. It may well appear if you load in the directory but the contents won't look much like a dot before. This is because entries in the FAT file Allocation Table will have been corrupted and these need to be restored. This can create untold problems

for a long time which has been outlined around the disk is more recent than a figure could.

However, do not fear - certain commercial packages are now available to remedy the problem. Most of UNLOCK, program can be used to accurately recover files. It works by taking an nibble grid look at the FAT table and checking where the file exists by calculating the amount of data again. The effect is that even partial programs can be recovered.

J. Ruffin,
Cherry Wilemington, Lincoln

WELL STAC ME!

STAC is not exactly the most well-documented of game-makers - at times the manual almost borders on the ridiculous with its many faults.

One of the first things you should do is to set the extra-protection bits on the Deques data so that you can't write to this disk. If you run the STAC



The STAC stack in a single Deque format.

Also check that the master you're completely wiping is 00.

On a 1.6 MB ST, STAC gives around 300K on loading. Assuming it works with all versions of DOS then you should be able to use about 200K of this. Use about 120K for graphics and figure the rest for text and game mechanics. Depending on what about 50-70 full-size screens can be held in memory (assuming you work to a 200K limit). As long as the images are fairly simple with large areas of filled blocks then it should be possible to squeeze as much as 50 full-sized screens into memory.

Deques and Neochrome compatible packages can be used to create your graphics and although the manual recommends using one screen for each graphic, it is actually far better to store several different pictures on one screen. In this way you can drastically reduce the amount of disk space which is given over to graphics - otherwise you could find that you're using up to 10 disks by the time you have finished writing your game. Look at STAC; you can run out of all the different areas of each screen which you need to use.

If you have a white background in the split-screen mode then the few pixels at the top of the screen will flicker. You can get around this by setting graphics in every location or changing the screen colour. Remember to clear the screen if you have a very long message to be printed (use: PRINT PRINT DRAW 0) otherwise most of the text will scroll off the top.

Yes, to add extra strengths to your games it may be useful to

put in a random message such as 'It starts to rain' or 'It's late past'. This can be done very simply with:

```
00: RANDOMISE seed
01: MESSAGE (1:1 seed:1:RANDOMISE(100)):NEXT
```

This gives the message a one in ten chance of being printed and once done it will not be printed again.

```
02: DO 10 RANDOMISE (100):DO 10:GOTO
```

This instruction will print a message if you are at location 10 and then wait for a time command. Copying these two instructions with:

```
03: IF (1:1 seed:RANDOMISE (100)):GOTO 10:GOTO
```

gives a one in ten chance of a message between one and ten being printed at location 1000. It's these sort of random commands which will make an adventure game far more interesting, or it's worth spending time looking them.

HIGH PRIORITY QUEUE

This is a bit of an advanced one. It makes a character appear all of the time you need via a high-priority condition such as:

```
01: DO 10 WAIT (RANDOMISE (1: seed:1:1:1)):IF 00:01
```

The rest must always be at the end of the line. To describe a character you can use a long description and then a short one. This can cause a peculiar parsing bug. The obvious order is to put the long description first, if you do this then it will affect the multi-statement syntax and only one command will be understood. It stops this you must:

1. Print short descriptions without wait
2. Print long description without wait

This may also affect readers which use the same method of printing two messages.

PROGRAMMER

MURDERER

```
-- WITH PERL --
```

From Heavyweight 808007

```
DEFINITION
  DEFINITION 1
    DEFINITION 2
      DEFINITION 3
        DEFINITION 4
          DEFINITION 5
            DEFINITION 6
              DEFINITION 7
                DEFINITION 8
                  DEFINITION 9
                    DEFINITION 10
                      DEFINITION 11
                        DEFINITION 12
                          DEFINITION 13
                            DEFINITION 14
                              DEFINITION 15
                                DEFINITION 16
                                  DEFINITION 17
                                    DEFINITION 18
                                      DEFINITION 19
                                        DEFINITION 20
                                          DEFINITION 21
                                            DEFINITION 22
                                              DEFINITION 23
                                                DEFINITION 24
                                                  DEFINITION 25
                                                    DEFINITION 26
                                                      DEFINITION 27
                                                        DEFINITION 28
                                                          DEFINITION 29
                                                            DEFINITION 30
                                                              DEFINITION 31
                                                                DEFINITION 32
                                                                  DEFINITION 33
                                                                    DEFINITION 34
                                                                      DEFINITION 35
                                                                        DEFINITION 36
                                                                          DEFINITION 37
                                                                            DEFINITION 38
                                                                              DEFINITION 39
                                                                                DEFINITION 40
                                                                                  DEFINITION 41
                                                                                   DEFINITION 42
                                                                                   DEFINITION 43
                                                                                   DEFINITION 44
                                                                                   DEFINITION 45
                                                                                   DEFINITION 46
                                                                                   DEFINITION 47
                                                                                   DEFINITION 48
                                                                                   DEFINITION 49
                                                                                   DEFINITION 50
```

DEFINITION 51: DEFINITION 52: DEFINITION 53: DEFINITION 54: DEFINITION 55: DEFINITION 56: DEFINITION 57: DEFINITION 58: DEFINITION 59: DEFINITION 60: DEFINITION 61: DEFINITION 62: DEFINITION 63: DEFINITION 64: DEFINITION 65: DEFINITION 66: DEFINITION 67: DEFINITION 68: DEFINITION 69: DEFINITION 70: DEFINITION 71: DEFINITION 72: DEFINITION 73: DEFINITION 74: DEFINITION 75: DEFINITION 76: DEFINITION 77: DEFINITION 78: DEFINITION 79: DEFINITION 80: DEFINITION 81: DEFINITION 82: DEFINITION 83: DEFINITION 84: DEFINITION 85: DEFINITION 86: DEFINITION 87: DEFINITION 88: DEFINITION 89: DEFINITION 90: DEFINITION 91: DEFINITION 92: DEFINITION 93: DEFINITION 94: DEFINITION 95: DEFINITION 96: DEFINITION 97: DEFINITION 98: DEFINITION 99: DEFINITION 100



WORK BENCH

Flushing Workbench

Life with a 512K Amiga can be a struggle to say the least. When you run a program from the Workbench, the free memory display before you loaded the program and after you have quit it never seems to quite tally. Where do those few extra bytes wander off to? All can be revealed...

The Amiga's memory is managed by the multitasking executive that maintains a list of free memory "pools". When you load a program into the Amiga, the program will require some form of workspace for storing its own data etc. To get this workspace memory, a program has to "ask" the multitasking executive for the memory and if there's enough memory around EXEC assigns it to your program.

When you quit from a program, all the memory should be deallocated by the program itself. Deallocating means your program telling the Amiga that it has finished with the memory and it can be reused by other programs. Many badly written programs often fail to properly release the memory and therefore the free memory count is never completely restored.

There is a way around this however. The Workbench program has an undocumented feature that allows you to force the unused workspace to be returned. To access this feature you will have to firstly change the Start-Up Sequence of your boot disk. Once you are in a boot disk, like the Amiga's own HD, search for the

Another collection of handy tricks and tips to help get your Amiga over that New Year hangover. Word processing, painting, programming - if it ain't here it ain't worth knowing. Send in your Amiga tips and you could pocket £30! This month's lucky winner is Darren Taylor from Coventry.

A FLOODY GOOD TIP!

One thing of the AmigaDOS ROM command is that it will continue filling the screen with a completely unbounded by a boundary of a particular colour. This is not particularly useful if you are writing a program such as a paint package that requires only an area of a particular colour to be filled.

There is however a way around this. The AmigaDOS Paint command calls the ROM kernel function Flood(). The ROM kernel function offers two different modes of operation. The first mode is the same way as Paint, but the second is of more use as it only fills an area of a particular colour and then fills it if encounters pixels of a different colour.

The code to access this enhanced flood function is as follows:
LIBRARY "graphics.library"
DO = 000; FS = 000; FILLCOLOR = 2
FLOOD 25, 91, FILLCOLOR
LIBRARY CLOSE
END

```
DO = FLOOD(x-coord, y-coord, fill-  
color,  
FIRST_PIXEL,  
LAST_PIXEL,  
BOUNDARY = BOUNDARY  
MODE = 1  
CALL FLOOD(100,100,0, 0,  
100,100, 0) ;  
END
```

Before this program can work properly, ensure that the GRAPHICS.LIBRARY is present within the current directory. This file can be found within the Workbench 3.0 user on your Extra disk.

The variables, X5 and Y5 are the coordinates at which the fill starts and FILLCOLOR is what you may have guessed, holds the fill colour. The colour of the pixel at this position is used to specify which pixels are to be filled. For example, if the pixel at the point is red, only connected pixels that are also red will be filled.

Darren Taylor
Coventry

line that reads LOOKS. This line must then be modified to read

```
LOOKS -> LOOKS
```

When you now start your Amiga, everything will appear to load as per usual. LOOKS can be described however as hidden

as in the Workbench menu bar in an extra pull down menu. To access it, hold the right mouse button down in the normal way and move the mouse pointer immediately to the right of the "Special" menu - the extra menu will show up. This extra menu will contain the following menu items:

```
Debug  
Flash LDR
```

The first menu item, Debug, is strictly for software developers, don't select it or your Amiga will lock up. The menu item at the end instead is the "Flash LDR" option. If you select this, the Amiga will attempt to free any memory it can.

Sponsor Gan
Billon Keynes

Protect secrets

There's a lot of people who have read the name of Protect for the Amiga in this month's Format and have decided to take the plunge and treat yourself to the excellent Word Processor, may be interested to hear that hidden away within the depths of its code are several rather strange features.

The first, and probably most interesting feature is the "Panic" screen. At the Protect command line, type panic and press the return key for a rather strange effect.

The second peculiarity exists within the Protect help function. If you're using a single drive machine, you'll have to mount your dictionary disk first. Now type either HELP LIFE or HELP



■ The mysterious extra Workbench menu exposed at last

source for some interesting messages.

Protest also features a powerful memory monitor that allows you to search through the Amiga's memory for those famous hidden messages. The monitor can be invoked by typing `mem`, followed by the address to be viewed. You can move through the Amiga's memory by using the Up and Down cursor keys. For an example, by entering `0000`, `000000` and observe the ASCII dump on the right hand side of the screen.

Getting Scriptic

In last month's *Workbench* section you may remember a look at the extra facilities offered by the `NewCLI` command. Here's another hidden feature that can be very useful.

When you load your Amiga with your *Workbench* disk, the first thing that happens is that a CLI window, entitled "AmigaDOS" is opened and a batch file called `STARTUP-SEQUENCE` is executed. The `NewCLI` command allows you to carry out a similar procedure for every extra CLI window opened.

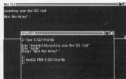
The `NewCLI` command offers an optional "FROM" facility that is used to give the name of a batch file that is to be executed when the CLI is opened. For example, if you created a batch file called `CLI-Startup` in the `D:` directory that did all kinds of wonderful things, you would enter the following command:

```
NEWCLI FROM D:\CLI-Startup
```

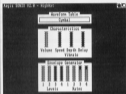
The FROM option is particularly useful when `NewCLI` is used within a disk's `Startup-Sequence`.

Sampling Sonic

Life with *Amiga!* Some music portage is a pleasure for those of you



■ Customize your CLI environment with ease



■ The sampled sound module within Sonic

who are lucky enough to have second drives connected to your Amigas, but for single-disk users, using `sonic` can be a problem. One particular trouble encountered by many crops up when trying to access sampled sounds from any disk other than the program disk.

The problem lies in the way `sonic` handles sampled sounds. Inside `sonic`, sampled instruments are composed of two files, a ".S2

file and a ".MIDI" file. When you load a sampled sound, `Sonic` also calls a sample handling module called `SAMPLEDSOUND.TECH` which is held in memory for only as long as sampled instruments are in use.

To use a sampled sound, you must first load an instrument of the same type from the main program disk. In this case, a sampled sound. Once this has successfully loaded, you can now remove the

FANCY A WEDGE OF DOSH?

How does thirty grand sound to you? By just reading or a verbal tip, you could win a wedge of bread interested! Well come on then, get those tips posted. We want tips of all kinds: obscure CLI commands, cunning *Workbench* tricks, getting the most from your *Database*, the most efficient way of giving your Amiga an attack of the gears...are we perhaps not the best one but absolutely anything else. We want tips on EVERYTHING!

Still reading? Why haven't you loaded your *Workbench* program to change your profile and started jelling down your pearls of wisdom? You need the address! Oh, here it is: **WORKBENCH, 37 SANGA FOREST, 4 QUEEN STREET, SAFFS, SA1 1LL**

program disk and insert your sampled sounds disk. Your samples should now load with no problems. **Steve Collier**

Saturday



PIXEL PRINT

Yes, another cunning *Workbench* tip for all of you who use *AmigaBASIC*. If you use the *AmigaBASIC* commands `LOCATE` and `RETURN` to print text at various positions on the output window, you will have already realized that the `LOCATE` command only works on a character basis. Positioning text at an exact pixel position is not possible... until now that is.

The following snippet of code bypasses *AmigaBASIC* and calls the *BOM* *Workbench* graphics functions. The Amiga treats text like any other graphic and therefore text can easily be placed at any position on the screen by simply calling the graphics library function, `text`. The following code is written as a *sub* program and can therefore be easily incorporated into your own programs.

```
LIBRARY "graphics.library"
CG = "new text" + CHR(10)
w = 10
y = 100
color% = 3
CALL PixelPrint (x%,y%,color%)
CALL PixelPrint (x%+1,y%+1,color%+1)
END
```

```
DEF PixelPrint (x%,y%,color%) : STARTCG
x% = 1000:11
width% = width%
color% = color%
CALL SetColor (color%+1,0)
CALL MoveCursor (x%, y%, 1)
CALL MoveCursor (x%+1, y%+1, 1)
END DEF
```

As with all tips *Workbench*, the program requires the appropriate *IMAP* file. For the above program, the file `GRAPHICS.MAP` must be present in the current directory. To run the program, the four variables, `x`, `y`, `fx` and `color%` need to be initialized. `x` contains the actual text to be displayed, `fx` and `fy` are the coordinates at which the text is to be drawn. Any guesses for `color%`?

AmigaBASIC's output screen is a medium resolution, so your pixel range is `0-639` across the screen and `0-255` vertically. If you want to experiment with different screen fonts, look back at last month's *Workbench* for details of the necessary programing.

Steven Taylor
Continuity

NEW FROM

ROMANTIC ROBOT

MULTIFACE ONE, the MULTIpurpose interFACE, was a sensation when originally released for the ZX Spectrum four years ago. MULTIFACE TWO, for the Amstrad CPC range, followed 3 years later — same success, same success. Now the time has come for the MULTIFACE ST — the BIG brother to the MULTIFACE family. Same success? Yes, and with even more features! So, what can MULTIFACE ST do to make an ATARI ST owner's life so much easier?

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ST Amiga Format back issues are now available. Don't miss this chance to complete your collection of computing's most exciting new magazine!

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Outline

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by Commodore and Philips

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This conversion of the late-coming game has a new Personal Graphics award.

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Three of the best arcade games of 1988 in one pack: Barbarian, Defender of the Crown and Rungway.

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Follow up into graphics shoot 'em up spectacle!

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FLYING SHARK

Profiled

The late-coming conversion of the vertical scrolling shoot 'em up as depicted on the Cover Disk (Issue 7).

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GOLD DUST

Commodore outselling Atari?

Ranking in the post-Comdex months from its new product releases, Commodore is hoping to make a killing in the pre-Christmas season in the US. By the time you read this, Commodore will probably have achieved its intention of doubling US sales during the fourth quarter, thanks to some really TV advertising on MTV and several other US TV stations.

The seven TV ads were produced for just \$75,000 — a fraction of the million dollars that companies usually spend on such advertising campaigns. The ads were kept low by using an Amiga



■ Amiga — winning the battle in the US

to produce and edit seven 15-second spot ads aimed at the teenage market. The ads are also being distributed through to form of least four 30-second ads to promote the Amiga as a dual-purpose business and leisure machine.

Blair said that the viewers of MTV and other Amiga-targeted TV stations, where the ads will be shown more than 1,000 times in the run-up to Christmas, have grown up with computers and video technology. They will, he says, be very interested in the Amiga, once they realize its capabilities.

Of course, there has to be a lot in the campaign. The low is that every purchase of an Am500 qualifies the buyer for a free video recorder worth \$249. Considering that's the equivalent of around a third of the full retail price of the Am500, the baby Amiga looks like

Remember all the stories of '86? Steve Gold kicks off 1989 with the juiciest Stateside rumours from Atariville and Commodore city — remember where you heard it first.

outbidding the Atari 500 and 386007 several times over.

Canada not dry
Early in December saw the launch of Commodore Show (also in Toronto, Commodore), a late-publisher's notice, is now 30 years old, and has created a special mobile museum to commemorate the anniversary.

Coupled with the museum, several companies unveiled new Amiga products at the show. Joint Technology displayed its 1004-500 hard disk adapter for the Amiga 4000 and A1000. The hardware add-on for the Amiga allows an ordinary ST-500 hard disk controller to be hooked up to the Amiga. The end result is that cheaper PC hard disks can be hooked up to the Amiga and run quite happily.

Analysys, meanwhile, produced its new MAX Apple Mac connector that plugs into the Amiga's external disk drive socket and allows Mac software to be loaded and run under AmigaDOS. The 1210 cartridge should be out in March '89, and does not need the Apple Mac ROM set that Dave Israel's Magic Set and Spectra 128 sets require.

ReadySet also unveiled Playback, a plug-in unit that allows up to 100MB of hard disk data to be dumped to a standard video recorder. Playback should be out in early February '89 at \$99.95.

Also shown in Toronto was a Deluxe Paint version II. The package, which should be out next March, is a major upgrade on version I and includes an animation facility. Deluxe Paint II also supports true overcast and direct overcast painting. Extras include eight 604 colours, new wrap and fill brush modes, as well as an improved font support with a new sequencer.

Finally, some good news on

the Amiga magazine front as well. Computer Publications announced that it will be launching a new Amiga magazine. The brand-new title monthly magazine will be out in the Spring with a \$2 price tag. That's a good value as ST/Amiga Format magazine with its disk, of course, but still worth keeping an eye open for if you can get import copies.

Atari prices falling

Now, it may just have been the pre-Christmas market that's causing competition amongst Atari ST shopkeepers to cut their prices, but more than few industry watchers suggest that sales of the ST really are falling off in the US. Whatever the reasons, the end result for existing ST users is that they get more scrump for their money.

Practical Solutions has just unveiled a new product for the ST that will make Amiga users jealous. The company has launched the Teasty Board, a plug-in unit that provides a full stereo output from the ST.

How does it do this? Simple. The ST series always has three channels of sound supported from within hardware. To (approximately) cut costs, Atari combined all three signals together to give a mono channel suitable for the ST range of monitors.

The Teasty Board solves the problem with a small circuit board that actually divides the three channels back into their separate components. Because it uses the ST's standard three sound channels, it's fully compatible with all existing ST software.

The Teasty Board plugs inside the ST and provides three independent phono outlets ready for connection to any suitable external amplifier and/or speakers. The good thing about the system is that the existing ST mono phono output to the monitor is not affected in any way.

And the price of this amazing board? A mere \$29.95 plus shipping. Practical also has some technical specification sheets, if any ST/Amiga Format readers want further information, contact Mark Louison of Practical at 010-400-6087602, or Email Mark on Commodore 176004, 20000 or Genie C-mail/Practical.

■ Gold Dust is compiled from the US online services by Steve Gold, a freelance journalist specialising in computer communications. Email, industry tips and comments are welcomed on PracticalGold@MAC2000 or via the US Email networks: Commodore@PC01, 1189, 50025@msl.cba, and the Source on IP2008.

BABY LAPTOPS

Justly this month, and just in time for the launch of the Baby ST laptop, comes news of one company that has developed a special PC case for laptops. Data Electronics is now selling its laptop case and website for just \$29.95. Call Data on 0181-419200 or 481-2613 in Florida. See this in your favourite store.





FORMAT LETTERS

W/P-ing about

As a recent convert to the Amig having been seduced from my faithful BBC B! it's some 6 years as I would be very grateful for a little advice.

I must admit that I am essentially a user and not an experimenter, and am quite happy to bundle along just pressing the correct keys, with all the technical aspects going over my head at a conceptual level, however...

I have been and continue to use my BBC for word processing, so I am a bit of a several paragraphs in an early retired 63 years of age, and would love to use the Atari 520ST, recently purchased essentially for game discs, for this purpose (word processing, that is).

I can't find much about word processing in any of the magazines, except that most of them appear to be extremely dependent to those any word processing program as Wordbase Plus or Interword for the BBC, and at a similar price!

**Or Mayes
Gillingham, Suffolk**

■ The very word processor we use to reply to you is probably a good bet. Instead of the ST offers many of the features of Wordbase Plus, particularly the word processing language and formatting controls. Read the review of the Amiga version in this issue for more details. If you're more interested in the pull-down menu options of programs like Interword, you could try Word Writer ST or Word-Plus, which both use the GEM environment. They all cost rather more than the basic word processors, though, starting at around £70.

Gunship down

For the first time in my life, I find I've gone way past my second childhood! I'm writing to a magazine, obviously it's not only to do the job but to congratulate you as an ST/Amiga for a superb magazine, with a good selection of interesting, serious, articles/soft-

New year sentiments from the loyal band of Format correspondents... send your opinions on life, the universe and everything to Format Letters, ST Amiga Format, 4 Queen Street, Bath BA1 1EJ and win yourself a luxurious real imitation leather Organiser for 1989.

ware and games software. After wading through the numerous mags, I placed a regular order with my local newspaper for ST/Amiga, for the Features, Applications, Technology or you have a lot to answer for.

I must confess I have only recently joined the computer scene and am a complete novice.

I have a problem, at least I think I have. On attending the Amig exhibition on Sunday 20th at the

Alexandre Palace, I purchased a 386 disk drive as a second drive for my Atari ST which is still only fitted with the 0.5Mb drive. I am pleased with the new drive (the fu-man has W30000 which is working very well, but.

Several months ago a friend allowed me to check an Atari 0.5Mb add-on drive. I installed it up to my 5000STFM and it worked OK - I placed the Gunship II disk in Drive A and the II disk in the add-on

drive and the game read from both drives. I have tried to repeat this with the new drive but each time it accesses drive B the game flips out and back to the desktop. Is this usual using two different capacity drives? I have tried the other way by double clicking an A disk in Drive B and using your boot II utility, but it will only run with the B drive switched off and using the built in Drive A and changing disks, could you please help?

**VJ Sutton
Plymouth, South**

■ It's possible that the Gunship program uses a 386 A drive disk and a 0.5Mb second disk, though this seems unlikely. It's more probable that the copy protection happens to be throwing out your A drive disk. If you need the fast drive option, check the alignment of the heads on your internal drive.

Changing sides

A friend recently lent me the original games which he received with the Super Pack. Most of the twenty-one games don't work on my machines, Commodore and Zenax 60.

He has a 1Mb drive with his ST and I purchased my 500 STFM from Sierra fitted with what I believe to be a 0.5Mb drive. When I load one of the disks, the Amos/Starquake disk for example, the GEM desktop appears. Then when I double click on either the Amos or Starquake program icons it begins to load the game in the normal way. Then a window opens and it tells me disk A is not responding and to check whether

Genlocked in

ST Amiga Format is by far and away the best magazine for information about the ST. Allow me therefore to correct an error which crept into your review of Lightbulb Camera's review 5. In one of the diary eye reports lets you state that there is no genlock system available for the ST.



Not the case!

Indeed, the reason for this letter being written so far after the event is because I have been using a genlock on my Atari to improve computer graphics for a Scottish and Newcastle training film-Diamond's Day Out - please find enclosed a PMS card.

The genlock was fitted by Capital Computers in Edinburgh. Outwardly it consists of two-BNC sockets - a video in for the TV picture you want to cut in on) and a video out for the original picture plus genlock. There's also a switch at the back to toggle between 'normal' and 'genlock' modes and a disk of software to get it all running. Remarkably the picture 'keeps' in to pure white 75%, although white can still be achieved with 75%.

The Cyber series was used to create the original graphics and the whole package was put together on a High End Commodore quality edit suite. It must be said that the genlock I was using was not broadcast but there is a broadcast model available.

And the cost? A mere £250 for the non-broadcast or about £300 for the full broadcast. Systems have already been installed in Channel 4 and a number of other TV companies. By the way, I don't work for Capital Computers, I'm just very satisfied customer.

**Stewart Myles
Edinburgh**

■ Thanks for your information. Thinking about it, we wonder if most of the Amiga genlocks couldn't be used with the ST. The video signal would be compatible, as you can run an ST into the Amiga's monitor with excellent results.



Qatar solo

For the past five months Steve Gold has talked about the possibility of a single 68000 upgrade for the future ST. With the advent of the Super ST has this 68000 job been deferred or will it ever see the light of day?

I have just moved to the Middle East and wait with bated breath each month for I wonder mag to come in the mail. This is not as easy a job as it at first sounds. The train of events follows that: subscription copy sent to my mother in law in Northampton (she laughs), someone has got to live in Northampton, eventually she gets round to sending it to me in, at a very high postage cost. After Qatari postal service have failed through it to see that there are no references to faxed or any other means which show errors in a state of address it finally makes it to me, total time, approximately a month. As for Atari dealers here in Qatar, forget it. The big computers down here are MSX (remember them?) and Amstrad CPC 6128s.



*Asterisk — any information about our services. The circle — any requests for information only.

tell you stop laughing! The big computer magazines here are Q, ones obviously so innocuous no one would be offended at anything in them.

So there you have it - computing in the Arabian Gulf. All you readers back home who moan because they don't get their mag dead in time spare a thought for poor ol' Steve youth! If you don't print the above letter, please answer the above question because one mag is just about the only way I can keep up with what's happening in Arab land.

Dr Peter Miller
Doha, State of Qatar

■ See the news section this month for details of

the 68000 board. This might be what you're looking for, though it's not the latest Steve Gold has been writing about.

It's interesting to hear the state of computer play in Qatar. Perhaps an ebook would be an export edition, without any ads for Bahrain or Oman.

It's a hard disk or to check its contents.

Are the disks with the super disk specified for a 1MB drive and therefore not able to work on a 0.5 meg drive? And if this is true why do Quantatron and Dynatec work?

If the disks do work only on a 1 Mb would there be any chance of making the other programs work on my 0.5 Mb drive by using a disk copier, like the Deep Scan Reader in the Data pages you print in the magazine (or instance?) I would be extremely grateful if you could shed some light on my problem.

Lugh Habbay
Widnesmore

■ As you suspect, the Super Pack disks are formatted for distributed drives. The two programs which do not happen, by coincidence, to be stored completely on the top side of the

disk, and so can be read by a single-sided drive.

We can't recommend you to copy the disks as this directly breaches the copyright on the games. If you bought the originals from your friend, you should then be entitled to copy them onto a format your computer can read (although some software licenses prevent you legally selling the software in the first place). Even ignoring the legality, you will have trouble creating double-sided disks on a single-sided machine.

Cumana ver to my place

I like Supermax Inc. I want to buy a second drive for my Amiga 500. Which one do you recommend?
Osprey Loggayan
Turkey

■ So do we. We've heard good things about the second drive from Cumana. It costs around £300 and is available from several of the advertisers in Format.

BASIC autoboot

I have needed a Commodore disk for several years and have managed to obtain a reasonable price of Commodore BASIC. Recently I purchased an Amiga 500 and I'm trying to get to grips with AmigaDOS. I followed the example in your Workbench section (issue 4) to create a bootable Amiga (ASIC) disk, having finally got it to work, I wondered if you could tell me how to load a BASIC program from the startup sequence, so that it runs the moment the disk is loaded.

The first adding the name of the program to the startup sequence but I just got an error code 121. I've also tried "running" it but the same thing happens.

J F Emery
Brentford

■ You'll need to get the program file AmigaBASIC from the Extras disk into the D directory of your boot disk for a COPY of the Workbench master disk. To do this you'll need to erase several master disks or disks from the Workbench to make room for BASIC. Then you add the line AMIGABASIC -PROGRAM NAME: to the startup sequence and you should be away.

Numbering off

I don't cost an AS20 yet, so I spend time by reading your BASIC programs.

I noticed that in the AS20 listings there are no line or program numbers, as with Commodore 128 BASIC. Line numbers seem to be very handy, especially with the SORT, IF, THEN and GOTO commands. Is it possible to use line numbers in an AS20 BASIC program?

Swings and roundabouts

Regarding the contents of ST Amiga Format issue 6, I wish to register my complaints of the alarming disparity of the contents of this disk between the ST and the Amiga.

I have an Amiga 500 and none of the games offered for my enjoyment remotely interest me but the fantastic selection offered for the ST made my mouth water (there I may have gone a little over the top there!) Colonial Chess X, Damiano and Accounts all ready to use. Oh the lucky ST owner. As I have only owned my 500 for a very short time I'm sure hopeful that the good-looking writer in the read-me files of Handy Icons, AC-windows and Perfect Sound will eventually all become crystal clear but at the moment just about all I understand is "press space bar to continue".

I'm certain that I'm not the only beginner who has subscribed to your magazine in the hope of helpful hints and tips etc, but I feel the magazine is now preserving the readers have a far greater level of edge of the intricate workings of the Amiga than can be obtained by reading Commodore's booklets.

Can Format:
a) stop preserving every reader has a PhD in computing,
b) give a more equal balance to the contents of the monthly disk,
c) keep up the good work as you have even managed to teach me how to "press space bar to continue".

Ray Blomser
Barnbury

Why is it Format persists with its annoying bias towards the Amiga. Take the issue 6 disk, for instance. The Amiga side contained 1 Perfect Sound demo, which would have been ideal for my budding interest in computer music and Soundfile, which would be great for my graphics work. All an STler get is a limited chess demo and a non-interest game. It's really not good enough to offer better programs on one side of the disk than the other.

While I'm at it, a lot of the text in Format is much too simple for most readers. We don't want interminable explanations of the copying and opening windows. How about an article on accessing the ST's screen memory and poking the video display registers.

Come on Format, give the people what they want.

S. Williams
Black Torrington, Devon

■ You see no problem.



is QM BASIC, as the PC the same as Amiga BASIC? Or with file numbers.

W Kain

Donny, Ireland

■ Line numbers can be included in Amiga BASIC listings, but only as named labels. This means you can still GOTO them or GOSUB on them, but it is really much more useful to give discrete sections of your program meaningful names. A subroutine called PrintLabel is a lot easier to understand than one called 2017.

Protection racket

As an avid fan of 16 bit computers, I was horrified to find that the software for these machines is considerably more expensive than its 8 bit counterpart.

For this reason I am complaining about the so called 'ambiguity' protection of some of these games. I could personally do better with an 8 bit and already have done!

I recently obtained 68k land for me by a friend who failed to include a manual, unfortunately making it difficult to run the program, since it asks for a specific word from the manual. This fails in line with a lot of the software ideas in quite a few games. (Great! Except for the fact that the little manual is not long enough to make the end of phosphorylating proline, and seriously, it means that come, if not all, of the manual has to reside in memory, thereby using valuable space that could be otherwise used.

I decided to look into this in more depth. With Amiga's disk doctor, to be precise, I'm not going to make it any more easy than it already is by telling all concerned exactly where and how I did it, it will suffice to say it took me five minutes to find the information. I could only to backup existing software and to use it if I like a program before I buy it - essential in my view, owing to the cost of it.

My recommendations for serious users, and many thanks to the writers and producers of the following:

SDOS - Masterix Software. Well made, well documented, well priced. It is so easy to use, it hardly needs the massive, comprehensive manual that goes with it.

Degas File - Batteries included. Great documentation, good edit within the program, but could have done with an 'arc selection' rather than having to cut off the unrequired section of a circle. Amiga's Disk Doctor... Good,

but not without very minor irritations, for printing, the x and numbers are omitted 4 characters to the left. But otherwise usable.

Last, but by no means least: **ST/Amiga Format**... Future Publishing Ltd. Keep it going! Great magazine with a readable attitude towards computers. PLEASE, don't turn into a games comic like so many mags in the past have done. So far it is the only magazine that I buy regularly, other than only when an article interests me so with other mags.

D P Saunders

Sittingbourne, Kent.

■ Thanks for your kind comments on the mag. We're not sure what you're trying to say in the last part of your letter, though, it seems to be that copy protection on 16 bit software isn't good enough. This certainly runs against the trend, most people continue to campaign for a slackening of back-up restrictions.

Doctor, doctor

I have got hold of a PD disk which is full of documents that include the ST in late '88 and '89. One of the files contains a ROM virus. I will explain. The ROM virus is a virus that manages to sneak open the weakest part of the protected RAM and makes a very easy passage to the ROM. Once it's in, it damages every disk and also writes itself to that disk, so that when you load up, the disk that is selected writes it again to the

same place, but if the virus is already there, it multiplies by 2 and writes itself again twice to a different place, thus making it difficult to find. There is an enlightening key press that will get rid of it, but no-one knows it apart from the person who made the virus.

This virus causes permanent damage to your ST and can either be removed by a very silly programmer, or by buying a new ROM which costs £30 plus repair man's labour £28 = £58, just for a repair job because of a stupid virus.

Stephen Trench

Stephen Mallet, Somerset

PS Every time you press the wrong keys it crashes. (PS: The code line in the last sector of the last track, but is locked by the boot sector)

■ Or, should that be late '87 and '88, or do you have methods at your disposal about which we as yet know nothing? You're obviously working with different technology from ours anyway, if you have found a way which will infect a ROM. You seem to have fallen for some elaborate practical joke.

While it's true that viruses can infect an ST and pass them selves from disk to disk, they cannot infect a ROM, as this is a Read-Only Memory. It can only be programmed with a specialised machine and not from within the ST. We know of no virus that can permanently damage the hardware of an ST, although I can damage floppy in hard disks, and

in the worst case make them unusable.

GST upgrade

I would be very pleased if you would print this letter as I think that GST software are brilliant.

I had some trouble with my 1st Word word processor so I wrote to GST asking them if they could help. They replied with a letter stating that they would upgrade my disk at no charge, so I sent GST my disk along with the manual. I received it back in seven days with a perfect running program and compliments of GST. I only wish other software houses would take a leaf out of GST's book. It would be great if they please print a big thank you to GST Software from me. By the way, thanks for the tape magazine, I think it is absolutely fantastic and I won't hesitate in reviewing my subscription.

P J McHarty

Hartley, Guyland

■ Good to just a bouquet among the finalists.

NO ECHO, No Echo, no echo

Firstly I would like to congratulate you on what a terrific job you did do. No other mag gives a disk away every month, and no other is packed with news, reviews, and so.

After reading your Sample City round up of samplers for the Amiga and ST, I decided it was time to introduce a sampler to my Amiga. I decided on the Pro Sampler Studio, because it looked very straightforward and powerful. There was one thing I couldn't understand after comparing the ST and Amiga samplers and that was the fact that the ST samplers had a reverb/echo/echo mode - why didn't any of the Amiga samplers have that function? We all know the Amiga can put the ST's sound to shame, so why not, in a way I did want a sampler for the echo function.

Lastly, I was wondering whether there is a real-time effects module on the market, it would be very grateful for a reply.

Dick Bacon

Shrewsbury-by-Sea

■ Amiga AutoMaster, sampling software which is compatible with most Amiga samplers, often have a reverb function. The software itself costs around £35, though you have to add the cost of a sampler to that. Check the ads in this issue for a sampler.

St. Format

In a recent acquisition of your excellent quality promotion, which I often find a wonderful recognition of - erudition, I overheard a conversation between 2 John Menzies' shop assistants, obviously on loan from ST's.

It went as follows:
Assistant 1: Pass the Saint Amiga Formats.
Assistant 2: Who is Saint Amiga anyway?

Assistant 1: Patrick Saint of Computer Health, probably.
Assistant 2: Don't be silly, they wouldn't have a patron saint.

I am all for a Patron Saint for computer users, but not Saint Amiga. Saint ST/Amiga sounds much better!

Andrew Kennedy

Guildford

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1. Format vouchers can be used to obtain discounts on purchases of goods advertised in this issue of ST Amiga Format, provided that they are bought directly from an advertiser taking part in the scheme. The vouchers are valid only for those advertisements which say 'We Accept Format Vouchers'.
2. Each voucher entitles you to a discount of the voucher's face value, provided that your overall order level is higher than the figure indicated on the back of the voucher.
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4. The order, including the voucher, must be received by the advertiser before the closing date printed on the voucher.
5. You must fill in the details requested on the voucher.



Colossal results

We had a surprisingly large entry for the Colossus Chess competition from our usual 4-cover club. The challenge was, you will recall, to beat Colossus within the 15 moves the demo allows you. There are obviously a lot of keen chess players out there. Unfortunately when we came to test out the entries, though, we had a problem in not being able to reproduce many of the games

THE WINNING GAME

| White | Black | White | Black |
|---------|-------|----------|-------|
| 1. g3f3 | e7e5 | 8. c4c5 | g6g5 |
| 2. d3d4 | e7e6 | 9. b3b2 | g6f6 |
| 3. e3e4 | g6f6 | 10. c3c4 | g6f6 |
| 4. f3e5 | f6e6 | 11. g5e4 | e5e5 |
| 5. d3d4 | e6e7 | 12. f3e5 | g7g5 |
| 6. f5f3 | e7e6 | 13. g4g4 | mate |
| 7. e5e4 | e6e5 | | |



because some of you didn't tell us which playing options you had

chosen.

We based our final choice on repeatability using default settings. Although there were some four-move wins using zero or one second think time, we finally went for a 1.3 move win which worked equally well on any setting up to 5 seconds. White makes a strong maneuvering attack on Black's king, forcing it into a position where a final pawn move checks the king. The piece therefore goes to Mr. L.F. Dobson or Langley Meads, Berkham. A full copy of Colossus will be on its

way to you soon. Thanks to all who entered.

Writing and drawing

Format is looking for good free-lance writers who can put their thoughts together intelligently and write in a fluent and informative manner. We particularly need experts in the fields of graphics, animation, music and communications to write feature and review articles on the ever-increasing number of software packages. If you fulfil the first two requirements, the third one is that you should own an ST or Amiga; we're particularly interested in writers for the Amiga.

Name, talent and fortune but quite so much need you - please get in touch with the editor, sending a sample of writing together with a brief CV showing us your background. (Our address is on the contents page.)



The start of the year - just the time to invest in a subscription to our favourite 1.6 bit magazine. With well over 100 pages of information, many things are new to you. **TRANSFORMER VEHICLES** - For those 8 of 17 things to watch. **WIRE** planning these features for your convenience, many of which will probably see print.

- **DISCOVER YOUR COMPUTER** - The secrets of emulation revealed. Run IBM, BBC or Apple Macintosh programs and add a whole world of software.
- **MULTITASKING** - If you can do it, stop thinking about copy protection. A full review of the patch-proof hardware which lets you finish up anything.
- **BATTLE OF THE OPERATING SYSTEMS** - Square Boy vs. Jay

NEXT MONTH

- and Computer's Standard file it out in the four-patch border program files.
- **MINIEMU** - 16K spare to your hobby video with your Amiga and the cheapest priced on the market. Look us up in issue 10.
- **GAMES ARE GO** - Omega's Car, War in Middle Earth and Board of London with it in your hands.
- **AMIGA GRAPHICS** - Step into your AmigaBASIC with HELIX's new compiler, or take a look at GFA BASIC, a treat from its success on the ST.
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by Sarkar



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