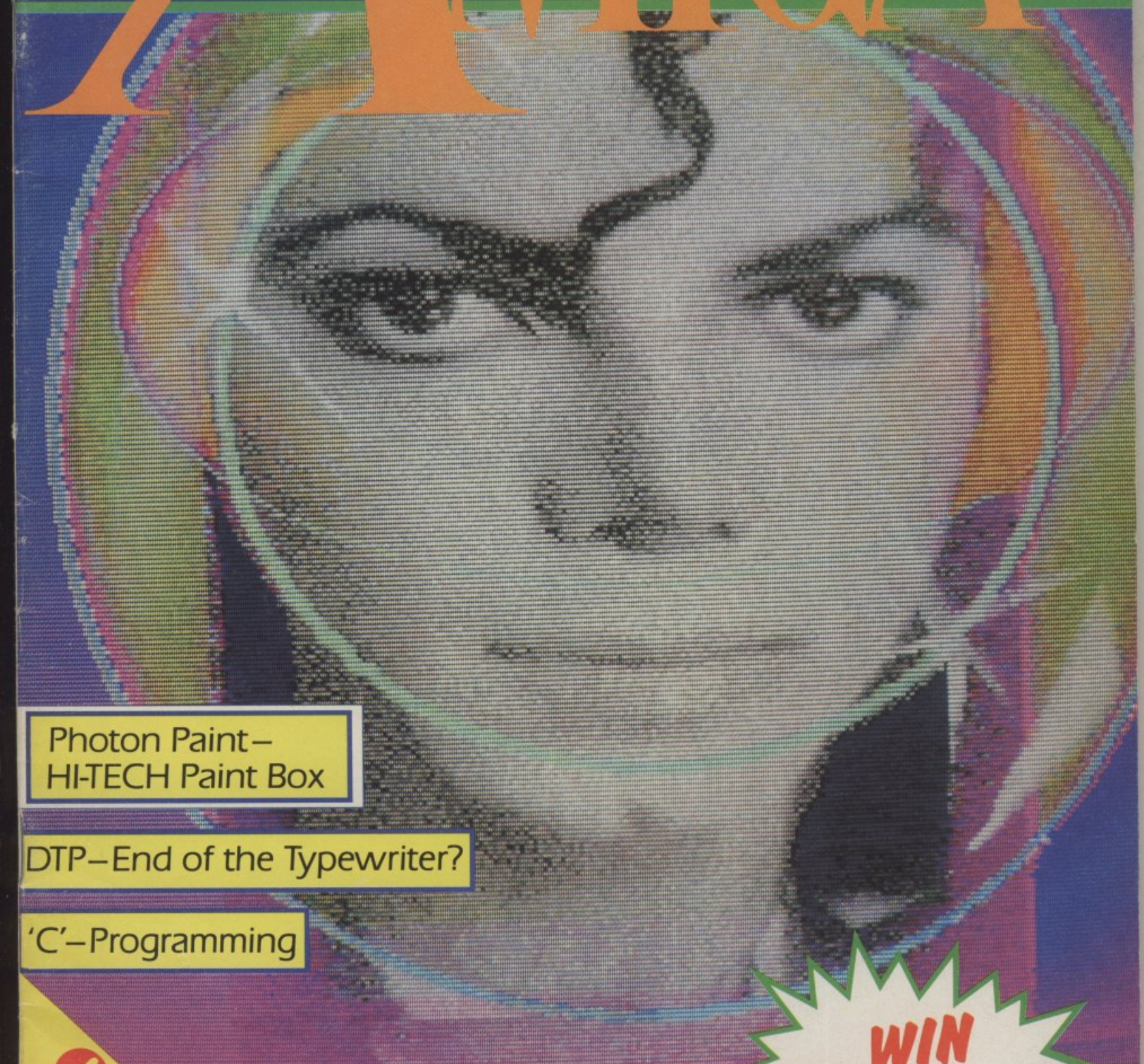
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August/September 1988

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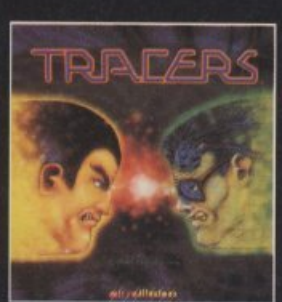


LAND OF LEGENDS is a dungeon-type adventure game. The first person graphic format gives you the sense of actually being in the dungeon as you roam through the multiple levels of various dungeons which you create. **LAND OF LEGENDS** has an over-head viewing mode which enables you to prepare for the nasty creatures and beasts which you will encounter. Do you have what it takes to become a dungeon master? **Amiga – £29.99**



Amiga screen shot shown





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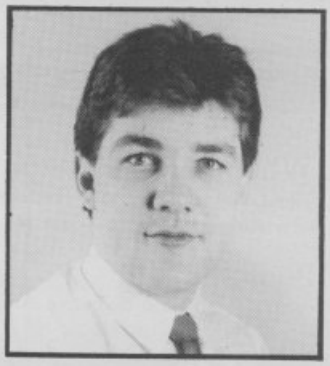
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This month's cover by Lewis Tilley using *Photon Paint* and *Digipic V1.21* digitiser from *JCL*. Special thanks must go to Pete MacLaurin and Alison Rutherford at *Precision Software* for their help in producing the cover and for the use of the digitiser.

ARGUS
PRESS
GROUP



Welcome

■ **Well, here we are with issue number two** of *Your Amiga*. Before I go on to expound upon the virtues of this issue of the magazine I would like to thank the thousands of readers that replied to our readers survey. At this very moment the results are being collated and you are sure to see small changes in the magazine in order to include some of the ideas that you have given us.

One change that you are no doubt already aware of is the increase in the colour pages. Of course a machine with the graphics capabilities needs lots of colour to show it off. We've therefore more than doubled the amount of colour and we're sure that you'll find the results pleasing.

A number of readers were interested to know why no mention of the dual format *Amiga/ST* disks was made in the last issue of the magazine. I thought I would make my feelings on these items known here. As I understand it there are two types of dual format disks getting ready to appear on the market. The first of these contains separate programs for both the *Amiga* and the *ST*, the correct version of the program being loaded from the disk to suit your machine.

The second format of dual disk is the one the worries me a little, since the *Amiga and the Atari ST* both use the 68000 processor. The bulk of the program on the disk is written to suit both machines. When the program is run on either an *Amiga* or an *ST* then the relevant run-time drivers will be loaded in to the machine so that the program can be used. As far as I can see this will mean that the program running on the *Amiga* will be almost identical to the same program on the *ST*.

The *ST* may be a good computer but very few people would disagree with me if I were to say that the *Amiga* has superior graphic and sound facilities. I can't help thinking that dual format disks will turn the *Amiga*, as far as the software houses are concerned, into a form of *ST* emulator running programs that do not make use of the *Amigas* potential — what do you think?

Now onto this month's issue - for those of you interested in Desk Top Publishing take a look at our DTP article. Not only do we tell you what's available for the Amiga but we also talk about the cost of producing DTP magazines and brochures. If you are thinking about buying a new memory board for your Amiga then details are given on those which you can find in the shops and advertisements.

Plus, we continue our popular series in C, using the CLI and 68000 programming as well as covering the latest software launches. So get your Amiga out and have fun!

Stuart Cooke

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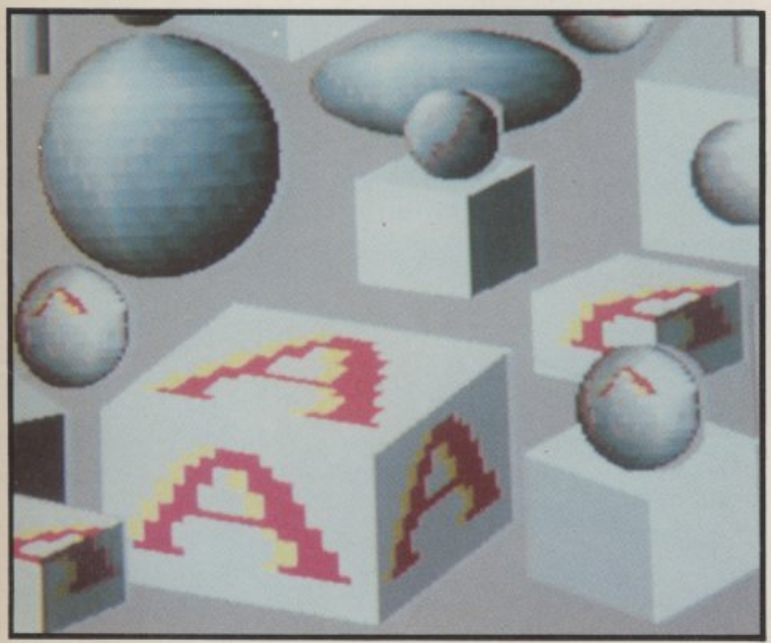
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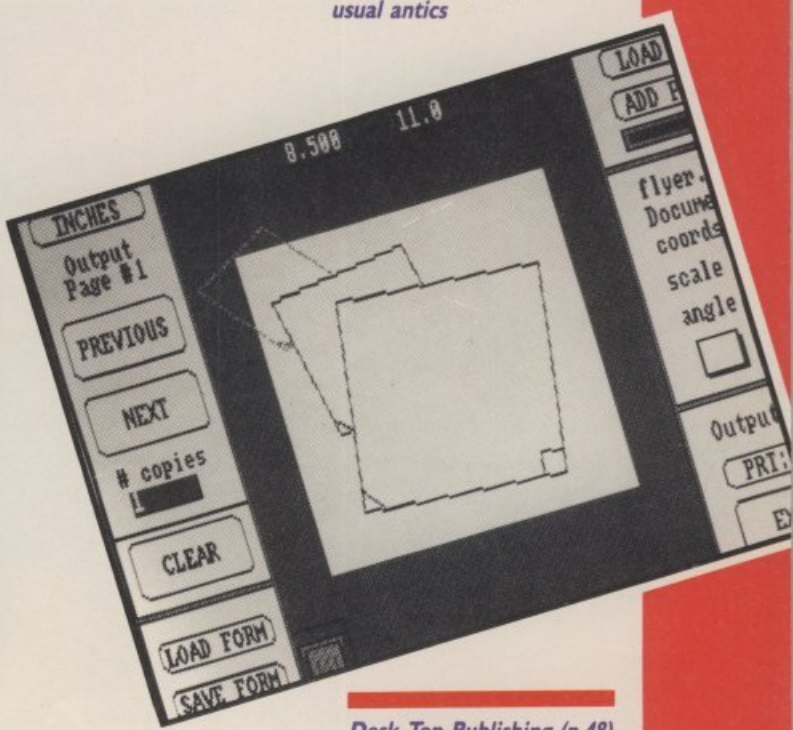
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Yep! The Flintstones are back



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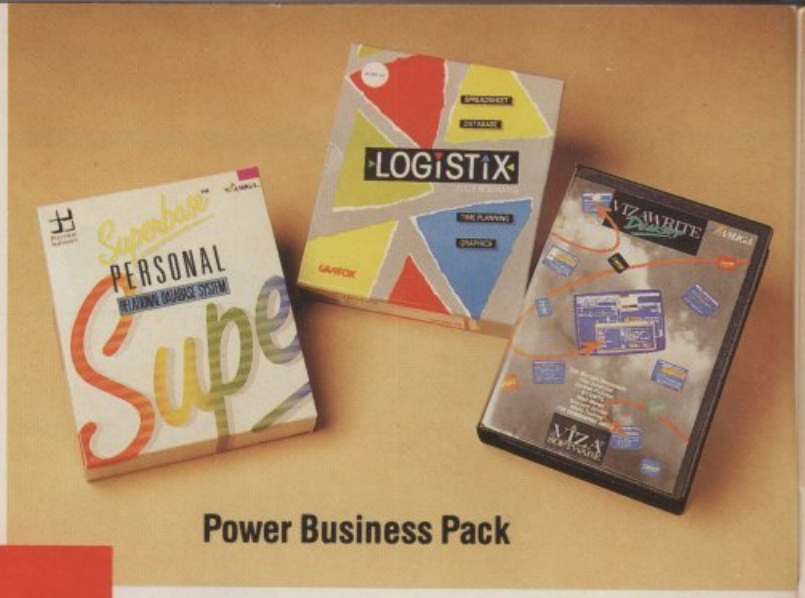


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LaserScript



DTP (p.48) Professional Page produces colour separations which can be used by a commercial printer

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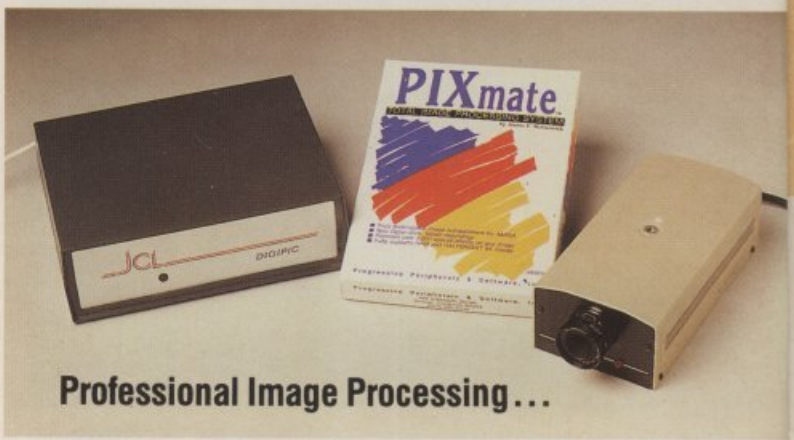
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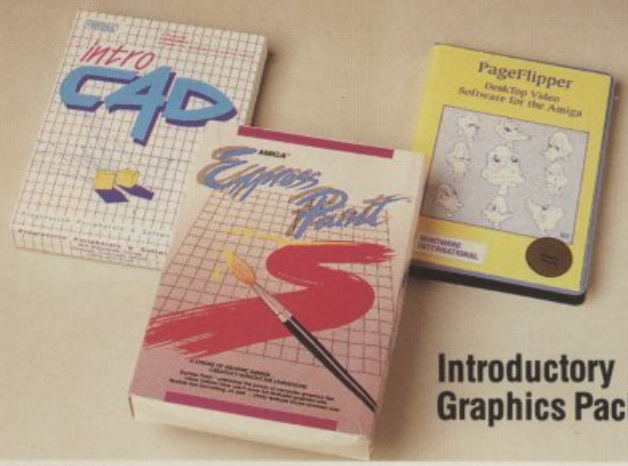
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YA 8/88

AMIGA UPDATE

FESTIVAL COMPETITION

The Edinburgh Festival is one of the world's leading festivals of art. This year coverage will be extended into the field of computer art and animation as Amiga Centre Scotland organise a fringe event for Amiga artists.

Against the festival backdrop, an Animation Workshop and Exhibition will be held from 11th-20th August and the results of the Amiga Centre's animation competition will be announced. The competition entries must be submitted on disk or PAL videotape by 31st July, 1988 and the work of the finalists will be displayed at the Computer Animation Exhibition.

Entry details can be obtained from Iain Anderson c/o Animation Competition.
Contact: The Amiga Centre Scotland, 4 Hart Street Lane, Edinburgh EH1 3RN. Tel: 031-557 4242.

COMMODORE CUTS

The Amiga continues to go down in price when all about go up. After Atari's announcement of £100 increase, Commodore have announced a £100 reduction to £399.99 (including VAT) for the Amiga 500!

The new price point was heralded at the recent Commodore Show at the Novotel, Hammersmith. This marks a new phase of bullish marketing by which Commodore hope to grab a larger share of the UK market. With 'further initiatives' promised in September, marketing manager, Dean Barrett, announced, "This is just the beginning of a massive marketing investment by Commodore in the UK market this year . . . all aimed at making 1988 the Year of the Amiga".

Compared to the Atari ST, the Amiga 500 is now ideally placed to draw potential ST users into the Amiga arena instead. Hopefully, the net effect will be for software houses to take the initiative and actually program games which take advantage of the Amiga's superior architecture to produce a new generation of Amiga specific games instead of inferior, but entertaining, ST conversions with improved sound.

According to the latest available figures, there are 600,000 Amigas worldwide and this user base should leap even higher with the new price cuts. The multitasking Amiga is already establishing itself as a first class games machine but the applications are constantly extending beyond recreation into the professional markets, including art and design, CAD, video production and education. With a support budget of £5 million, the Amiga is starting to demand attention at long last.

Contact: Commodore Business Machines, Commodore House, The Switchback, Gardner Road, Maidenhead, Berks SL6 7XA. Tel: (0628) 770086.



The Year of the Amiga?

RED ALERT

SubLogic's lastest addition to the flight simulation range, Flight Choice, is the Western European Tour Scenery Disk.

Compatible with all SubLogic simulators — including Flight Simulator II, Jet, Stealth Mission, and Microsoft Flight Simulator — the disk contains a secret mission into Russian airspace. Catalogued on the disk are co-ordinates for such European delights as Parliament, Stonehenge, Arc de Triomphe, Eiffel Tower and the Munich Olympiaturm Tower, but Moscow is not listed.

The reason for the exclusion is that SubLogic is offering a challenge in the form of a competition. Emulate Mathias Rust's feat of landing in Red Square and you could win a two-week trip for two on a real Western European Tour with $1000 spending money, the catch is that you have to be a US resident!

The Scenery disk will soon be available over here from the usual SubLogic stockists.
Contact: Sublogic, 713 Edgebrook Drive, Champaign, IL 61820. Tel: (217) 359-1472.

AMIGA ACCOUNTS

Almost as a direct response to the journalist at the Commodore Show who complained about the lack of an accounts package for the Amiga, a missive flies in from International Marketing Services announcing the release of . . . yes, you guessed it, an accounts package.

On the face of it, the two packs seem to be fairly comprehensive. Pack 1 of the PANmead businessware contains three modules: invoicing and sales analysis, stock control, and sales ledger. Pack 2 holds the general and purchase ledgers.

The packs appear to be British made so they shouldn't need too much tailoring to fit their purpose.
Contact: IMS/PANmead, 12 Seaforth Avenue, New Malden, Surrey. Tel: 01-942 6512.

CRYSTAL CLEAR PRINTER

The launch of Data Technology's new laser quality CrystalPrint printer brings liquid crystal technology into the marketplace.

As an alternative to laser technology, LC applications have a distinct price advantage over laser printers. Using a full paper width Liquid Crystal Shutter (LCS), the printer does away with the need for a rotating mirror but maintains a resolution of 300dpi.

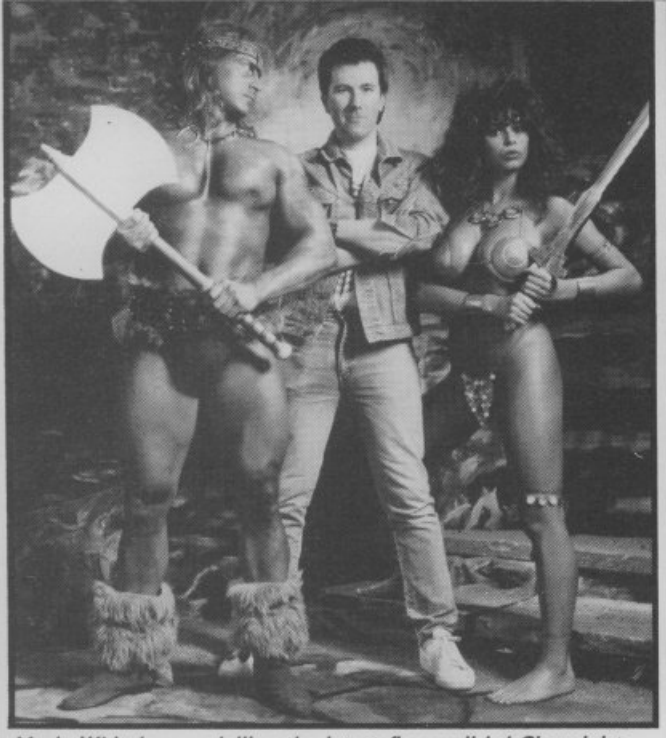
The CrystalPrint is designed as a high quality replacement for desktop matrix printers and, as such, is smaller than an equivalent laser printer. The printout quality is clean and comparable to any laser printer of similar resolution and the paper tray holds 100 sheets maximum.

The printer is available in two versions: the CrystalPrint WP at £1149 and CrystalPrint II for £1499.

Standard emulation on



Crys Print



Maria Whitaker modelling the latest floppy disks! Chauvinist pigs!

BARBARIAN II OR BUST!

Palace are pawning more shots at Maria Whitaker around the offices again to attract our attention to Barbarian II — The Dungeon of Drax.

However such low slung manoeuvres won't wash with us. Semi-naked men are not sex symbols so here's Mike Van Wyjk with game designer Steve Brown in a pose likely to invoke Section 28.

The new game is not a re-run of Palace's Barbarian but hack action and stomach churning effects still play a large part. Barbarian II is a multiload action adventure played over a mappable landscape. Each load features a menagerie of monsters out for your blood.

The game should appear sometime in August, or at least before the PC Show in September.

Contact: Palace Software, The Old Forge Business Centre, 7 Caledonian Road, London N1 9DX. Tel: 01-278 0751.

THE EMPIRE'S BACK

Darth Vadar and Co are back again: Domark's follow up to the immensely enjoyable Starwars is called, not surprisingly, The Empire Strikes Back.

After flashing across battlefields as Luke Skywalker on a snowspeeder, wiping out probing probots as you go, the AT-AT/AT-ST attack begins. After thoroughly wearing out your vehicle and nerve endings, its time to help Han Solo in the Millenium Falcon to remainder a few TIE fighters and weave a pathway through an asteroid belt.

On the way, the invulnerability of a Jedi knight can be gained for a time by spelling out the word Jedi through your fighting prowess.

Contact: Domark, Domark House, 22 Hartfield Road, Wimbledon, London SW19 3TA. Tel: 01-947 5622.



BARGAIN BUFFER

Don't consign your old Commodore 64 kit to the dole queue just yet because Trilogic have found an excellent use for it as redundancy looms. For £34.99, the Amiga Printlink 1A allows an Amiga to be inter-faced to the old Commodore serial printers and for £10 more any Centronics printer can be accessed through the Printlink 1B. This is no ordinary cable link, however, because the C64 is used as an integral 60k printer buffer.

Equivalent 60k buffers would normally cost around £150 and serial printers would not be accessible, so the Printlinks provide a saving for Centronic users but an even greater saving for serial printer owners. The Printlink kit consists of a cartridge which forms the operating system for the C64/buffer and a connecting cable to the Amiga. Printer connectors, such as that shown in the picture, can also be purchased from Trilogic but it is assumed that these will already be owned by the user.

As Trilogic's joint managing director, Graham Kelly, says, "Thanks to Printlink, upgrading is now a much cheaper process as the new Amiga owners can now make use of their old equipment."

Contact: Trilogic, Unit 1, 253 New Works Road, Bradford BD12 0QP. Tel: (0274) 691115.

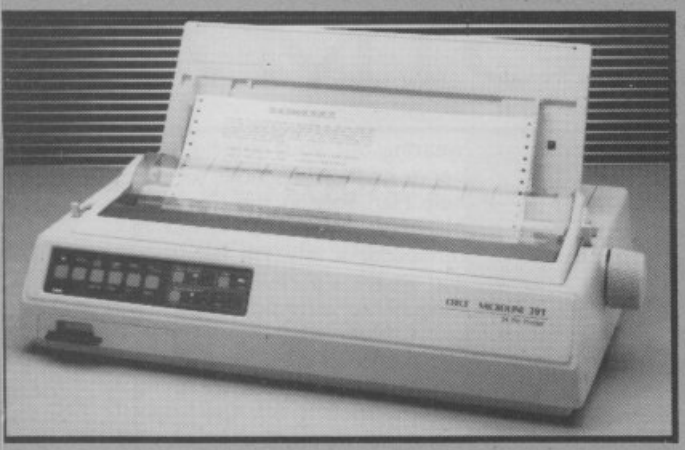


CrystalPrint — the LCS alternative to laser.

the WP is to Diablo 630 standard but alternative emulation can match the standards for Epson FX-85, HP Laser Jet Plus and II, or IBM ProPrinter II. Standard fonts are Courier in Medium and Bold but optional font cartridges can be added for Prestige Elite, Times Roman, Helvetica, Presentation Helvetica and Letter Gothic.

The CrystalPrint II is a HP Laserjet II emulator, with LaserJet+ option, and accesses HP font equivalents through its cartridge system. Optional printer driver cartirdges emulate Diablo 630, Epson FX-85, HP Plotter 7475A and IBM ProPrinter standards.

Contact: Data Technology, PO Box 49, Gt Missenden HP16 0PA. Tel: 0753 868893.



OKI's new 24 pin professional printer.

FIT TO PRINT

Epson are smarting from the introduction of a punitive 33.4% levy on all imported Japanese printers. To minimise the effect of this toll, the whole range of Epson printers has suffered a small overall price increase ranging from £4 to £30.

Jenny Lynn Jones, Epson's printer business manager admits, "This levy will hurt Epson. It will hurt our profitability," ominously (or am I too sensitive) adding, "It will hurt our investment in the UK."

Meanwhile the 24-pin printer competition hots up. In addition to Epson's LQ series, OKI and Star Micronics have recently launched two new machines.



The LC-10's big brother — the Star LC24-10 printer.

With the desktop market in mind, The OKI Microline 390/1 machines are small table top units with IBM Proprinter, XL24 and Epson LQ800/1000 emulators.

The features are now fairly standard offerings of supplementary cartridge fonts which can be displayed in the usual variety of styles (including proportional spacing, underlining, super/subscript), front panel font pitch and quality selection, push tractors with a pull option for difficult stationery, and hex dump debugging facilities. Both models also include a 16K buffer.

Star Micronic's LC24-10 machine is a 24-pin version of the well-received LC-10 and LC-10C machines which were much in evidence at the Commodore Show. The specification is very similar to the OKI machine but with a choice of four different fonts instead of one.

Like the LC-10, the new machine also features 'paper parking' which means that tractor drive paper is withdrawn from the paper path by the rear-mounted tractor feed. This means that single sheet paper feeding does not mean an awkward replacing job when continuous sheets are required again.

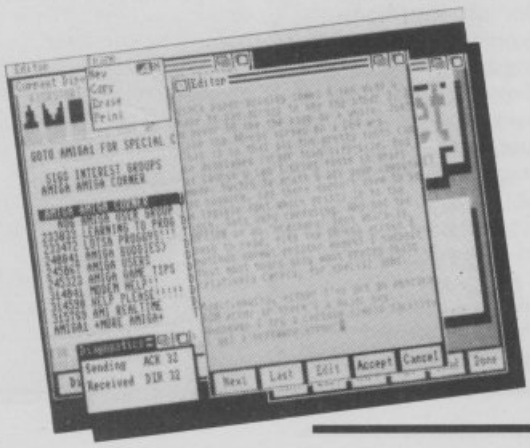
The 7K buffer is supplemented by an optional 32K RAM card with battery back-up and the LC24-10 price is £379.

Contact: Epson (UK), 388 High Street, Wembley, Middlesex HA9 6UH. Tel: 01-902 8892.
OKI, Techitron Data, 750/751 Deal Avenue, Slough Trading Estate, Slough, Berks SL1 4SH. Tel: (0735) 312920.
Star Micronics, Craven House, 40 Uxbridge Road, Ealing, London W5 2BS. Tel: 01-579 2259.

COMPUNET UNLIMITED

At last, it seems that any modem linked Amiga can access the Compunet system, thanks to the work of Eddy Carroll. Before Eddy's wonder program appeared, anyone wishing to log onto the network could only do so with an expensive Hayes compatible modem. Tests are still continuing but so far the Demon, Prism 2000 and OEL modems have all been put through their paces successfully.

Eddy Carroll is probably best known for the Edterm terminal software for the Commodore 64. As a keen C64 Compunet user, he wanted to gain access through his new Amiga but begrudged spending a three figure sum on a new modem. In two weeks, after numerous mailbox consultations with Dave Parkinson of Ariadne Software, Eddy logged onto Compunet with his Amiga via his beloved DEL modem. One small step for Ed but a leap for modem-kind.



Although the new terminal software is still undergoing tests with various modems — including WS 2000, the Nightingale and Tandata — the signs seem to be that it is a successful all-purpose terminal. For those members or non-members who can't log on as yet further details can be obtained from Compunet's editor, Jane Firbank, at Chichester House.

The Compunet membership can also take advantage of the special low-cost, 'bulk buy' time charges. For less than £25 per quarter, regular Compunet users can enjoy unlimited offpeak time on the network (6.00 pm to 8.00 am and all day Saturday and Sunday). Occasional users can take advantage of choosing to pay £12 per quarter but connect time is charged at 60p per hour.

These charges compare favourably with the new Prestel/Micronet costs and the price for connecting into the Compunet PartyLine chat service is £1 per hour, compared to Micronet's £1.80.

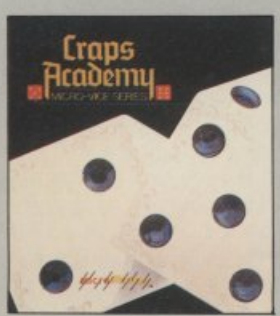
Compunet has been running for four years now and is specifically designed for Commodore 64, Atari ST and Amiga users. This allows the network to offer advanced features which go beyond the normal Viewdata system.

Contact: Compunet Teleservices Ltd, Chichester House, 278-282 High Holborn, London WC1V 7HA. Tel: 01-997 2591.

TURBO...
WAR ON WHEELS!

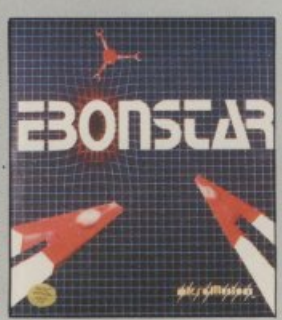


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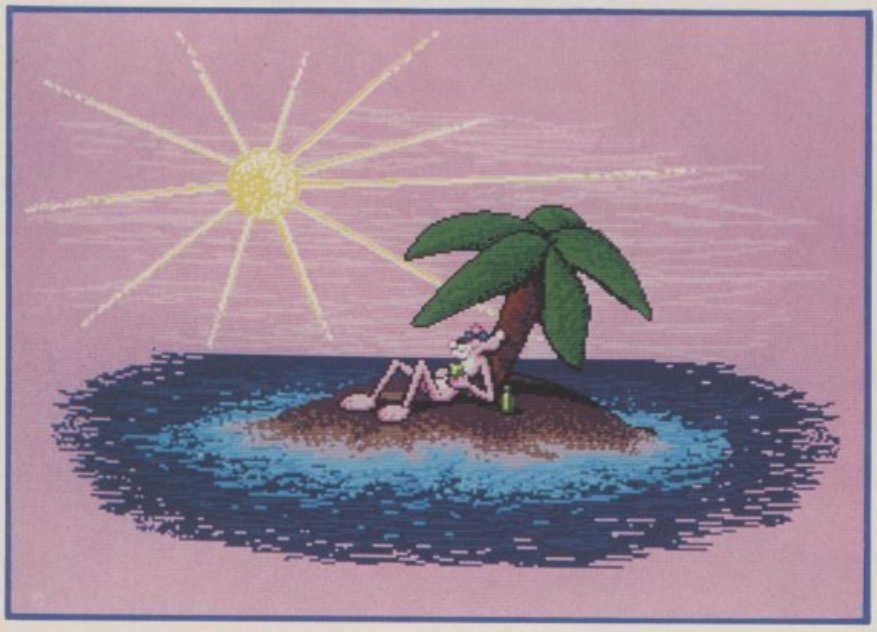


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Pink Panther



Our in-house Clouseau, Gordon Hamlett, puts the Pink Panther through its paces.

It seems hard to credit that in the original film, the Pink Panther was a famous jewel. We have become much more accustomed to seeing either the cartoon series or the Inspector Clouseau films starring Peter Sellers, that keeps the title going. Indeed, the game *Pink Panther* from *Gremlin* stars the former and features the latter. The jewel seems to have been totally forgotten about.

As usual, Pink Panther is broke. While the high life is a lot of fun, it also has a lot to answer for. One way of raising some much needed cash is to take a job, and the position of butler seems to be ideal. Not for the job's sake of course, but because it would provide a perfect opportunity to gain access to a series of large houses from where Pink Panther can rob the owners blind.

A quick trip to the job centre to see what is on offer then it's off to the department store in order to stock up on a few items guaranteed to impress a prospective new employer. These change depending on the job desired but in order to buy some of the items and so land the very top jobs, Pink Panther needs to have earned some money by stealing from less wealthy houses.

Once he has been accepted for a job, Pink Panther can get down to the serious business of casing the joint with a view to filling his swag bag. Obviously, night time is the best time to do this but there is a slight snag. All his employers turn out to be sleepwalkers.

This means that Pink Panther has to guide his master safely through the house, making sure that he doesn't trip over or bump into something or do anything else that would cause him to wake up and discover the nefarious goings on.

As if that wasn't enough, Inspector Clouseau is hot on the trail of Pink Panther. For years, he has been trying to catch up with him and has now nearly succeeded. So not only does the master have to be shepherded around, but the bumbling detective avoided as well.

Basic control of the sleepwalker involves nothing more than shoving him backwards and forwards. This is fine as far as it goes but in order to move round the house, Pink Panther has to make sure that his boss follows him. There just isn't enough time to rush around, steal things and get back before a collision with a wall.

Controlling the boss from afar involves making use of items casually pocketed on your travels. Catapults can make him change direction, see-saw boards are useful for getting over obstacles and there is always the blow-up plastic Pink Panther. Not only does this turn the boss round, but it also proves to be a neat distraction for Inspector Clouseau. A more permanent way of getting rid of him though is to get him to fall into one of your portable holes, something no respectable burglar should ever be without!

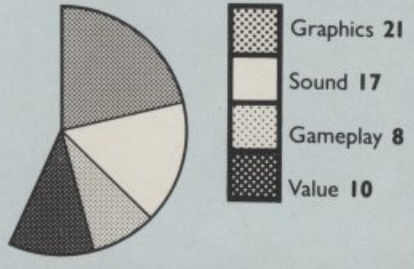


The game looks very good indeed with a nice cartoon feel to the graphics. Sound is similarly excellent but, and it is a big but, the gameplay is disastrous. Manipulation of objects within the game is far too complicated. The objects are frequently unidentifiable and by the time you have worked out what you think you might like to try, your master has hit a wall and you have to start all over again. Not helped by a poor set of instructions, badly translated from the German, all this has the effect of rendering the game far too difficult in the initial stages. Consequently, there is no compulsion to have another go.

It may be that with perseverence, you could get to enjoy this game. As for myself, I found nothing in the initial stages that made me want to load it in again. *YA*

Pink Panther

Publisher: **Magic Bytes**
Suppliers: **Gremlin**
Alpha House
10 Carver Street
Sheffield
S1 4FS
TEL: **(0742) 753423**



What's New?



Gordon Hamlett visited the 11th Commodore Show at the Novotel Hotel in the beginning of June. Here's his report

■ **Finding new products at the Commodore** Show is becoming increasingly like trying to find the proverbial needle in the haystack. More and more, stands are being taken by dealers and distributers, all offering a wide range of discounts on both software and hardware. This is a quiet period of the year at the best of times and many companies were obviously waiting for the PC show in September to launch their new products in time for the Christmas market.

From *Commodore* itself comes a story guaranteed to annoy anybody who has just bought an Amiga but which will delight those of you about to assault their piggybank. The price of the A500 was officially cut by £100 to £399.99 including V.A.T. All *Commodore* products are to be supported by a heavy advertising campaign and it is likely that there will be a special pack bundled together in time for Christmas.

Also on the hardware front, there was a lot of interest in mass storage devices. Notable among these was *Burocare* who was showing a removable hard drive system. Although initially expensive at £895, you can add as much extra memory as you require. This is in the form of 20Mb cartridges at £50 per cartridge. This gives you an effective infinite hard disk system. Compatible with all three Amiga models, each cartridge can be formatted to use either standard Amiga-DOS or MS-DOS formats. For further information, phone *Burocare* on 01-907 3636.

Just because you have upgraded to an Amiga, it doesn't necessarily mean that your Commodore 64 is now obsolete. *Trilogic* has released two Print Links, which connect your Amiga to your C64 allowing you to use your old machine as a 64k printer buffer, something normally costing somewhere in the region of £200.

There are two models available. The cheaper model (£34.99) is for use with serial printers only whereas Print Link 1B at £44.99 has an extra interface allowing you to hook up to both serial and parallel printers simultaneously. *Trilogic* can be contacted on 0274 691115.

Programmers may be interested to know that there are now a number of different languages available to them. *Metacomco* is a notable leader in this field and three of their products are likely to be of interest. ABasiC, which was originally bundled with the Amiga is now on general release by popular demand, although in a much enhanced version. Features include named routines, syntax checking, extensive debugging facilities, a full screen editor and MS-DOS compatability.

Metacomco Pascal has now been updated. The new version of this single pass compiler includes OTHERWISE in CASE statements, dynamic strings, full 32-bit pointers, extended RESET and REWRITE and enhanced I/O error handling. The manual has been totally rewritten and includes many examples of how to use the new features. Owners of version 1 can upgrade for £38.50, otherwise the package will cost £89.95. Finally, by the time you read this article, there will also be a version of MICROPROLOG available for the Amiga. Further details from *Metacomco* on 0272 428781.

Anybody looking for a wordprocessing package at the lower end of the price range, could do alot worse than ask for a demonstration of *KindWords* from their dealer. Released in the States last year to considerable critical acclaim, *KindWords* allows you to incorporate colour graphics in your text. The image can be cropped and manipulated using up to 16 colours.

Different fonts can also be included in your text — the program uses a WYSIWYG format. Also included is a 90,000 word spelling checker. This is based on an American dictionary although an even larger British version is promised in the near future. The latest 1.3 printer drivers are all fully supported.

KindWords will cost just £49 although the *Disc Company* have yet to finalise their distribution outlets over here, so details are not yet available as to where it is available from. Hopefully though, it should be in the shops by the time you read this.

KindWords will also feature in a bundled package called *The Critic's Choice Productivity Bundle*. The other two programs are *Maxiplan*, a highly acclaimed but simple to use spreadsheet and *Microfiche Filer*, a database. The bundle will retail for £149.95, a saving of £55 over the individual unit costs.

Games news was very thin on the ground at the show with none of the larger companies taking stands. *Interceptor* from *Electronic Arts*, a flight/combat simulator looks likely to be a spectacular success. Adventurers can look forward to *Corruption* from the pens of *Magnetic Scrolls* — their first 'serious' adventure in which you get involved with insider dealings, murder and drug trafficking. *Mandarin Software* are planning to release a package of three games called *Lancelot* featuring the Quest for the Holy Grail and other Arthurian stories. On the arcade front, *Robtek* have indulged in a taste of nostalgia with a triple pack featuring Bouncer, Swooper and Brands Hatch, respectively Breakout, Galaxian and Pole Position clones. *YA*

C : Setting Up

Operating your C compiler can be a confusing chore, even with the manuals at hand. Mark Burgess explains how to make compiling programs easy.

■ **C has probably become the most** important language for an Amiga owner to learn. In this article we explore the preliminaries of setting up the Amiga for programming in C with the aim of creating a neat programming environment which makes the most efficient use of the Amiga's resources. Programming the Amiga involves three things:

■ **Setting up the Amiga as a programming environment**
■ **Learning a programming language**
■ **Creating programs**

Setting up a computer in the most efficient way is a process of evolution which often takes months or even years of experience so it's worth taking a look at some hints about using compilers.

The C Compiler

All of the specific examples which will be given in this series refer first and foremost to the Lattice C compiler (Version 3.03). This has been adopted for the series since it is a good implementation of C with access to all of the Amiga's facilities and is usually thought of as being *the* Amiga compiler.

The Lattice C package consists of a single disk (whose volume name is 'Lattice_C') which contains the compiler and all of the libraries required for programming the Amiga. The Lattice C disk is not a workbench disk, so when programming it is necessary to use it in collaboration with a system disk.

The simplest way to use the compiler disk is to leave it completely alone and to let the Amiga handle the awkward details of locating the important files. This is easily achieved using AmigaDOS 'batch files', or programs of AmigaDOS commands. The task this month is to set up a companion disk containing the basic utilities required, so that compiling a program is reduced to one simple instruction.

Using The CLI

Programming in C means sacrificing the Workbench utility and icon driven approach to AmigaDOS when using the compiler. The reason for this is that the Workbench is a clumsy environment for programming. The commands which operate the C compiler must be typed into an AmigaDOS CLI window. To this effect, it is advantageous to keep a separate startup disk for programming with: a disk which does away with the Workbench altogether and sets up a pair of CLI windows.

A CLI window is an AmigaDOS window which you can type commands into. The first time you will see a CLI window is when the Workbench disk is inserted after the Amiga is switched on and a window called 'AmigaDOS' appears, bearing the message 'Use preferences tool to set date' and so on. Each CLI window on the Amiga is like a separate computer with no mouse interface: in the jargon, each CLI window is a virtual terminal. Having two such windows on the screen allows the user to exploit the multi-tasking nature of the Amiga while working on programs by, for example, editing a file while a program is being compiled.

CLI windows are normally closed and their startup icon hidden from view on standard Workbench disk. The initial AmigaDOS CLI window is closed down by the standard Workbench startup sequence. On some Amiga systems there is not even an icon on the Workbench disk, enabling a CLI window to be opened, up until some steps are taken to configure the system.

The aim of this month's article is to reprogram a copy of the 'Workbench' disk so that the Amiga will automatically start up in a programming mode. But, in order to do this, it's actually necessary to use a CLI window!

The first step is to make a copy of the Workbench disk for butchering. *Under no circumstances* use the original workbench disk for this purpose. The copy can be performed using the Workbench by following the instructions given in the Amiga's user manual. Once you have obtained a copy, boot up the machine with that copy and proceed with the next step which is to alter the way the Amiga starts up when it is booted. First of all, we need a CLI window.

There are several ways of obtaining a CLI window. The most convenient of these is a slightly desperate act, but has the advantage of being simple. The idea is to rescue the window called AmigaDOS before it is discarded. This can be done by pressing CTRL-D (hold CTRL and D down together) when the AmigaDOS CLI window appears during start up. If this is done in time, the message

***** BREAK**

appears and the AmigaDOS prompt:

1>

is left in this window. This is by far the simplest way to obtain a command window for our purpose. It is only a temporary measure anyway. Once you have reached this stage, it should be possible to type commands into the Amiga in the AmigaDOS command language.

The Startup Sequence

When the Amiga boots up a Workbench disk it uses the contents of a file called 'startup-sequence', which lives in the 's' directory, to determine exactly what takes place. This file can be altered to reprogram the workbench disk in the most suitable way. Type:

ed s/startup-sequence

This invokes the AmigaDOS screen editor and leaves the editor window showing the usual set of instructions which are issued at startup. Delete all of these by pressing CTRL-B until they are all gone. Now type in the program Batch Listing 1.

Copy the commands exactly as these will form the basis of the programming environment. To exit the editor and save the file, type ESC X and press return. The 1> prompt should now be back on screen. This sequence of commands causes two overlapping CLI windows to appear instead of the Workbench. In addition it copies a compiler control file 'cc' to the ram disk and creates a temporary file directory in RAM: before closing the original CLI.

Batch Listing 1

```
newcli con:0/20/550/180/CLI:Command-Window
newcli con:40/50/600/180/CLI:RAM-C-Compiler
copy cc to ram:
makedir ram:T
endcli
```

Compiler Control

The next step is to create the file called 'cc' which will control the C compiler. 'cc' is called a batch file: it contains a sequence of AmigaDOS commands in the form of a program which reduces the process of compilation to the single command:

EXECUTE cc program

Using a compiler is often a slow process and any increase in speed is welcome. We shall therefore use the Amiga's RAM disk as much as possible to make the most efficient use of time and memory.

While programming, it is simplest to work in the directory df0: when editing and compiling programs. This will be the root directory of the customized workbench disk which is the default directory anyway. To make the cc file type:

ed df0:cc

or simply

ed cc

The editor should load once again, this time bearing the message 'Creating new file'. Type in the following program, being careful that the dot '.' on the first line is the first character in the file, with no spaces before it. The line beginning LC:lc1 is long and is necessarily printed on two lines in this magazine. However, it is important to type it in on a single line when using the editor. Because of the way that ED works, the very longest line could be split into two by the editor itself.If this happens it is possible to rejoin the two lines into a single line by moving the cursor to the upper line and typing ESC J as a command to the editor.

Now type in Batch Listing 2. Once again type ESC X to save the file onto the disk and exit the program. The batch program works as follows. The first line tells AmigaDOS to scan the command line for parameters, such as the name of the program to be compiled. Three assignment statements then locate various directories on the compiler disk. The 'if' construction checks that the file concerned exists before calling the first phase of the compiler 'lc1'. If the first phase of the compiler succeeds, it generates a temporary file called program.q containing an intermediate translation of the program known as a quad file.

The batch program checks that this has been created and if not quits with the message 'Compile Failed'. If all goes well with the compilation, the second phase of the compiler and the linkerare called up, finally resulting in the compiled program. Notice that the DELETE statements throughout the batch program delete unwanted files minimising the amount of RAM used up by the compiler. This is important when writing long programs of a thousand lines and thereabouts, since RAM is scarce on a 512K machine.

Having created these two files on your disk, the Amiga is ready for programming. Now reboot the Amiga to see the results of this handiwork.

Listing 1

```
/*************************************************************/
/* Short Poem                                                */
/*************************************************************/

     /* Reprinted from C: A Dabhand Guide - M. Burgess */
     /*       by kind permission of Dabs Press         */

   #include <stdio.h>

   main ()

   {
   printf ("Astronomy is %dderful \n",1);
   printf ("And interesting %d \n",2);
   printf ("The ear%d volves around the sun \n",3);
   printf ("And makes a year %d you \n",4);
   printf ("The moon affects the sur %d heard \n",5);
   printf ("By law of phy%d great \n",6);
   printf ("It %d when the the stars so bright \n",7);
   printf ("Do nightly scintill%d \n",8);
   printf ("If watchful providence be%d \n",9);
   printf ("With good intentions fraught \n");
   printf ("Should not keep up her watch divine \n");
   printf ("We soon should come to %d \n",0);
   }
```

Tidying Up the Custom Disk

Although it is possible to use this customised disk exactly as it stands it does not leave very much room for programs. There are many redundant files on the disk which are of no use to programmers. For example, the entire FONTS directory can be deleted from the disk with no harmful effects. The expansion directory and the Trashcan directory are redundant. Programs like the clock and the notepad could go. The only directories which you must not delete are DEVS, L, S, T and LIBS since these are required by the system.

Creating Program Text

Having created the environment for programming, the compiler is invoked with the instruction:

Batch Listing 2

```
     .Key file,opt1,opt2,opt3

     assign LC: Lattice_C:c
     assign LIB: Lattice_C:lib
     assign LINK: Lattice_C:c
     if not exists "<file>.c"
          echo "File not found"
          cd df0:
          quit 0
     endif

     copy <file>.c to ram:
     cd ram:

     LC:lc1 <opt1><opt2><opt3> -iLattice_C:include/
-iLattice_C:include/lattice/ -iLattice_C
:include/exec/ -iLattice_C:include/intuition/ <file>

     if not exists "<file>.q"
          echo "Compile failed."
          cd df0:
     quit 0
     endif

     delete <file>.c
     LC:lc2 <file>

     LINK:alink FROM LIB:c.o,<file>.o  TO <file>.x
lib LIB:lc.lib,LIB:amiga.lib

     delete <file>.o
     copy <file>.x to df0:
     cd df0:
```

Listing 2

```
/*************************************************/
/*                                               */
/* Prime Number Generator #1                     */
/*                                               */
/*************************************************/

   /* Check for prime number by raw number */
   /* crunching. Try dividing all numbers  */
   /* up to half the size of a given i, if */
   /* remainder == 0 then not prime!       */

   #include <stdio.h>

   #define maxint  500
   #define true      1
   #define false     0
/*************************************************/
/* Level 0                                       */
/*************************************************/

     main ()

     { int i;

     for (i = 2; i <= maxint; i++)
        {
        if (prime(i))
           {
           printf ("%5d",i);
           }
        }
     }
  /*************************************************/
  /* Level 1                                       */
  /*************************************************/
     prime (i)          /* check for a prime number */

     int i;

     { int j;

     for (j = 2; j <= i/2; j++)
        {
        if (i % j == 0)
           {
           return (false);
           }
        }
     return (true);
     }
```

EXECUTE ram:cc <program-id>

Try this out with the example program shown in listing 1. The compiler demands that the filename of C text must end in '.c' so type for instance:

ed poem.c

and carefully type in the program exactly as shown using the editor. Remember that the programmer's greatest enemy is the keyboard: one small slip of the fingers can spell dozens of errors from the compiler!

Once typed in use ESC X to save and exit. Now type:

EXECUTE ram:cc poem

to compile the program. Be careful NOT to type the '.c' at the end of poem: the compiler will automatically look for this suffix. If you type it, you will end up with the message 'Can't open poem.c.c'. If all goes well, the program will take a few minutes to compile. There are three phases: Phase 1, Phase 2 and a Linking phase. The linking phase often takes a disproportionate amount of time to run, so don't worry if you are waiting for a couple of minutes. You will find that the time taken for the linker to complete its work does not alter much with the length of program you have written.

The finished code is stored under the name poem.x. To execute the program type simply:

poem.x

and press return. If you have not made any mistakes, the result should be:

Astronomy is 1derful
And interesting 2
The ear3 volves around the sun
And makes a year 4 you
The moon affects the sur 5 heard
By law of phy6d great
It 7 when the stars so bright
Do nightly scintill8
If watchful providence be9
With good intentions fraught
Should not keep up her watch divine
We soon should come to 0

Personal Preferences

There is no compulsion to stick rigidly to the prescription given here. For example programs can be typed in using the AmigaDOS screen editor called ED, or you may prefer to use a wordprocessor such as Scribble! (Note: Textcraft and Wordperfect are not suitable for this purpose since they do not create pure ASCII text files.) You may also wish to copy some commonly used CLI commands from the disk to the ram disk. This can save a lot of time but it is wasteful on memory. For example:

COPY C:DELETE TO RAM:
COPY C:ASSIGN TO RAM:

Basic Features of The Example Programs

Before starting a systematic introduction to the vocabulary of C it is instructive to note down the basic features of the example programs contained here.

A C program is built out of black box objects called functions which are connected up to make programs. A function in C is a very flexible object: it embodies both the procedures and functions of other languages. It is really just a general kind of subroutine. A function has a name followed by parentheses '()' and is enclosed by curly braces { and }. Every C program has to have at least one function which must be called main(): this is where a program begins. In example 1 the program has only one function. Example 2 has two functions. The '()' parentheses are required even when there is nothing in them.

The statements of a C program are usually written one per line. These can be made up of function calls and assignments and comparisons in the usual way. Notice however that each complete statement is terminated by a semi colon.

One invaluable function which is provided as a standard part of the input/output library for C is called *printf* or print-formatted. This function provides a magnificently versatile way of printing text to the screen. The simplest way of using it is to write:

printf ("..some string...");

More generally variables can be inserted by using a "control sequence" inside the quotes and listing the variables after the string which are then inserted into the string in place of the 'control sequence'. To print out an integer "%d" is used as a control sequence:

printf ("Integer = %d",someinteger);

The variable "someinteger" is then printed instead of "%d". The more exotic uses of printf() will be explored later on in this series.

The word 'int', which crops up in the text, signals the fact that the variable concerned is an integer-only type of variable. Notice that C does not use the '%' naming convention to represent integers in the way that BASIC does.

Example 2 contains some simple arithmetic devices ++ and %. ++ is a neat operator which means 'increment by one'. So the statements

```
i++;
i = i + 1;
```

are in fact equivalent. % is equivalent to the MOD integer division operator in BASIC.

A feature common to both examples (and common to nearly all programs) is the:

include <stdio.h>

instruction at the very start of the programs. This means include a disk file and treat it as though its contents were part of the program text. Include provides a mechanism for merging programs and parts of programs which are stored in different files. The particular file stdio.h is the standard input/output 'header' file which contains basic definitions required by all of the input output functions like printf. This is usually the starting point of a program.

The define lines are C's macro facility. The statement:

define name rest of line

defines 'name' to stand for whatever string is on the rest of the line. The macros furthermore are pure text substitution, so the macros may be composed of anything at all. Normally they are used to define names for useful constants so as to improve the readability of programs.

The final construction to notice in the examples is the comment brackets:

/* ... */

Everything enclosed by these markers is ignored by the compiler and is discarded from the program. The slightly curious LEVEL labels which can be seen in example 2 will be explained in more detail later on in this series. They are in fact part of a simple program organization technique which has been coined 'Burgess structuring' after a little known author of the same name. *YA*

Things to Try

Try typing in the program in listing 2 and compiling it. Listing 2 is a more involved program than example 1 with far a greater potential for typing errors, so it should serve as good experience in debugging.

Another useful exercise is to actually introduce errors into programs on purpose and to try compiling them over and over again. This is a good way to become accustomed to the behaviour of the compiler and its error trapping system and will be good experience for dealing with more complicated combinations of errors at a later date.

In the next issue the flavour of the tutorial changes a little to look at some of the rich vocabulary which C and its libraries have to offer programmers and to some of the applications which might harness the powerful facilities on offer.

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UTILITIES

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Disc Boxes – 40		£12.50
Disc Boxes – 90		£17.50

PERIPHERALS

Type	SSP	Our Price
Commodore:		
A2010 Intl. 3·5 Drive	£197.16	£170.00
A2052 Ram Expansion 2Mb (2000)	£395.88	£340.00
A2058 Ram Expansion 8Mb (2000)	£2333.40	£2050.00
A2088 XT Card	£526.29	£455.00
A2092 3·5 20Mb Hard Disc	£634.97	£550.00
A2286 AT Card	£743.64	£645.00
A2300 Genlock	£197.16	£171.00
A1084 Monitor	£346.20	£305.00
AMIGA A500 Pack (Inc. Printer + Works)	£688.85	£645.00
AMIGA A500 Pack as above + Monitor	£803.85	£775.00
AMIGA A500 Pack as above + Colour Print	£918.85	£885.00
AMIGA A2000	£1141.08	£990.00
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A1010 Ext. 3·5 Drive	£253.11	£220.00
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Graphics Tablet CRP A4	£414.00	£375.00
Graphics Tablet CRP A3	£684.25	£600.00
VD3 Frame Grabber	£632.50	£550.00
VD3+ Colour Frame Grabber	£914.25	£795.00
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3½in. External Drive Daisychainable	£130.75	£115.00
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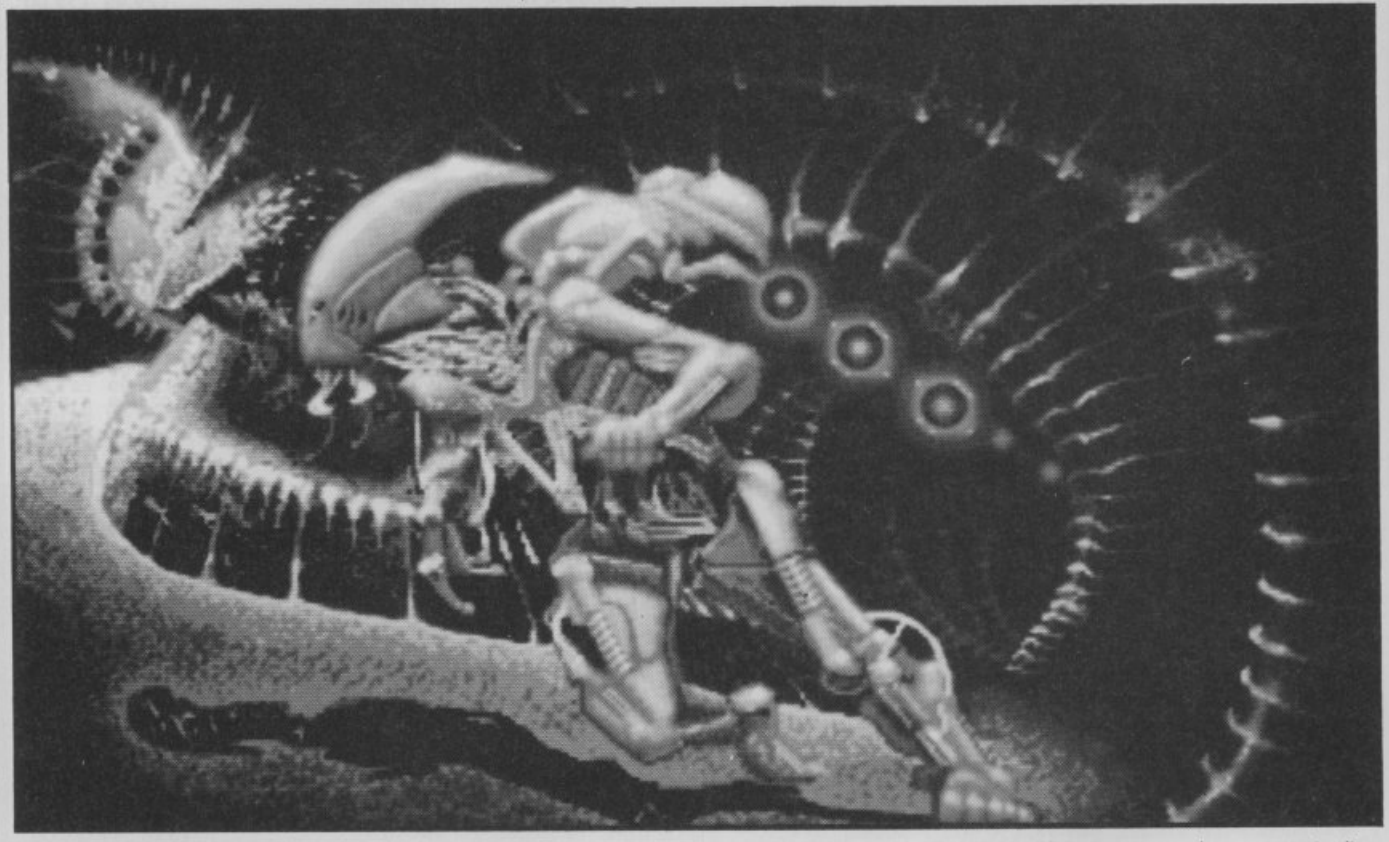
REVIEW

Obliterator

Clive Grace takes a look at a new adventure from Psygnosis.

I'm hooked! I have been playing *Obliterator* non-stop for over twelve hours now; the music is still in my head; my eyes are a little bloodshot; my fridge empty of cherry cokes (aah I'll have to top up tomorrow); well over 75% of the game has been mapped out and still I want to quit writing this review and go back for more!

Psygnosis really started something big when they started writing classics such as *Barbarian* and *Terrorpods*. They had a brief flirtation with space opera "trading games" (Deep Space) and now they are back again with a new arcade adventure in the same mould as *Barbarian*. But this time they have gone for the Sci-Fi angle and set the story far into the future. The Obliterator is a chappie who sports gigantic guns, huge rifles and an amazing array of missiles and killing devices to pitch against weird and wonderful aliens (probably from the mind of Roger Dean — the *el supremo* of fantasy art).



The object of the game is to destroy certain aliens who have infested Mankind.

The game essentially goes back to the tired and tested mould of "the aliens have invaded, get out there and waste a few of them!" And with the amazing array of creatures, that will take some time!

The controls are implemented by the mouse in the time-honoured *Barbarian* tradition (from icons that run along the bottom of the screen). By pressing the space bar, you can swap over to your inventory display, showing the number of weapons and bullets/missiles at your disposal.

You don't have three or more lives in *Obliterator*, you simply have an energy level which is depicted as a red line that decreases when you are hit, and when you run out of energy you die. And then it's back to square one — unless you have saved a position onto the disk.

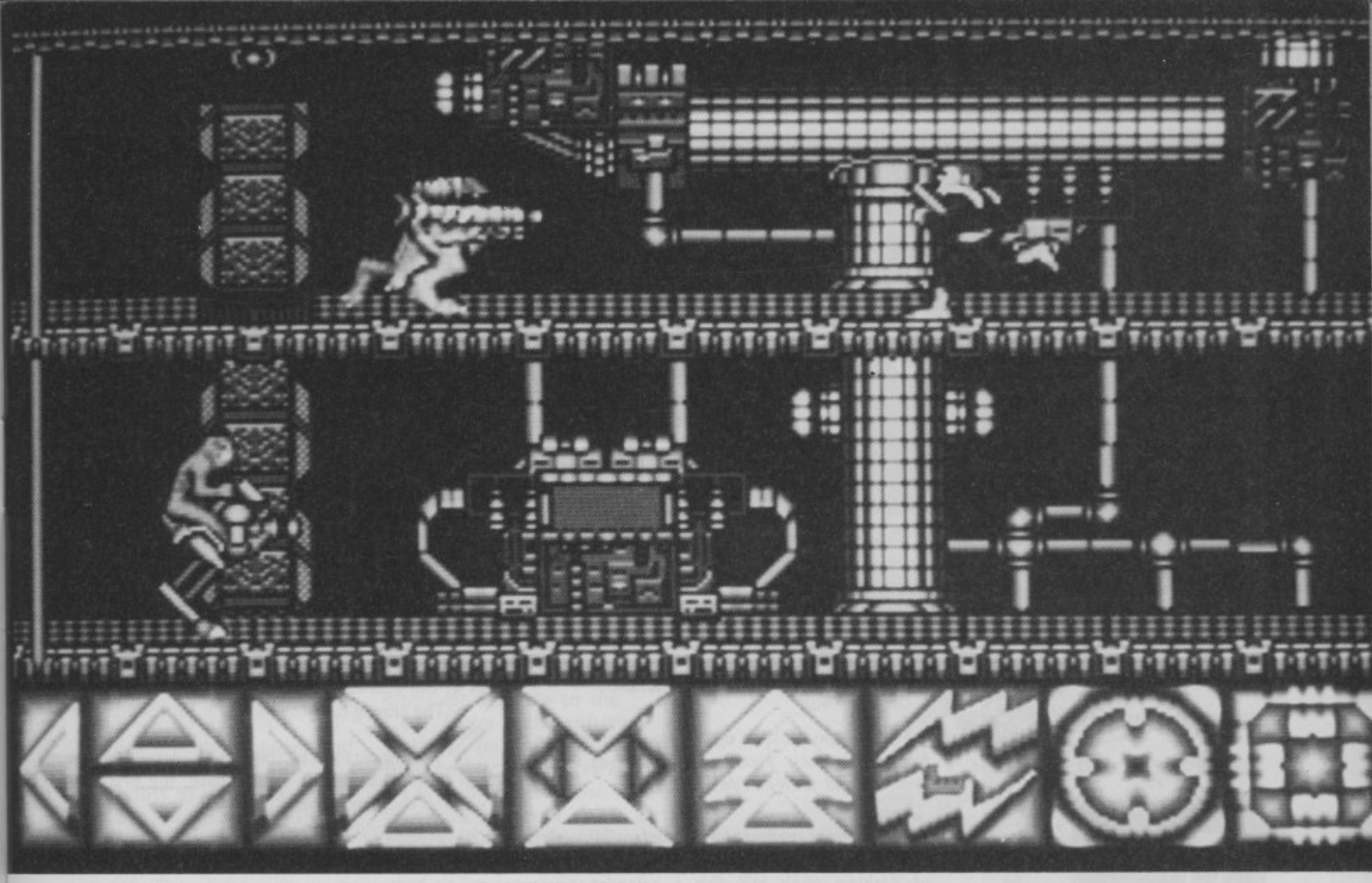
There are strategically placed charging units dotted all over the place — the problem is staying alive before you get to one. Should you be able to reach one, you will be able to charge up your batteries and save your position in the game, so if you do die, all is not lost!

Many people feel that a game with a saved position facility makes them too easy to play — not so with *Obliterator*. I have been mapping this game from the outset, and the level of complexity and puzzles is sure to keep you scratching your head. There are various defence systems to destroy, avoid, or run away from and the aliens are very accurately detailed (from Roger's artwork supplied as a poster). Without doubt the game makes good use of the Amiga's graphics' capabilities, and with the huge sprites, a real sense of scale is achieved very easily.

The object of the game is to destroy certain aliens that have infested Mankind. The only hope is in the form of a super killer — the *Obliterator*, and all you have to do is get yourself a good collection of meat cannons bigger than Nick Fury's (Bill Sienkiewicz — you ain't seen nothing yet!) before blasting away at the defences set up by the aliens.

You're in a ship that has literally hundreds of rooms, some of which are connected by elevator shafts, some by walkways, others simply have doors. There's also a nasty looking chute that you have to jump down in order to get to a particular fine specimen of a portable rocket launcher (hand held). This is not to mention a few bits of ammo for your other weapons, and a chance to take on two pretty gruesome looking Aliens at the end of that particular sequence.

The monsters range from glowing plasma bolts



The action seems to jump out at you with very effective use of shading.

to "alien" lookalikes and some can be despatched by merely shooting with your pistol, while others have to be disposed of by using your rifle. Force fields and walls also have to be blown away, but by using something a little less subtle!

The few sound effects to the game are good, but what Psygnosis have really concentrated on is a really good soundtrack. The sort of music that sets the scene so well, with good use being made of the Amiga's ability to replay samples. The music is catchy, and it *is* certainly worth sitting down to listen to. There is a *"music off"* facility in the menu display that is accessed by pressing the *"Help"* button on the keyboard, so if you don't like the music, or if it is getting late (you know how next door neighbours are) then you can easily turn it off.

One problem with *Obliterator*, which I think follows suit to all Psygnosis games, is that the actual gameplay is quite slow. The movements of the characters and objects on the screen, while detailed, are quite jerky, and there is a long pause between screens. Thankfully the disks are optimised, meaning they don't make the Amiga wait around when the game has to access the disk.

To counter the problem of jerky sprite movements, Psygnosis claim that *Obliterator* is compatible with floating point extensions, such as the 68020 and the 68030 processor add-ons that are becoming available. I must admit this is interesting to say the least and I wish I had such a kit to add to my Amiga, but I haven't and so like the rest of us without FP kits (that's probably 99%), we'll just have to cope with the speed as it is. This can be annoying, especially when a monster has trapped you and you find yourself flailing wildly about with no control over the situation. The only real way to avoid being hit is to "attack" your commands by pressing a sequence of keys while you're in transit.

The loading graphics to this game are superlative — since *Barbarian* was released a couple of years ago, Psygnosis's mastery of sprite animation has jumped by leaps and bounds, making them one of the few companies that can compete against the sprite wizardry of Cinemaware (such as *Defender of the Crown* by EA).

Obliterator must be one of the most naturally coloured games I have seen in a long while, with very effective use of shading. The action seems to jump out at you, especially in the loading screen depicting our hero pulling a load of faces (like he was undergoing shock therapy) before blasting away the centre of your monitor!

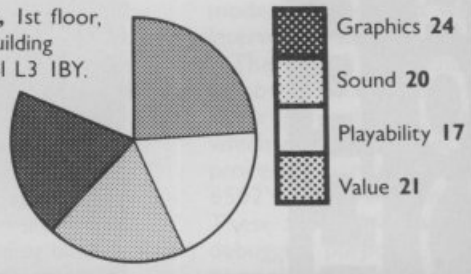
This game is a must for any discerning arcade adventurer's collection. There are plenty of things to kill, the action is in top gear all of the time, and the puzzles are sneaky.

Psygnosis also give you the feeling of getting value for money out of their games. *Obliterator* comes complete with colourful packaging, poster (a must for any Roger Dean fan) and the little novellas; playing guides and other assorted bits of kipple all add up to a smashing game.

Now go out and buy it. ***YA***

Obliterator

Supplier: **Psygnosis,** 1st floor,
Part of Liverpool Building
Pier Head, Liverpool L3 1BY.
Tel: **051-207 0825**
Price: **£24.95**



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How To Enter

Robtek has posed a few questions regarding the history of *Commodore*. All that you have to do is complete the entry coupon (in block capitals please), answer the questions on the form and send it to us at the address indicated.

The closing date for entries is 30th September 1988.

The winners will be the first 11 correct entries out of the hat on the closing date, the first one winning the hardware.

The Rules

Entries will not be accepted from employees of Argus Specialist Publications and Robtek. This restriction also applies to employees' families and agents of the companies.

The How to Enter section forms part of the rules. The Editor's decision is final and no correspondence will be entered into.

Robtek Competition Entry Coupon

Name _____

Address _____

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Should I win one of the software prizes I would like the following (please tick two only).

Omega File _____ Gizmoz _____ Promise _____

The Questions

1) When was the C64 first launched?
(a) 1981 (b) 1983 (c) 1984 (d) None of these. ☐

2) When was the VIC20 first launched?
(a) 1978 (b) 1980 (c) 1982 (d) None of these. ☐

3) When was the C128 launched?
(a) 1985 (b) 1984 (c) 1983 (d) None of these. ☐

4) From the following list name two people who are/have been bosses of Commodore:
(a) Jack Tramiel (b) Paul Welch (c) Chris Curry
(d) Clive Sinclair (e) Steve Franklin (f) Alan Sugar. ☐

6) Why is Commodore sometimes referred to as CBM? _____

_____

Send your entries to **Your Amiga, Robtek Competition, Argus Specialist Publications, 1 Golden Square, London, W1R 3AB.**

Closing date: **30th September 1988.**

Guru's Guide



Your technical adviser has just opened up shop — so just write in with any queries regarding the Amiga

Dear Guru,
"Having moved up from the C64 to the Amiga, I want to learn how the Amiga can multitask routines in 68000. Although I know a little about Assembly language on the 6502 I have only recently started programming the Amiga's 68000 and I understand there is no such thing as an interrupt on the 68000. Is this true?"
J. F. Dawes, Liverpool.

Not really. It is true that the 68000 processor does not support interrupts in the same way as the 6502, and there are both hardware and software generated interrupts as well as a number of internally generated "exceptions" built into the hardware of the 68000. They behave in much the same way as the 6502's interrupts, but, as you will see, they are far more flexible.

As you know a little about assembly language programming on the 6502 processor, it would probably be best to have a look at the way the 8 bit processor treats the whole affair before jumping in at the deep end and having a look at the 68000.

The 6502 processor has two interrupt lines — IRQ (interrupt request) and NMI (non maskable interrupt). If either of these requests are paged by a hardware "low" poll, then the 6502 causes an interrupt, meaning it stops the process of the current instruction, saves the current program counter and status register on the stack, and then sets up an interrupt disable flag in its status register and jumps to an address held in a vector at the top of memory.

This process invokes a service routine specifically for the interrupt that then saves registers, performs various housekeeping tasks and then begins to restore things back to normal by reloading registers and finally performing an RTI (Return To Interrupt).

The RTI causes the program counter and the status register to be restored from the stack (thus clearing the Interrupt Disable Flag), and the interrupted program carries on as if nothing had happened.

IRQ and NMI are both quite different beasts, in that an IRQ can be disabled by setting the Interrupt Disable Flag whereas NMIs cannot be disabled. They are considered to be more low level than IRQs.

There are other forms of interrupt available to the C64. There is the software interrupt (in the form of BRK instruction) or as most 64 programmers know, a hardware interrupt generated from the VIC chip. The VIC chip can be used to cause an interrupt when raster scanning, thus enabling flashy split screen effects to be made. External devices can poll an interrupt (a modem chip can be set up to perform I/O "on the interrupts").

Unlike many 6502 based machines (or in the C64's case 6502 variants), you can make the C64 spend as long as you like (well, almost) before returning from interrupt, providing the IRQ is not polled from hardware that is creating another IRQ. By sticking to time-honoured practices, the C64 can interrupt as effectively as the Amiga, but the speed overheads are quite large, and the amount of memory take up can be quite large by comparison.

The multitasking cart-horse on the Amiga is the EXEC. This is a collection of low level routines and is the watering hole for all the other processor's applications such as graphics libraries, intuition, AmigaDOS and so on. EXEC is also in charge of the 68000's interrupts and it is the first place to start when setting up interrupts.

Unlike the 6502's "zero page", the 68000 has eight internal 32 bit registers, and we will focus on one particular address register, A7. This is known as the stack pointer. The 68000 has three interrupt lines which are used together to provide eight priorities of interrupt. Instead of an interrupt disable flag, it has a three bit interrupt mask in the status register. This is used to set priorities so that a level 1 interrupt can be interrupted by levels 2 to 7 but not 0 or 1.

The number of priorities has been effectively increased by using one of the Amiga custom chips called Paula. This manages 15 different interrupts from the other interrupt sources including the copper, the blitter, the disk drives and so on. Paula decides when to interrupt the CPU (based on the partitions set up by the interrupt mask).

Paula takes an interrupt signal from a piece of hardware. It flags which interrupt was requested by setting a bit in one of its registers and then checks another register to see if this interrupt is enabled. If this is the case, then the 68000 will receive an interrupt in a specific priority from Paula.

If the 68000 is already servicing an interrupt, it checks to see if the new priority is greater than the priority it is currently servicing. If not, the interrupt will be ignored until the end of the routine.

If the priority is greater, then the 68000 goes into supervisor mode. It will save the program counter and the status register on the system stack. The routine drops down to an entry point in EXEC which will call the appropriate interrupt handler from within Paula.

Returning from the interrupt handle (RTE), the 68000 restores the status register and program counter — this restores the mode from which it was interrupted and then exits.

The 68000 also handles a number of software interrupts including 16 traps which can initiate special processes (similar to the 6502's BRK mnemonic). These are usually used for debugging purposes, and the normal system action is to give you a Guru number.

In order to make the

most of 68000 interrupts on the Amiga, you will have to have the ROM Kernel Manual at hand (Vol 1 and 2) and the Intuition manual. Both of these are published by Addison Wesley and they both cost a fortune — oh, while you're at it, get the 1.2 enhancer kits (for modern Kickstarts and Amiga 500/2000 owners).

I haven't even touched on the subject of "exception processing" and "round robin time slicing". A small series would probably suit the subject of interrupts on the Amiga, but at least here is enough for you to be getting on with at the moment.

Dear Guru,
"A lot has been written, said and speculated about the dreaded Amiga virus. Articles have been written in the major newspapers about this interesting "feature" of the Amiga, so much so that it is high time to clear up this mess that has evolved around the whole subject.
"How does the virus work? Can it damage my hardware, and can it really destroy my programs on my disks? I play a few games (who doesn't with an Amiga) and I own a second drive.
"Is there any way I can check for the presence of this virus, and is there any "cure" for my infected disks or will I have to throw them all away?"
M. Hollow, Oxford.

The way the virus works is as follows. Normally the virus lives on the Boot track of the Amiga workbench disks. There is no way that the virus can live off of a non-standard disk such as a kickstart disk of a commercial game with a special format for copy protection. It still doesn't mean that these special disks are impervious to the effect of the SCA virus, indeed, there is a problem associated with these disks that I don't think even the creators of this virus could have forseen

The workbench boot track contains code which is read in and executed as part of the system start up. Normally this code does very little except look up the rest of the DOS in the Amiga's internal ROM memory then, once found, hand over control to it.

On an infected workbench, the virus replaces the normal start up sequence and code on the boot track. When the virus code is read in and executed, it copies itself into a region of memory usually reserved for the "system stack" and then proceeds to wedge itself in by taking over system vectors (i.e. those involved with restarting the Amiga). If any effort is made by someone to stop the virus taking hold, then the Amiga will crash and then restart itself and proceed with the ordinary system start up as usual.

All is well until you decide to use another disk by rebooting off of it (by simultaneously using Ctrl CBM and Amiga keys). At this point the virus intervenes and checks for the presence of the virus on the workbench. If it isn't on the disk (i.e. a new workbench disk has been inserted), then the old workbench is replaced by a new virus. This happens every time a new disk is put into the Amiga. All this goes on in the background but every sixteen times the virus copies itself a pretty message appears on the screen:
Something wonderful has happened —
Your Amiga is alive!!!
And, even better . . .
. . . some of your disks are infected by a VIRUS!!!
Another masterpiece of The Mega Mighty SCA!!

The virus then carries on starting up the system as usual.

Okay, so where is the harm in this? Apart from the slight intrusion and the break from normal working practices (and I have had it too!) the SCA virus does not interfere with the machine, it was just a silly joke after all.

But some jokes can get out of hand and SCA's biggest mistake was that copy protection schemes, as used by some games software packages, make use of the boot track for some non-standard applications. For example, turbo loading and special cross machine format programs. Once the virus hits these modified boot tracks and overwrites it, the disk will be corrupted and, to all intents and purposes, totally useless.

Fortunately the people who built the SCA virus also wrote in a self-destruct function. Killing the virus is very easy and can be done without special software or disk sector editors or any of that clap trap (as some of our competitors seem all too willing to charge you for).

To find out if the virus is currently in your Amiga's memory, perform the usual CTRL CBM Amiga startup sequence but then hold down the left button on the mouse. The screen will flash green very briefly just before the usual workbench display if the virus is in memory.

To get rid of the virus from a workbench disk, just start off with a standard (non-virus infected) workbench disk and boot off of it. Install the infected disk in another drive (say DF1:) and type INSTALL DF1: from the CLI. This will install the standard boot track hence killing the virus.

This process works for key disks — that is, disks with a standard disk format, and non-protected games disks (if any still exist). If you have a commercial game whereby the protection system has been upset by the virus, then the only course of action is to get a replacement copy — software houses are normally willing to oblige when it comes to virus damaged disks.

For this purpose, many software houses are implementing a special virus protection routine that will check for the presence of the SCA virus and wipe it out from memory. Virus protection programs are available to the public, but they can be almost as bad as the virus itself, as they can sometimes contain counter viruses!

The SCA virus is by far the most successful example of a computer virus I have seen since the heady days of the Cambridge ring network gremlin. There are however, other viruses on the market for the Amiga and these are with one exception all from the hard core Amiga fanatics in the USA.

The American viruses are all based on the SCA virus but, when they find a SCA virus they print up a message saying:
"A virus — yummy!"
and then they tend to crash the system, which is something the SCA virus didn't do unless under special circumstances!

So, whereas the original virus was fairly harmless, the new ones have mutated into something far worse! DO NOT USE A VIRUS ANTIBODY DISK! In the past, so-called cures have been known to hold a counter virus program that mutates a virus into something far worse — an errant virus with no known cure. If it is possible on other machines, it is possible on the Amiga.

Thankfully the latest batch of viruses (and I have seen three recently) are all based heavily on the SCA virus with the same bootstrap routines. This is a blessing in disguise as they can all be disabled by using the install procedure I talked about earlier.

I would like to personally thank Harry Broomhall and David Parkinson of Ariadne Software for their invaluable notes when compiling this item.

Datel Electronics have a SCA virus protector which is "clean" from cross infections, as far as I know.

Visiting Hours:
The Guru cannot answer all your questions in person, so if you have a technical query, why not drop him a line at: Guru's Guide, Your Amiga, 1 Golden Square, London W1R 3AB. Questions regarding software piracy will be sent onto the relevant software houses.

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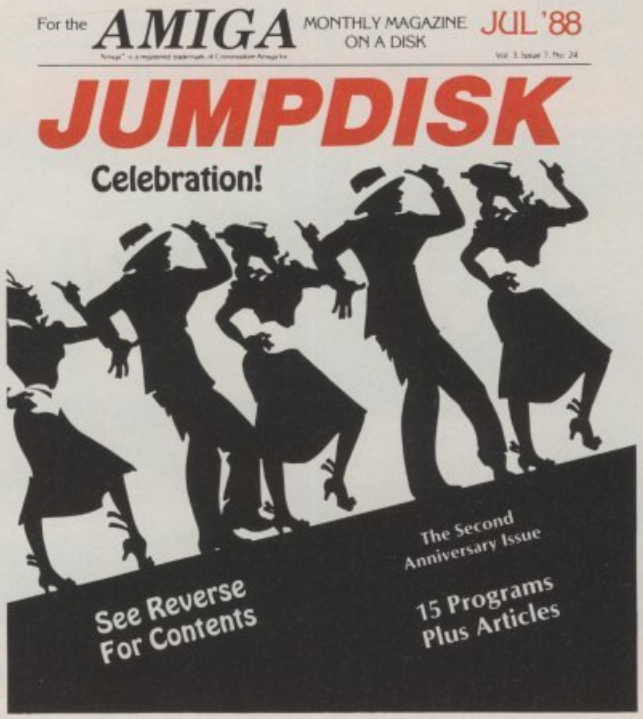
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REVIEW

The Three Stooges



Gordon Hamlett tries his hand at a little slap stick — and saves an orphanage in the process!

■ It was Moe, he of the pudding basin hair cut that first heard the crying. Pointing the noise out to his two colleagues, they quickly determine that the source is the nearby orphanage. For want of anything better to do, i.e. resting to use actors' vernacular, they go to investigate. They quickly trace the sobs to Ma, the sweet little old lady who runs the orphanage. "I'm not surprised she's crying, she must the be the oldest orphan I've ever seen" comments the curiously named Curly who has a distinct lack of both hair and brain cells.

The story is soon told. The mortgage to the orphanage is held by the miserly Mr. Fleecem of the Skin and Flint Finance Corporation and he has decided that he wants his money within the next 30 days or else he is going to foreclose on the loan and tear the building down.

For once the Stooges agree. They will raise the money and save the orphanage somehow. How much this decision is determined by their natural generosity and how much by the fact that Ma has three beautiful daughters who might just be available for marriage if they can find enough money is open to debate, but nevertheless, our three heroes set off, full of optimism.

The game is set in the town of Stoogeville. The main (indeed only) street consists of 180 squares and the boys can move up to six squares on each turn. The street is one way so there is no turning back once a square has been passed.

Rather than rolling dice to move, the Stooges do at least have some measure of control over their destiny and destination. At the beginning of each turn, the next six locations on the street are displayed as icons at the top of the screen. A hand points randomly to each of the locations and you can press the fire button to stop it where you want.

That at least is the theory. In practice, things are not quite so simple. To start with, you only get a couple of seconds to study the icons before the hand starts to move. There is also a time limit that you must choose your square in, otherwise you end up moving to wherever the hand stops, be it beneficial or harmful. Finally, although it is fairly easy to choose the location you want early in the game, the rate at which the hand moves across the squares speeds up dramatically in the latter stages of the game making selection something of a lottery. It is however possible to slow down the hand — see later.

Future Wives

The object of the game is to raise as much money as possible within thirty days and there are four possible results. If you fail to get 5000 dollars, then Mr Fleecem will be able to evict the kids and pull down the orphanage. Over $5000 saves the orphanage for the time being. Over $10,000 and they can pay for the orphanage to be repaired as well. More than that, (amount unspecified) and the Stooges will be able to marry Ma's lovely daughters.

Some squares offer the chance to earn money, others are hazards that should be avoided wherever possible. Not least among these are the mousetrap squares. If Moe's hand should land on one of these, it snaps shut breaking one of his fingers. Loose all four fingers and it is game over time. It is not always easy to give them a wide birth. At one point in the game, four of the six squares are traps with the hand moving at top speed to cause extra problems.

The easiest source of cash is to land on a money square. Here, the Stooges find a wallet, money bag or gain a reward without having to do any work for it. Easy but no fun. Trivia squares offer



crackers that are scattered in the bowl. The only problem is that one of the oysters is intent on fighting back and is snapping up the crackers as quickly as possible. The rewards are ten dollars per cracker and fifty dollars per finished bowl of stew.

Custard Pies

Put any comics near a custard pie and the results are inevitable! When the Stooges get mistaken for waiters, it seems to be a heaven sent opportunity both to earn some money and take part in one of their favourite pastimes. A number of pies have to be 'delivered' to the three guests in the restaurant. Delivery in this case involves standing on the opposite side of the room and hurling the pies with all your might. A successful delivery is only recorded though if the pie actually makes contact with its target. There are no dollars for a miss. Beware though, the customers fight back and you have to avoid being hit yourself. The Stooges can take five direct hits before they are unceremoniously sacked. The rewards can be quite high though if you can master the noble art of flan flinging. Ten dollars per pie and double money if you manage to deliver the number specified in your contract.

Of all the jobs in the world that you would deem to be least suitable for the boys, Hospital Doctors must be very high on the list. Nevertheless, the Stooges have somehow managed to acquire medical certificates and are now answering an urgent call. The hospital corridor is crowded and this is an emergency but fortunately, once again, help is at hand.

Three mini dodgem cars just happen to be lying around and the Stooges set off at breakneck speed, trailing one behind the other. There is good money to be earned if they can reach the operating theatre. As everybody else also seems to be in a hurry, extra cash can be earned by picking up the supplies that fall off the nurse's trolley. Depending on who picks them up governs what the payment will be.

Naturally, the Stooges should avoid hitting any of the people in the corridor as they career round the hospital. Up to five hits are allowed before they get chucked out. This is not as easy as it sounds for where it is easy for the first car to miss a patient in a wheelchair, the second and third cars swerve out alarmingly, the more so the faster you are going and it is often these two vehicles that cause the collisions when you are concentrating on the first one.

Round One!

Curly has always fancied himself as something of a pugilist even if he doesn't know what the word means. The secret of his success though is a method that so far seems to elude the likes of Frank Bruno and Mike Tyson. Providing that Larry plays Pop Goes The Weasel on his violin, Curly is invincible. The challenge to six rounds with some mauler, sounds as if it should be a nice little earner.

And it would have been if Larry had not accidentally sat on his 'Stradivarius' just before he reached the last few bars of the tune. Panic sets in. Where can he obtain another violin at this time of day. The answer is nowhere but a radio playing the tune might do just as well.

Larry has to rush through the streets dodging obstacles, find a radio and return before six rounds are up. The pavement is divided into two lanes which Larry can switch between as he tries not to collide with doors, lamp posts and ladders. They all have to be dodged but he can leap over smaller obstacles such as fire hydrants, sleeping dogs and packing cases.



Ma tells her story.

The final arcade game does not earn any money per se but it does make things easier on subsequent turns. Or at least it does if you do it properly! When the Three Stooges move along and find themselves on an empty bit of pavement, they start bickering among themselves trying to decide who is to blame for wasting a turn. This quickly degenerates into a fight as Moe tries to knock some sense into his companions.

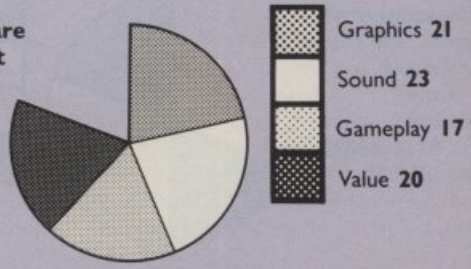
Standing between them, he must try to hit his friends as often as possible in the allotted time. For every successful pull of the ears, poke in the eyes, slap in the face or kick to the stomach that he lands, the speed of the hand will decrease. For every blow that misses its target or is dodged, the speed increases. The secret behind a successful strategy here is to fake a few moves to get your opponent moving the wrong way before you actually hit him.

The graphics in the *Three Stooges* are an excellent mixture of cartoon animation and digitised pictures of actual film stills. It is the sound however that really makes you sit up and take notice. Sound effects and tunes are superb and Cinemaware have also obtained the rights to use Curly, Larry and Moe's actual voices so that fans can delight to the genuine sounds of 'nyuk, nyuk' and the like.

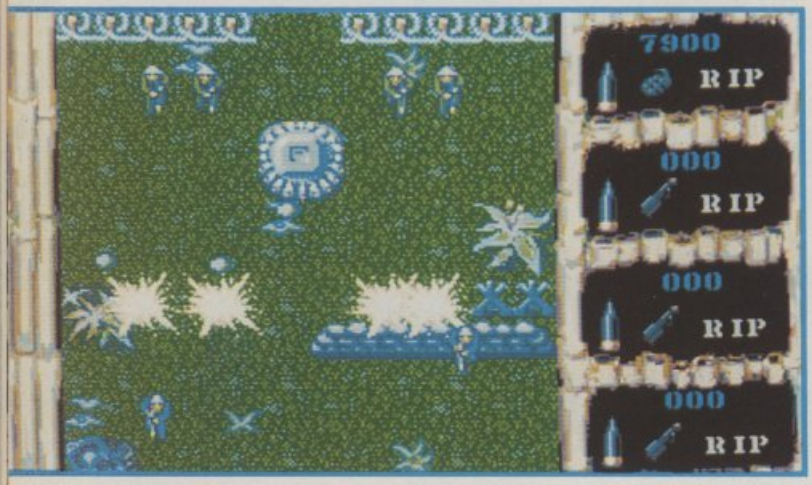
If you examine the individual parts of the *Three Stooges*, then there is little to get excited about. None of the arcade games would stand up on their own. But that is not the point. Cinemaware titles are better described as entertainment rather than games pure and simple. Indeed, that is their whole underlying philosophy. ***YA***

THE THREE STOOGES

Authors: **Cinemaware**
Suppliers: **Mirrorsoft**
Athene House,
66-73 Shoe Lane,
London
EC4P 4AB
Tel: **01-377 4645**
Price: **£29.95**



Leatherneck



Commando style scrolling action in which survival is the name of the game not for the faint-hearted!

The term *Leatherneck* was a sailor's word for a soldier or, more especially, a marine and derived from the leather tunics that they used to wear. During the Second World War, the word came into popular usage when applied to the United States Marine Corps. As they considered themselves to be the best fighting force in the world, so the meaning changed slightly and the word became associated with any elite fighting unit. Thus it is that you enter this new game from Microdeal.

The plot as such is non-existant. You are a member of a crack Commando squad, taking on, either individually or as part of a team, the massed armies of a corrupt evil empire. Survival is the name of the game and although the advertising blurb dangles a carrot of prisoners to be rescued somewhere along the line, the game's actual instructions make no mention of this. Needless to say, I did not survive long enough to find out!

Up to four people can play at once although a special Microdeal joystick adaptor is required if there are more than two players. As the Commandos disembark from their troop carrier, a quick movement of the joystick tells the computer that you exist. Any soldiers not under direct control never make the beach- head.

The game is a vertically scrolling shoot'em-up. Waves of enemy troops hurl themselves towards you, frenetically hurling grenades and losing off machine guns at you. As if that wasn't enough, there are artillary emplacements to be taken out as well although this does seem to be something of an overkill method of taking out between one and four men — very much a case of using a sledge hammer to crack a walnut. Rolls of barbed wire hinder your progress still further.

You have three methods of defending yourself. Running away is not considered to be an option! Your light machine gun has a high rate of fire but is only effective over a short range. For a longer range, you can use your heavy machine gun but it doesn't fire nearly so quickly. For more distant or armoured targets, you can always lob a grenade or two. Personally, I preferred the heavy gun and grenade option — the light gun took me too near to trouble! I suppose it would be churlish to say that no fighting man would ever go into battle with two machine guns. Perhaps it would have been better to let the player choose his weapon before starting out or, if three weapons were deemed necessary, then change one of the guns into a bazooka and throw in a few tanks for good measure. The men seem more than capable of handling everything else that is thrown at them. It is perfectly possible to add to your own misfortune either by shooting one of your colleagues in the back or by blowing him up with one of your own grenades.

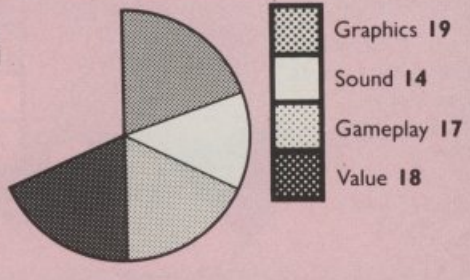


As it is, you have to use all three weapons in similar proportions. A bullet in the status panel on the right hand of the screen shows how you are doing for ammo with regards to the weapon being used at the time. Once a bullet has disappeared for a particular weapon, you are forced to use something else until you get the chance to reload. Extra supplies of ammo can be picked up by walking over one of the occasional ammunition boxes that has been carelessly left lying around. Each ammo box tops up your supplies for all three weapons.

Leatherneck plays well although you are likely to progress much further if there is more than one of you playing. It seems strange that no changes are made to the defending forces depending on the number of players. As with all games of this type, you tend to get further with practice as you start to learn the patterns employed by the opposition.The game looks good on screen with a whole range of buildings and obstacles to dodge around and an assortment of pill boxes, bridges and general militaria to add to the atmosphere. There are some reasonable sound effects of the usual shouts, bullets and explosions, although the music does get a bit repetitive after a bit. ***YA***

LEATHERNECK

Title: **Leatherneck**
Supplier: **Microdeal**
P.O. Box 68
St. Austell
Cornwall
TEL: **0726 68020**
Price: **£19.95**



Graphics **19**
Sound **14**
Gameplay **17**
Value **18**

Assembly Language Programming

In the second part of this article, Peter Lawrence looks at how to apply 68000 programming to the Amiga and in particular how your own programs can interact safely with the Amiga's system software

■ **In this installment we'll carry on from** where we left off with explaining the general principles of 68000 Assembly Language.

Data Movement Instruction

MOVE — this instruction moves data from one place to another. Its syntax is given above and so will not be repeated here.

CCR Effects: C Always cleared
V Always cleared
Z Set if data is zero, else cleared
N Set if data's high bit is set, else cleared
X Not affected

Note: if the An addressing mode is used then the BYTe data size is not allowed. The move instruction can also shift data to and from the status register. The syntax is,

move (Dn:(An):(An)+:
-(An):x(An):x(An),xr.s):x),(SR:CCR)
move SR,(Dn:(An):(An)+:
-(An):x(AN):x(An,xr.s):x)

In the first case the CCR is loaded with new data and in the second case all CCR bits are uneffected.

MOVEA — this is the same as MOVE except the destination is an address register.

SYNTAX:
movea(.w:.l) (Dn:An;(An):(An)+:
-(An):x(Anmxr.s):x: x),An
CCR Effects: none
Notes: Although this instruction is required to move data into an address register most assemblers will accept the standard move instruction and generate the correct code for the movea if required. In fact, the Seka assembler will not accept the movea instruction at all so we will not be using it in this series.

MOVEQ — is a quick and memory efficient way to move a constant between 0 and 7 into a data register.
The syntax is: moveq x,Dn
CCR Effects: Same as for the MOVE instruction.

LEA — The Load Effective Address instruction loads an address into one of the address registers.
Syntax: lea (An):x(An):x(An,xr,s):x),(An)
CCR Effects: none
Notes: the value loaded into the address register is the address itself and not the contents of that address. If A0 contains 1000, then lea 10(a0),a! puts the value 1010 into Al regardl?ess of what is stored at any memory location. Data is always assumed to be LONGWORD.

EXG — Enchanges the contents of any two data or address registers.
Syntax: exg(An:Dn), (An:Dn)
CCR Effects: none
Notes: Data type is always LONGWORD so the entire register contents are exchanged.

CLR — Clears a location, that is, stores zero into it.
Syntax: clr(.b:.w:.l:) (Dn:(An):(An)+:
-(An):x(An):x(An,xr.s):x
CCR Effects: X Not affected
N Always cleared
Z Always set
C Always cleared
V Always cleared

Integer Arithmetic

ADD — adds two two's complement numbers and stores the result in the location specified by the second operand.
Syntax:
add(.b:.w:.l) (Dn:An:(An):(An)+:
-(An):x(An),xr.s):x x),Dn
add(.b:.w:.l) Dn,(Dn:(An):(An)+:
-(An):x(An):x(An,xr.s):x)
CCR Effects: X Set by carry out of high bit, else cleared.
N Set if high bit of result is set, else cleared.
Z Set if result of addition was zero, else cleared.
C Set as for X.
V Set if overflow occurs, else cleared.

Notes: If An is used as the source then the BYTE data size is not allowed.

ADDA — Adds and stores the result into an address register.
Syntax: add(.w:.l) (Dn:An:(An):(An)+:
-(An):x(An):x(An,xr.s):x: x), An
CCR Effects: none
Notes: even if the data size used is WORD the result will always be 32 bits.

ADDI — this addes immediate mode data (a constant) into some location.
Syntax: addi(.b:.w:.l) x,(Dn:(An):(An)+:
-(An):x(An):x(An,xr.s):x)
CCR Effects: same as for ADD instruction.

ADDQ — A quick way to add a three bit number (0..7) into a location.
Syntax: addq(.b:.w:.l) x,(Dn:An:(An):(An)+:
-(An):x(An):x(An,xr.s):x)
CCR Effects: as for ADD unless destination is An in which case there is no effect.

SUB — the SUB instruction subtracts the first operand from the second and stores the result where it found the second operand.
Syntax: same as for ADD instruction.
CCR Effects: similar to ADD except X and C are set by a borrow rather than a carry.

SUBA — subtract from an address register. Exactly analogous to ADDA A instruction.

SUBI — subtract an immediate operand from a location. Analogous to ADDI except C and X bits of the CCR are set by a borrow rather than a carry.

SUBQ — subtract a 3 bit number from a location. Analogous to ADDQ but C and X effected by a borrow rather than a carry.
Note: remember that with all subtraction operations the first operand is subtracted from the second and the result stored in the second.

NEG — takes the two's complement of the specified data. In two's complement arithmetic this is the equivalent of multiplying by −1.
Syntax: neg(.b:.w:.l) (Dn):(An):(An)+:
-(An):x(An):x(An,xr.s):x)
CCR Effects: X Cleared by a zero result, else set.
N Set by a negative result, else cleared.
Z Set by a zero result, else cleared.
V Set if overflow occurs, else cleared.
C As for X.

Data Testing Instructions

CMP — compares two pieces of data and sets the CCR as if the first operand were subtracted from the second. This subtraction is not, however, actually performed and so the data is preserved.
Syntax: cmp(.b:.w:.l) Dn:An:(An):(An)+:
-(An);X(An):x(An,xr.s):x: x),Dn
CCR X Uneffected.edit Effects:
N Set by a negative result, else cleared.
Z Set by a zero result, else cleared.
V Set by an overflow, else cleared.
C Set if a borrow occurs, else cleared.

Example: These branches are usually used in association with a comparison instruction such as those discussed above. A typical example may look like this:

```
cmp.b   d0,dl
bgt.s   Greater
clr.l   d0
```

```
        rts
Greater: move.l    100,d0
        rts
```

When the subroutine above is executed, if the value in the lower 8 bits of D1 is greater than the contents of the corresponding bits of D0 then the branch takes place and the routine returns with 100 in D0, otherwise zero is returned in D0. This example can also serve to illustrate the difference between BGT and BHI. If, when this routine is called, DO contained 100 and D1, 200 then the branch would not take place. This is because 100 is the two's complement representation of +100 but 200 is two's complement for −56 which is clearly less than 100. However, if the BGT instruction were replaced by a BHI then the branch would occur since this instruction works on simple binary rather than two's complement. In this case 200 is higher than 100.

CCR Effects: These instructions only test the CCR bits, they do not change them.

Notes: take notice in the example above that the branch tests if D1 is greater than D0 and not the other way around. It is also worthy of note that some assemblers may specify a long branch displacement by appending .w (for word) to the branch instruction rather than .l.

What's Next?

Having gained this background and learned a reasonable number of 68000 instructions the emphasis in later articles can now be placed much more heavily upon Amiga specific programming and examples. Next time we'll learn how all of this applies to the Amiga and look at a sample program using some of the operating systems advanced features such as windows and gadgets.

The Amiga System Software

Most of the system software which controls the machine is loaded into special RAM from the Kickstart disk during a cold boot (or is present in ROM in the case of the Amiga 500 and 2000). Almost anything useful which you wish to do with your machine needs to be achieved using the routines within the system software in order to be compatible with the Amiga's multi-tasking environment. It is of course, possible to access the machine's many hardware features directly but unless you take total control of the machine (and thus disable multi-tasking, intution and many other features of the sytem software) you could quite easily bring the system crashing down around your ears.

Since taking total control of the machine is far too complex a topic to cover in this series we will concentrate all of our examples upon peaceful co-existence with the system software. To do this we must first absorb a few more definitions of vital concepts. Namely: libraries, messages and structures.

Libraries

To make life much easier, Commodore have made many of the system routines directly available to application programs. This presents an easy way to do a wide variety of things such as opening files, screens and windows, performing I/O operations, and drawings and moving graphics. Not only do these routines allow you to perform complex tricks without needing to write masses of your own code (thus also saving memory) but they also make it easier to operate in harmony with the rest of the Amiga environment.

There are several hundred such routines available to the programmer and they are grouped together into libraries according to their function. Functions concerned, for example, with constructing, drawing into and animating the display are grouped together in the Graphics Library while those routines involved with file handling and management are found in the DOS Library. The often used libraries, required by the system software for its own operation, are kept in memory (Kickstart RAM/ROM) while, to save space, less frequently required libraries, such as Floating Point Maths, are located in the l directory of the system disk and only loaded into RAM as required.

We will not go into any detail about the structure of a library as this information is really only of interest to the advanced user. What is important to us now is how do we use the routines contained within the libraries?

To access any library routine we need two pieces of information: the location in memory of the "library node", and the "offset vector" for the particular routine. The library node is a particular byte within the library below which are a series of LONGWORDS giving the entry point addresses to each of the library's routines. The offset vector for a routine is a negative number which states how many bytes below the library node we must look to find the entry point address of the routine. Therefore to call this routine we simply store the library node address into an address register (by convention always a6) and then do a jump to subroutine using indirect addressing with displacement. As an example, if we want to call the CloseWorkBench routine in the Intuition Library then we use the following code (assuming the library node address is already in a6):

```
jsr LVOCloseWorkBench(a6)
```

Note: the Commodore convention writes vector offsets in the form __LVOCloseWorkBench but since the Seka assembler demands that the first character of a label be alphabetic, the underline has been dropped.

The obvious question which arises from all of this is — where do the vector offset and the library node address values come from? Well, as far as the vector offsets are concerned, that depends upon which assembler you are using. In some, such as the Commodore developer's assembler, you simply declare the offset as an external label which is then resolved via the Alink command which your knowing what the value really is. However, assemblers such as the Seka do not have this facility and so the programmer must specifically define the label within the program. This can be done with statements of the form:

```
LVOCloseWorkBench = −78

or

LVOCloseWorkBench: EQU −78
```

As we introduce new library routines in this series we will naturally also give the value of the offset.

Before describing how to find the library node it is necessary to digress and discuss another concept; passing data to the routines. If a routine needs data to execute, or if it needs to pass data back to the calling program, then this data is passed via the registers. If a particular piece of data will fit into 32 bits then it is usually passed or returned via one of the registers. However, if the data is larger, or there are more pieces of data than there are available registers, an alternative method is used. Rather than loading the data directly into a register it is loaded into RAM and the address in RAM at which the data is located is loaded into a register. Thus the register contains a pointer to the data. This is closely related to the idea of data structures which we will discuss shortly.

Having made that point we can now get back to the question of locating a library node. The address of a library's node is made available to your program when the library is opened. Whenever the system is booted, one library (the Exec Library is automatically opened and the address of its node is stored in the LONGWORD starting at address 4. By convention this location is known as AbsExecBase. To find the nodes of other libraries you simply open the library in question with the Exec Library function, OpenLibrary (offsets= −552). This takes as its input a pointer to the library name in a1 and the library version number in d0. The library name is a lower case ASCII string consisting of the name of the library followed by the string ".library" and terminated with a zero byte. When the OpenLibrary function returns, register d0 will contain the address of the library node.

The following example thus shows the complete process of opening a library and using one of its functions.

It is not intended that this example should be entered into your assembler an run, as it is not functionally of any interest. However, it will nevertheless be instructive to look at it in detail and hopefully clarify some aspects of Assembly Language syntax. For this reason the lines have been numbered but these numbers should not be entered into the source file if the program were to be assembled.

Line 1 — defines the location of the pointer to the Exec library node.

Line 2 — defines the library version number. The library version number 33 corresponds to version 1.2 of the operating system. If you are using kickstart 1.1 then the library version would be 31. When you attempt to open a library the system checks the number you supply against the version it finds in the operating system. If it finds an earlier version than you requested then it will not attempt to open the library since your software may attempt to use routines not supported by the earlier version. Alternatively, you can supply a library version number of zero in which case the system will attempt to open the library no matter which version if finds.

```
 1:          AbsExecBase          = 4
 2:          LIBRARY_VERSION = 33
 3:          LVOOpenLibrary       = -552
 4:          LVOCloseWorkBench = -78
 5:
 6: CODE
 7:          movea.l     AbsExecBase, a6          ;Exec Library Node
 8:          lea         IntuitionName, a1        ;Pointer to LibraryName
 9:          move.l      #LIBRARY_VERSION,d0
10:          jsr         LVOOpenLibrary(a6)
11:          move.l      d0, IntuitionBase        ;Store the node later
12:*
13:*Then use an Intuition Routine
14:*
15:          movea.l     IntuitionBase, a6        ;Load Library Node
16:          jsr         LVOCloseWorkBench (a6)
17:          rts
18:
19: IntuitionName:       dc.b 'intuition.library',0
20:
21:  DATA
22: IntuitionBase:       blk.l 1
```

Lines 3 & 4 — library vector offset definitions.

Line 5 — blank lines are ignored.

Line 6 — this instructs the Seka assembler to generate relocatable code which is probably the only type of code you will ever want to use.

Line 7 — puts the Exec library node into register A6. This line also shows an example of a program comment. When a semi-colon (;) occurs in a line then the rest of the line is ignored by the assembler and so serves as a means of inserting comments into the program source file.

Line 8 — here the address at which the library name is stored (Intuition) is loaded into A1. Note that using the LEA instruction means that the address itself is loaded and not its contents.

Line 9 — the required library version is put into D0. Since we want to load the value 33, and not the data stored at address 33, immediate mode addressing is used. This is similar to the LEA instruction but that cannot be used here since it can only load values into address registers.

Line 10 — calls the OpenLibrary function and returns with the node address in d0. If for some reason the open fails then the returned value will be zero. Normally it is good practice to test this value and take appropriate action if the library failed to open (e.g. issue an error message, end the program7.

Line 11 — once a programme has opened a library it is not necessary for the same program to do so again (unless it closes the library again at some stage). In general you will want to call routines within the library many tmes so it is good practice to store the node address (or library base as it is often called) into memory for safe-keeping. Conventionally the name of a memory address where a library base is stored is formed by adding the word Base to the end of the library's name (hence IntutionBase).

Line 12, 13 & 14 — give other examples of entering comments but in this case without a semi-colon. If the character in the first column of any line is an asterisk (*) then the whole line is treated as a comment and ignored by the assembler.

Line 15 — moves the intuition library base into A6.

Line 16 — the CloseWorkBench routine is called. This routine requires no data.

Line 17 — the program (or subroutine) ends.

The next few lines give examples of how to set aside storage space for the data which the program needs.

Line 19 — this is an example of initialised data which the assembler will include in the machine code file it generates. The first part is a label which we discussed briefly in part one.

When the assembler reaches this instruction it will assign the value of the next memory address (in this case the byte after the RTS instruction) to the label IntuitionName. The instruction dc.b then tells the assembler to define data constants of size BYTE (dc.w and dc.l deal with WORD and LONGWORD data) and to fill memory addresses, starting at IntuitionName, with the data BYTES which follow on the line. Thus the ASCII string is inserted into the code file and followed by a zero byte. The 0 is interpreted as a zero byte rather than an ASCII zero because it is not surrounded by quotes. Individual data items are separated by commas and the assembler will generate just enough storage to area to hold all of the data.

Line 21 — the DATA statement tells the assembler to stop generating code as what follows is unitialised data. Some assemblers use the BSS statement to achieve this.

Line 22 — the label IntuitionBase is assigned to point to an address which reserves space for a block of LONGWORD data elements (blk.l). The number following the instruction indicates how many data elements in the block, in this case just the one. This differs from the dc.l instruction because blk.l does not cause the data to be bound into the code file. The storage area will be allocated, by the system, when the code file is executed. In this example the dc.l instruction could just as well have been used (and line 21 omitted) but if we had an example such as:

Label: blk.w 5000

where we are reserving 5000 words of storage, then the dc.w instruction would not be as good. First, it requires that the initial value of each word be assigned individually, which is tedious, and secondly it would bind this 10K of storage into the code file which wastes disk space and increases the time it takes to load the file.

From the above example you should now have at least a superficial understanding of what Amiga libraries are all about.

Messages

An important key to the peaceful co-existenc of programs in a multitasking environment is communication. There needs to be an efficient way for programs and the system to send data and messages to one another so that there is no conflict over resources, such as two programs attempting to use the same audio channel. Communication also leads to a far more efficient utilisation of the available processor time by not requiring a program to bide time performing useless instructions in a loop while waiting for something to happen. An example of this is input from the keyboard. On most earlier micros an Assembly Language programmer would use a technique known as polling in which his or her program would read the keyboard to see if a key had been pressed. If not, the program simply looped and read the keyboard again and again, millions and millions of times, waiting for the lumberingly slow

human operator in the outside world to get around to pressing a key.

In the Amiga the situation is different. When your program is ready for input it merely sends a message to the system telling it what kind of input it requires (a key press, or data from another program) and then it goes to sleep. The system will not attempt to execute anymore of the programs instructions until the I/O request is satisified, upon which it will send a message back to the programm, waking it up, and telling it where to find the data it was waiting for. In this way only the system software needs to worry directly about accessing I/O hardware and so the process is considerably more efficient.

This type of message communication is extremely important to the Amiga as we will continually see in the sample programs that will be presented in this series.

Data Structures

We saw in the discussion of libraries about that data are passed beteen user programs and the system routines by means of the processor's registers, and that if there are too many data then a register will be loaded with a pointer to those data (e.g. the library name). In fact, the complexity of the system software and its many functions is such that most of the system's library routines must pass blocks of information to and from the calling program. Naturally, for this to work it is necessary for all programs which use such data blocks to have agreed upon just what information is present and exactly how it is arranged. Such a block of data is called a data structure, or simply a structure. The Amiga system software defines many such structures to contain information related to messages, windows, screens and, indeed, just about anything which exists within the Amiga environment. Thus, if you wish to write programs which do anything useful with your machine it is necessary to be familiar with the appropriate structures.

As this course progresses we will be introducing more and more new structures each month as we look at new topics. First let's look in detail at the important elements of a data structure as I will be presenting them in this and later articles.

Data Types — we have already looked at the 68000's three data types BYTE, WORD and LONGWORD in part one of this course but when describing structures it is necessary to introduce a few other data types. (Also note for the rest of this series I will often refer to the type LONGWORD simply as LONG for brevity.)

Each of these three data types above assumes that the data are two's complement numbers. A BYTE, for example, can have any value between −128 and +127. However, sometimes the data involved are not signed integers; they could be positive integer betweens 0 and 255, ASCII characters or perhaps merely collections of bits each of which has a different meaning to the system (in such a case the individual bits are referred to as flags). We will be referring to this non-two's complement from of data as unsigned data and will use the symbols UBYTE, UWORD and ULONG depending upon whether they are 1, 2 or 4 bytes long.

The final data type we will define here is one which we have already discussed — the pointer. A pointer is a LONGWORD which gives the memory address of other data or of a subroutine and here we will refer to such a data type as APTR (Address PoinTeR).

These are the most common data types and with them we can describe almost all of the standard data structures which the Amiga uses.

Below is an example of a typical Amiga structure, the IntuiTest structure, which is used to define a text string for printing using the Intuition library.

IntuiText Structure	
UBYTE it_FrontPen, it_BackPen	{0,1}
UBYTE it_DrawMode, it_Pad	{2,3}
WORD it_LeftEdge, it_TopEdge	{4,6}
APTR it_ITextFont, it_TextAttr, it_NextText	{8,12,16}

This is the form in which I will be presenting all of the structures we'll be using during this series so let's take a few moments to define just what it means.

Each element in the structure has a name and a data type. In the case of the IntuiText structure the first element is called it_FrontPen and is an UBYTE, the second is also an UBYTE and is called it_BackPen and so on. Note that all data element names within the structure are preceded by a two character unique abbreviation (it) which identifies the structure to which they belong. The underline character is merely included to improve reading clarity.

If we wanted to reference any of these elements in a programme then we could simply give each element a label equal to the absolute address at which it resides, and use that in our instructions but, using the indirect addressing with displacement mode offers a more elegant alternative. In your program you simply place a unique label at the beginning of each structure. If you then load this label into an address register with the LEA instruction it will act as a pointer to the structure. The next step is to define all of the element names in the structure, not as absolute pointers to their corresponding data elements, but as offsets into the structures. These offsets are given in the curly brackets {} in the structure descriptions above. Thus we would write:

```
it_FrontPen=0
it_BackPen=1
it_DrawMode=2
```

and so on. In this way, if the pointer to the structure were loaded into A2, for example, the DrawMode could be loaded into D1 with the instruction:

```
move.b  it_DrawMode(a2),d1
```

This has the advantage that if you have several different IntuiText structures within your program you need only define one label to point to each structure and use the same set of offsets — rather than a whole set of unique absolute labels for each structure.

All that now remains is to describe just what each of these structure elements is for and how to use them. This will be done for each new structure as it is presented. What follows is a description of the IntuiText structure.

FrontPen, BackPen — these two bytes define which of the available colours will be used for the foreground and background of the text. On an eight colour screen, for example, each of these bytes could take any value from 0 to 7.

DrawMode — there are three available text modes, one of which should be loaded into this byte. They are:

JAM1 (=0): The text is drawn with FrontPen and background is not effected.
JAM2 (=1): Text is written in FrontPen and Background filled with BackPen.
XOR (=2): Text is written by producing the complement of what is already there (an exclusive OR).
Note that the number in parenthesis after each of these draw modes is the value which must actually be stored to get the particular mode. The conventional way to use these would be:

```
JAM2 = 1
move.b  JAM2,it_DrawMode(a2)
```

or something similar.

LeftEdge, TopEdge — these give the position to print the text expressed as an offset, in pixels, from the left and top edge of the window, screen or gadget into which the text is being drawn.

TextAttr — this element is the address of another structure which defines the font you want to use. To use the default system font set this to null (zero).

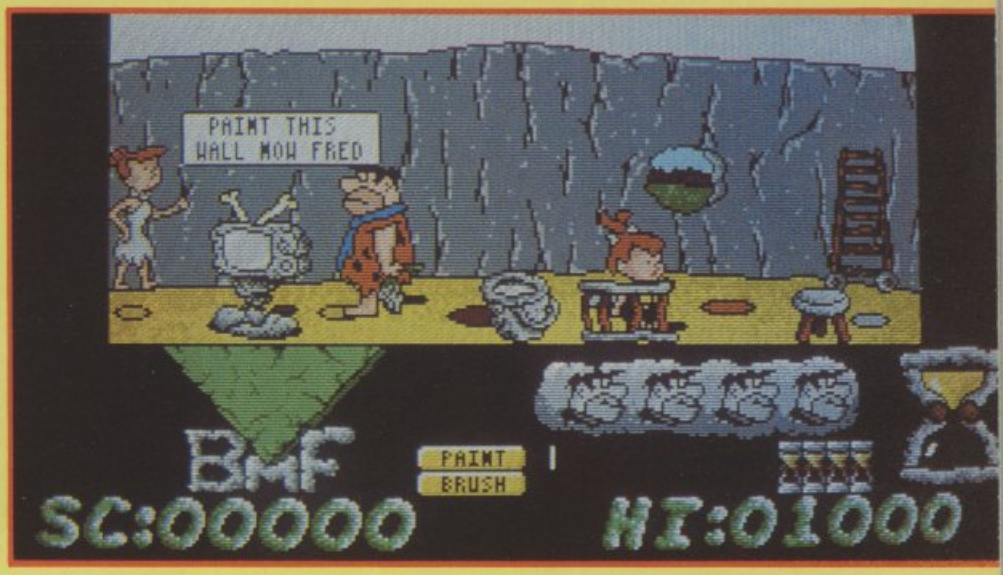
IText — a pointer to the actual null-terminated ASCII string which is to be printed.

NextText — when the system has finished printing your text it will look here. If it finds a null it will return, otherwise it assumes it has found a pointer to another IntuiText structure and so will proceeds to print that text also. In this way an effectively unlimited number of strings can be printed together.

So how do we actually get the text onto the screen? Well, there are a lot of ways to do this and I'm afraid I'm going to have to skirt around the issue and say that you'll learn that from the example as the course goes on.

Enough talk, — next issue we'll do something concrete and concentrate on an example. ***YA***

Yaba Daba Doo



■ **Thankfully the great Fred Flintstone** has a game worthy of him here. The animated cartoon figures and the Flinstones theme music are excellent, the game's enjoyable and pitched at the right level of difficulty. This means that you can progress through the different games but you have to put some thought into them.

The first game can be especially frustrating. Fred wants to go bowling, Wilma wants the walls painted and Pebbles wants to scribble her name and pictures of flowers all over Fred's new paint. So Fred has to juggle her, the squirrel who is lending his tail as a brush and a ladder so that he can get the painting finished. The sands of time are against you and you'll need to combine dexterity with exactly the right tactics to succeed. Wilma is a hard lady if you don't and they'll be no bowling tonight!

The second element of the game finds Fred and Barney trying to find a suitable replacement wheel for Fred's incredible stoneage car. When you do get to the bowling alley, Fred and Barney's favourite leisure pursuit, it's indoor games stoneage style. The game is a little slow in its progress as you play Fred against a computer controlled Barney. The fourth game is another puzzler as Fred tries to rescue Pebbles from a hostile building site.



Fred Flintstone is back. Not only is he successfully advertising breakfast cereal, he is back on the television and now on an Amiga monitor near you, courtesy of Grand Slam Entertainments. The game contains much of the classic cartoon humour but there's plenty to play for and it can be a * frustrating Flintstones at times***

You can turn the music on and off and pause the game at any time. Instructions are given for keyboard control and, although not mentioned, some actions can be achieved with joystick or mouse if you prefer.

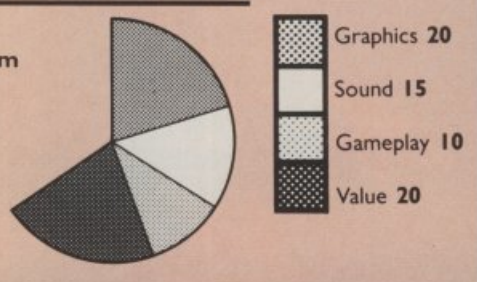
Fred, Barney, Wilma, Pebbles, Betty and the animals are all here. Speech bubbles are used for speech rather than sound samples from the original sound tracks; something which is not beyond the programmers because the technique is used once at the start of the game for Fred's famous yell.

The Flintstones is a must for the lovers of the television programme and I reckon that the four different types of game offer value for any games player. Try and get some "hands-on" and I think you'll agree. *YA*

FLINTSTONES

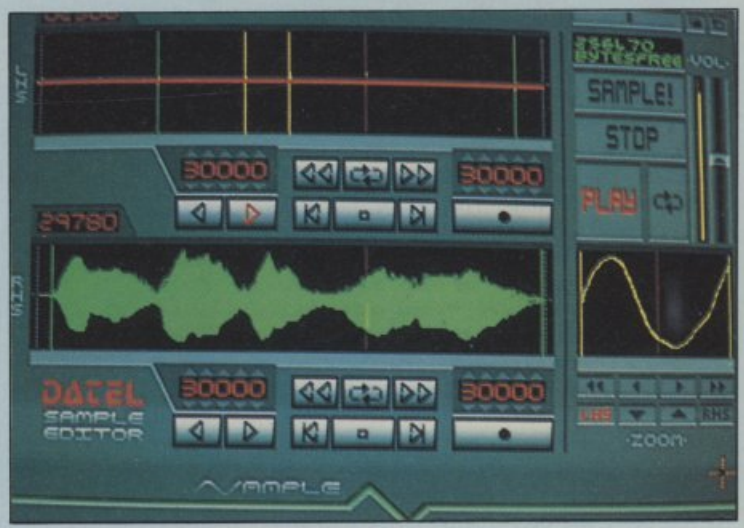
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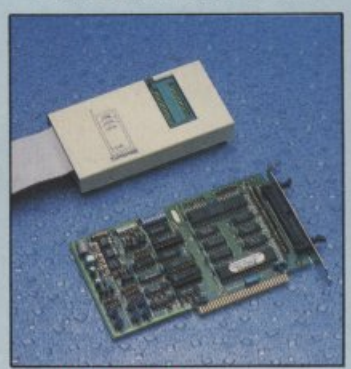
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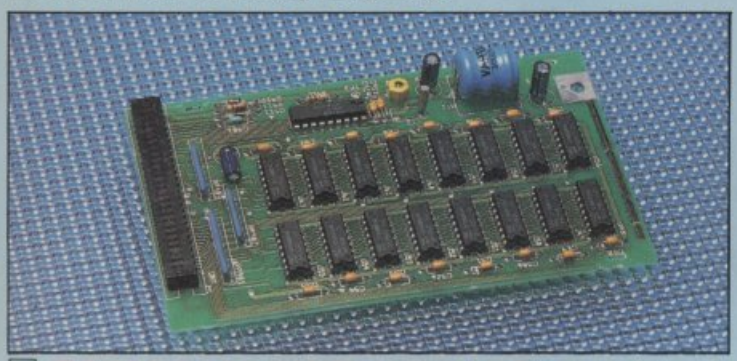
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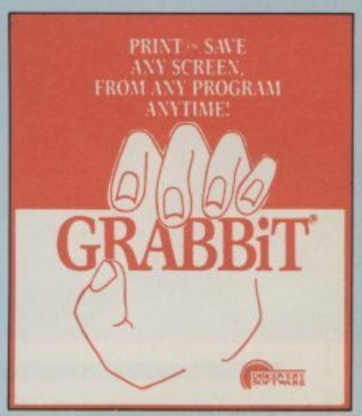
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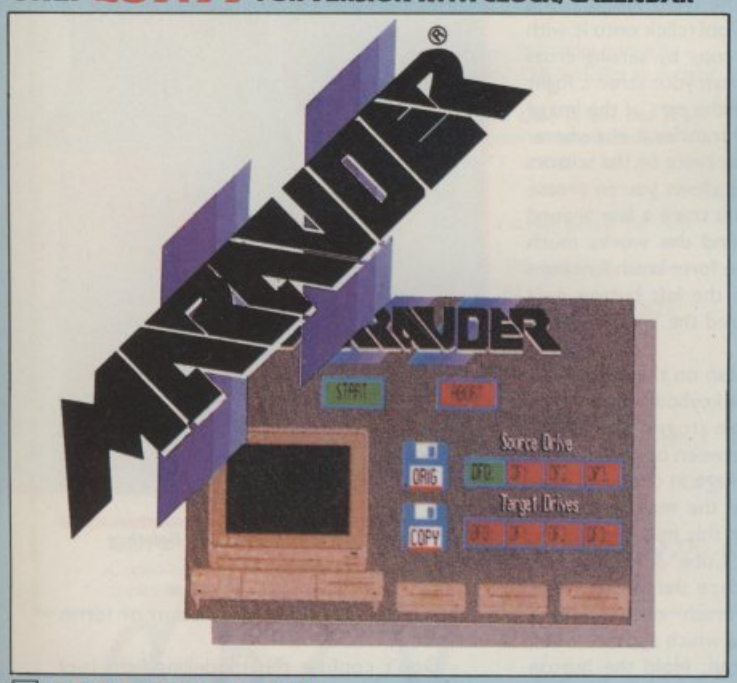
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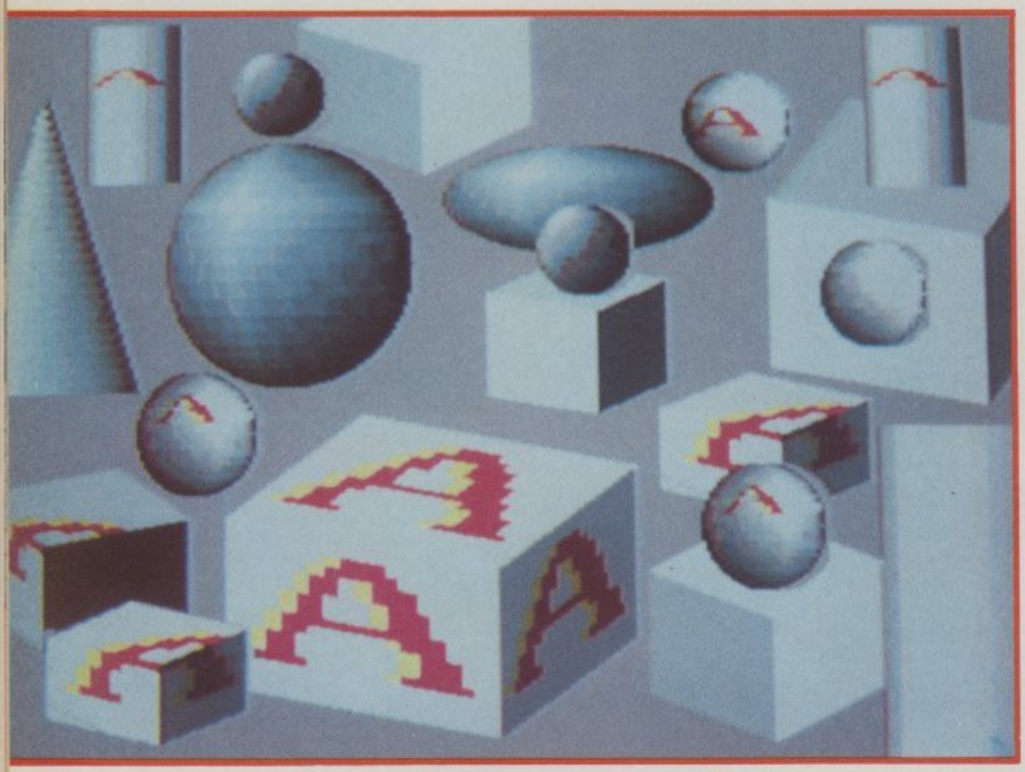
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Photon Paint



Impressive results can be achieved using wrapping

The first of the third generation by Lewis Tilley

No sooner had we developed a painting style for the Amiga which used the combined facilities of Deluxe Paint II and Digi Paint when along comes Photon Paint to do *almost* the same things all by itself.

Almost is underlined for although Photon Paint is without doubt the most complete painting program available for the Amiga at the present time, and is my choice if I could buy only one program , there are some functions that one or the other program still do better.

On the other hand...WOW ,ZOWIE and HOT ZIGGITY DANG! The new feature will make your fingers itch to start manipulating your images.

Surface mapping is the feature which impresses anyone who sees Photon Paint for the first time. It is found under the Brush menu. Pull it down from the Main Menu Bar with your right button held down. You will be offered all the wonderful brush manipulations such as Flip, Resize, Rotate and a few new ones such as Trans, Twist, Bend and Tilt. We will return to some of these later. For now concentrate on Wrap on.

But to wrap a brush you must first catch a brush. Do this with the tools found in the tool box. The Scissors Tool (click onto it with the left button) lifts a *copy* by setting cross hairs in rectangle form from your screen. *Right* button click will *remove* the part of the image chosen so that you may transfer it elsewhere.

The Lasso Tool (click twice on the scissors symbol to change it up) allows you to create a free form brush as you trace a line around the area you want. I find this works much smoother than other free form brush functions I have tried. Let up on the left button only when you have completed the area you have encircled.

We now have a *brush* on the end of our pointer. Type "J" on the keyboard to jump to the fresh screen available (toggle key "J" to switch back and forth between original and this screen). To wrap this image in different ways bring down Brush from the main menu and select Wrap on. Under this heading are the action selections. Select Cube*3 for your first plunge. It will clearly place the entire image you picked up on your "brush" onto the three sides of the hollow cube which appears when you press the left button. Hold the button down and rotate, tilt and tickle the cube around in its perspectives until you find one you like. Release the button and be prepared to wait a while. What is nice about Cube*3 is that image goes into perspective too and retains legibility in each side of the cube.

The Cube3/4 really wraps the brush around the cube, breaking it at the edges!

Ball makes a sphere of your brush, Cone a cone and so on with the other wrapping features.

When you are tired of the "wrapping" come back out to the brush menu and select Tilt. This mode is Photon Paint's answer to a perspective tool. It can be easier to use than DPaint's and employ's nautical terms like Ditch, Roll and Yaw to describe the positions in space of the 2D plane on which you place your "brush" into three dimensions.

Photon Paint has a remarkable lighting system for casting the shading onto these 3D surfaces you are mapping with your brush. It is labelled Lum (for luminosity) and found in the Brush Menu. The window which appears when you scan down with the right button depressed offers a multitude of adjustment to the light source which will shine on the 3D surfaces and give them the illusion of forms in space.

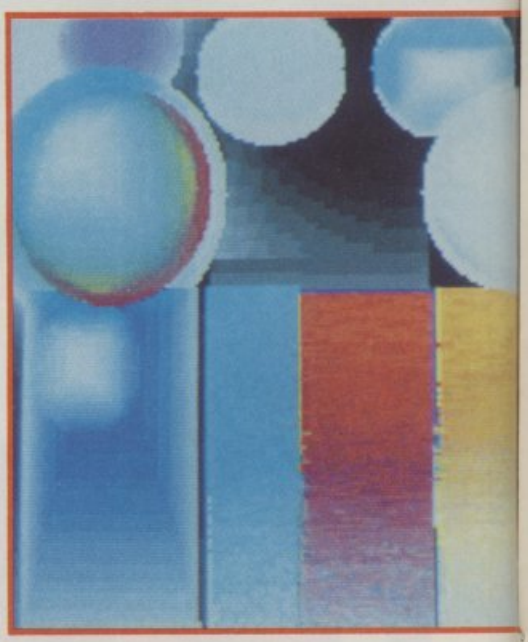
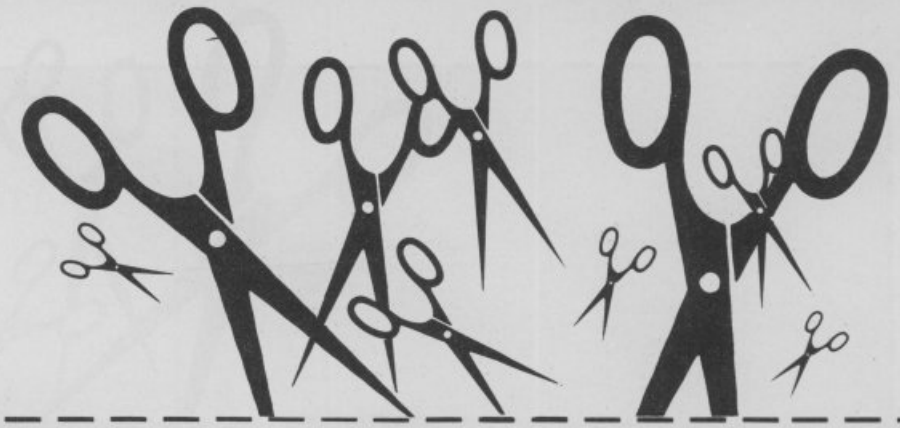


Photo paint has a remarkable lighting system

Don't confuse this modelling light tool with the other shading device which is found under the Mode Menu as Blend, then subhead Set. The Blend mode will interact with Lum so watch the code word of Blend which appears on the Menu Bar when you are in that mode.

The Set devices which determine how a blend Fill will appear on the screen, as well as the other tools selected from the tool boxes, is much more elaborate than Blends which have gone before.



CLI — FAX

The AmigaDOS environment has a built-in help feature. If you remember the command but forget the syntax for the arguments you can ask AmigaDOS to show you. The syntax for this kind of help is : ⟨Command⟩ ⟨space⟩ ? ⟨return⟩ AmigaDOS will respond by showing you the argument template. This template has three qualifiers which are preceded by slashes as follows:
/A - this argument must be present and may NOT be omitted
/K - the argument must use this keyword
/S - this argument is used as a switch

AmigaDOS Commands File Utilities

Comment character
Format: [⟨command⟩] [⟨comment)]
Template: "command" "comment"
Examples: copy DF0:c/list to ram: ;copy list program to RAM drive. List DF1: ;display directory of DF1: drive. Anything after a ';' on a CLI line is ignored.

⟨ ⟩
Direct standard input and output, respectively
Format: ⟨command⟩ [⟨] [⟩] [⟨arg⟩]
Template: "command" ⟩ "TO" ⟨ "FROM" "args"
Examples: DATE ⟩ date-file sends the output of the DATE command to file 'date-file'
SOMEPROG ⟨ input-file directs the data in file 'input-file' to the program named SOMEPROG. Note that the usual standard input is the keyboard, and the standard output is the screen, unless you re-direct input and output with these commands.

COPY

Copies one file to another or copies all the files from one directory to another.
Format: COPY [[FROM] ⟨name⟩] [TO ⟨name⟩] [ALL] [QUIET]
Template: COPY "FROM,TO/A,ALL/S,QUIET/S"
Examples: COPY DF0: TO DF1: ALL QUIET copies all files in all directories from DF0: to DF1:. New sub-directories are created on DF1: COPY print-file TO PRT: copies a file to the printer device

DELETE

Deletes up to 10 files or directories.
Format: DELETE ⟨name⟩ [⟨name⟩] [ALL] [QUIET]
Template: DELETE ".....,ALL/S,Q=QUIET/S
Examples: DELETE out-dated-file DELETE temps/file1 temps/file1 DELETE df1: ALL QUIET deletes all files in all directories on DF1:, without telling which files were deleted

DIR

Shows filenames in a directory.
Format: DIR [⟨name⟩] [OPT A|A|]
Template: DIR "DIR,OPT/K"
Examples: DIR lists files in current directory
DIR DF1: OPT A lists files in all sub-directories below current directory

ED

Enters a screen editor for text files.
Format: ED [FROM] ⟨name⟩ [SIZE ⟨n⟩]
Template: ED "FROM/A,SIZE"
Examples: ED temp/ed-file
ED large-file SIZE 55000

EDIT

Enters a line editor.
Format: EDIT [FROM] ⟨name⟩ [[TO] ⟨name⟩] [WITH ⟨name⟩] [VER ⟨name⟩] [OPT ⟨option⟩]
Template: EDIT "FROM/A,TO,WITH/K,VER/K,OPT/K"
Examples: EDIT ed-file WITH

Format: BREAK ⟨task⟩ [ALL] [C] [D] [E] [F]
Template: BREAK "TASK/A,ALL/S,C/S,D/S,E/S,F/S"
Examples BREAK 6
BREAK 4 D F

CD

Make a given directory and/or drive the current directory
Format: CD [⟨dir⟩]
Template: CD "DIR"
Examples: CD RAM: makes RAM: the current directory
CD DF1:temp/1

ENDCLI

Ends an interactive CLI process.
Format: ENDCLI
Template: ENDCLI
Examples: ENDCLI closes the CLI window

NEWCLI

Start a new CLI window
Format: NEWCLI [⟨window⟩]
Template: NEWCLI "WINDOW"
Examples: NEWCLI
NEWCLI "CON:20/15/300/100/a new CLI" opens a new window titled "a new CLI" at position 20,15, of size 300 x 100 pixels

PROMPT

Change the current CLI prompt
Format: PROMPT [⟨prompt⟩]
Template: PROMPT "NEWPROMPT"
Examples: PROMPT resets the prompt to "⟩"
PROMPT "%n⟩ " sets the prompt to "1⟩ ", where 1 is the current number

RUN

Executes commands as a background process.
Format: RUN ⟨command⟩
Template: RUN command + command
Examples: RUN TYPE:s/startup-sequence
RUN COPY:c/list TO RAM: + CD RAM: + LIST runs each command in sequence

STACK

Displays or sets the stack size for commands.
Format: STACK [⟨n⟩]
Template: STACK "SIZE"
Examples: STACK
STACK 9000

STATUS

Displays information about the CLI processes currently in existence.
Format: STATUS [⟨process⟩] [FULL] [TCB] [SEGS] [CLI ALL]
Template: STATUS "PROCESS,FULL/S,TCB/S,SEGS/S, CLI=ALL/S"
Examples: STATUS
STATUS 1 FULL

WHY

Explains why a previous command failed.
Format: WHY
Template: WHY
Examples: WHY

Command Sequence Control

ECHO

Displays the message specified
Format: ECHO ⟨ string ⟩
Template: ECHO ""
Examples: ECHO "This string was echoed to the screen"

EXECUTE

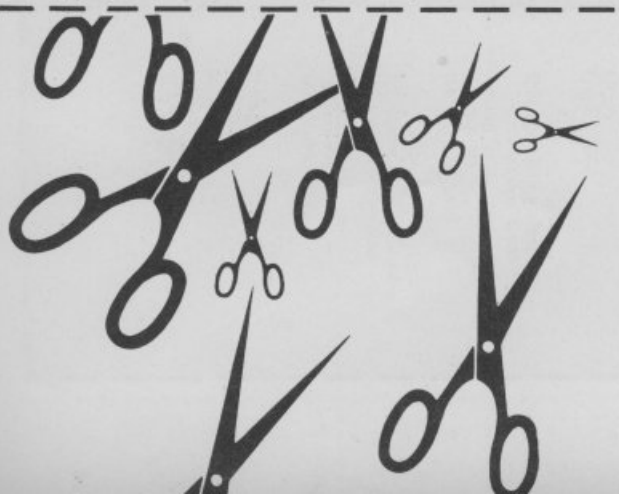
Executes a file of commands.
Format: EXECUTE ⟨commandfile⟩ [arguments]
Template: EXECUTE "command-file","args"
Examples:
EXECUTE:s/startup-sequence
EXECUTE my-command-file

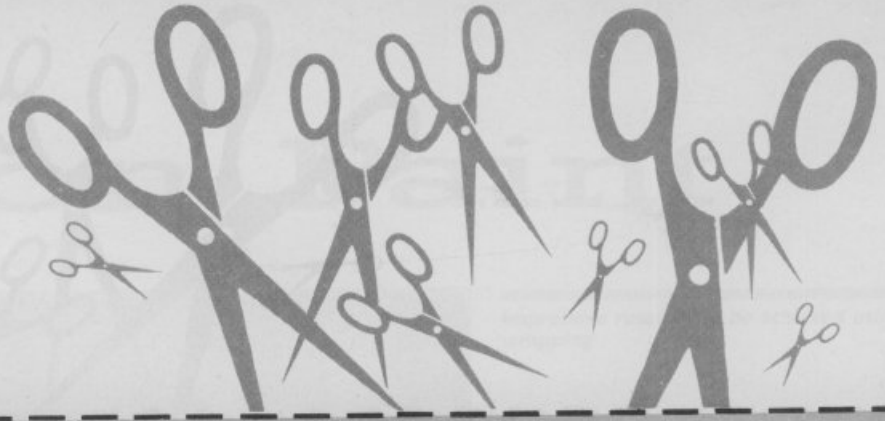
FAILAT

Ends a command sequence if a program returns an error code greater than or equal to this number.
Format: FAILAT ⟨n⟩
Template: FAILAT "number"
Examples: FAILAT if the program returns any error code
FAILAT 14

IF

Tests specified actions within a command sequence.
Format: IF [NOT] [WARN] [ERROR] [FAIL] [⟨string⟩ EQ ⟨string⟩] [EXISTS ⟨name⟩]
Template: IF





"NOT/S,WARN/S,ERROR/S,FAIL/S,,EQ/K,EXISTS/K"
Examples: IF EXISTS:c/cd
IF ERROR

LAB

Defines a label ⟨ see SKIP ⟩.
Format: LAB ⟨string⟩
Template: LAB ⟨text⟩
Examples: LAB error-location
LAB ok

QUIT

Exits from command sequence with a given error code.
Format: QUIT [⟨returncode⟩]
Template: QUIT "RC"
Examples: QUIT 14
QUIT

SKIP

Jumps forward to a LAB in a command sequence (see LAB)
Format: SKIP ⟨label⟩
Template: SKIP "LABEL"
Examples: SKIP
SKIP error-location

WAIT

Waits for, or until, a specified time.
Format: WAIT ⟨n⟩ [SECSECS] [MINMINS] [UNTIL⟨time⟩]
Template: WAIT ",SEC=SECS/S,MIN=MINS/S,UNTIL/K"
Examples: WAIT
WAIT UNTIL 12:25

System and Storage Management

ASSIGN

Assigns a logical device name to a file or directory
Format: ASSIGN [[⟨name⟩] ⟨dir⟩] [LIST]
Template: ASSIGN "NAME,DIR,LIST/S"
Examples: ASSIGN temp: DF0:source/files
ASSIGN cc: df1:/lc1 now you can say 'cc: cfile' to compile a C file
ASSIGN LIST lists currently assigned device names

DATE

Displays or sets the system date and time.
Format: DATE [⟨date⟩] [⟨time⟩] [TOVER ⟨name⟩]
Template: DATE "DATE,TIME,TO=VER/K"
Examples: DATE today
DATE yesterday
DATE tomorrow
DATE friday sets the date to the next friday after the current (wrong) date DATE 01-OCT-85 12:32

DISKCOPY

Copies the contents of one entire floppy disk to another.
Format: DISKCOPY [FROM] ⟨disk⟩ TO ⟨disk⟩ [NAME ⟨name⟩]
Template: DISKCOPY "FROM/A,TO/A/K,NAME/K"
Examples: DISKCOPY FROM DF0: TO DF1:
DISKCOPY DF0: TO DF0: NAME "Copied Disk" names new disk "Copied Disk"

FAULT

Displays messages corresponding to supplied fault or error codes.
Format: FAULT [⟨n⟩]
Template: FAULT "....."
Examples: FAULT 123
FAULT 133 234 245

FORMAT

Formats and initializes a new 3 1/2 inch floppy disk.
Format: FORMAT DRIVE ⟨drivename⟩ NAME ⟨string⟩
Template: FORMAT "DRIVE/A/K,NAME/A/K"
Examples: FORMAT DRIVE DF0: NAME "New Blank Disk"

INFO

Gives information about currently mounted disks
Format: INFO
Template: INFO
Examples: INFO

INSTALL

Makes a formatted disk bootable.
Format: INSTALL [DRIVE] ⟨drive⟩
Template: INSTALL "DRIVE/A"
Examples: INSTALL DF0:

RELABEL

Changes the volume name of a disk.
Format: RELABEL [DRIVE] ⟨drive⟩ [NAME] ⟨name⟩
Template: RELABEL "DRIVE/A,NAME/A"
Examples: RELABEL DF1: "Disk over there"
edits VER nil:
EDIT orig-file TO new-file

FILENOTE

Attaches a note with a maximum of 80 characters to a specified file.
Format: FILENOTE [FILE] ⟨file⟩ COMMENT ⟨string⟩
Template: FILENOTE "FILE/A,COMMENT/K"
Examples: FILENOTE my-picture COMMENT "drawn in November"
FILENOTE src-file COMMENT "source for screen"

JOIN

Concatenates up to 15 files to form a new file.
Format: JOIN ⟨name⟩ ⟨name⟩ [⟨name⟩] AS ⟨name⟩
Template: JOIN ",,,,,,,,,,,,,,,AS/A/K"
Examples: JOIN src-file1 src-file2 AS all-src
JOIN text data results AS experiment

LIST

Examines and displays detailed information about a file or directory.
Format: LIST [DIR] ⟨dir⟩ [PPAT ⟨PAT⟩] [KEYS] [DATES] [NODATES] [TO ⟨NAMe⟩] [S ⟨STRing⟩] [SINCE ⟨date⟩] [UPTO ⟨date⟩] [QUICK]
Template: LIST "DIR,P=PAT/K,KEYS/S,DATES/S,NODATES/S,TO/K,S/K,SINCE/K,UPTO/K,QUICK/S"
Examples: LIST DF1:
LIST P ?? list info about files matching pattern ?? (that is, all files with two character names)
LIST:1 S handler list info about files in directory '1' on current disk, searching files there for string 'handler'.

MAKEDIR

Creates a directory with a specified name.
Format: MAKEDIR ⟨dir⟩
Template: MAKEDIR "/A"
Examples: MAKEDIR DF0:test
MAKEDIR RAM:temp/files

PROTECT

Sets a file's protection status.
Format: PROTECT [FILE] ⟨name⟩ [FLAGS ⟨status⟩]
Template: PROTECT "FILE,FLAGS/K"
Examples: PROTECT file1 rwd
PROTECT temp/file FLAGS r

RENAME

Renames a file or directory.
Format: RENAME [FROM] ⟨name⟩ [TO AS] ⟨name⟩
Template: RENAME "FROM/A,TO=AS/A"
Examples: RENAME OLD-NAME NEW-NAME
RENAME RAM:C/FILE1 NEW-FILE

SEARCH

Looks for a specified text string in all the files of a directory.
Format: SEARCH [FROM] ⟨name⟩⟨pattern⟩ [SEARCH] ⟨string⟩ [ALL]
Template: SEARCH "FROM,SEARCH/A,ALL/S"
Examples: SEARCH DF0: my-name
SEARCH DF1: source ALL search all files on DF1: for the string "source"

SORT

Sorts files.
Format: SORT [FROM] ⟨name⟩ [[TO] ⟨name⟩] [COLSTART ⟨n⟩]
Template: SORT "FROM/A,TO/A,COLSTART/K"
Examples: SORT file TO sorted-file
SORT list TO sort-list COLSTART 5 sorts file 'list' to 'sort-list', based on the data starting in column 5

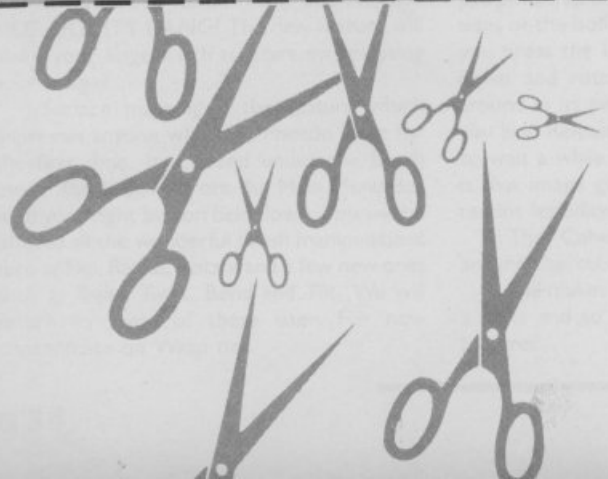
TYPE

Types a file to the screen that you can optionally specify as text or hex.
Format: TYPE [FROM] ⟨name⟩ [[TO ⟨name⟩] [OPT NH]
Template: TYPE "FROM/A,TO,OPT/K"
Examples: TYPE preferences OPT H type a file in hex
TYPE:s/startup-sequence

CLI Control

BREAK

Sets attention flags in a given process.



How do I get it?

It's alright us giving you an exotic address and ZIP code for some Los Angeles neighbourhood but how do you get the software?

- Check the ads — English Commodore dealers are importing more and more software all the time
- Try our contact addresses/telephone numbers
- Get in touch with Commodore UK who can supply you with a brochure full of goodies for your Amiga

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The Switchback
Gardner Road
Maidenhead
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2301 DC Leiden
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Finchampstead Road
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RG11 2NZ

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2115 Pico Blvd
Santa Monica
CA 90405
Tel: 213 392 9972

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4 Hart Street Lane
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Tel: 031 557 4242

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166-170 Wilderspool Causeway
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WA4 6QA
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Kent
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Tel: 0322 92518

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11-49 Station Road
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EC2A 4JS

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Adlington Park
Adlington
Macclesfield
SK10 4NP
Tel: 0625 878888

Oxxi Inc.
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Herts
AL7 1EN
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Precision Software
6 Park Terrace
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74 New Oxford Street
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WC1A 1PS
Tel: 01 240 8838

Realtime Associates
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59 Canning Road
Croydon
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Sentinel Software
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New Zealand Avenue
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KT12 1PY
Tel: 0932 231164

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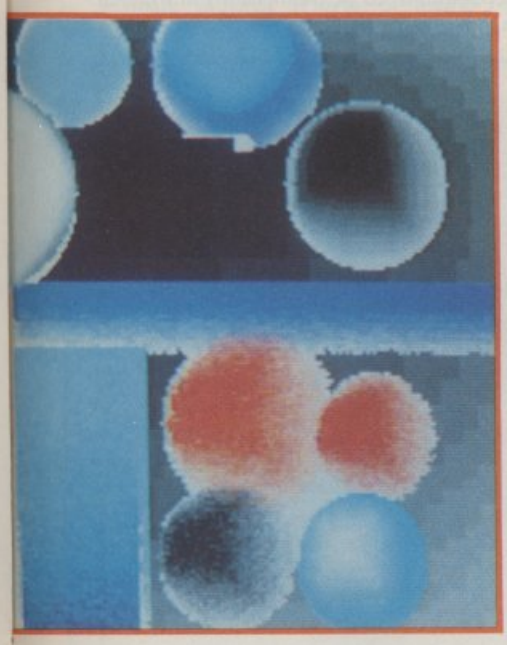
Could this be a shattered Ms Turnipseed?

Selecting Blend under the Mode Menu opens up the options of Normal (which keeps all tools normal or opaque, i.e. "covering" of the background), Blend, Add and Subtract.

Since Add and Subtract do just that to your brush or other function, it is Blend on which we shall focus for it blends into the images you have on screen the colours and images you have on your brush" or selected tool. How much and where is determined by the sub-head Set.

A wonderful window of magic appears as you highlight the word "Set.." by releasing the right button on the mouse (click left button on Blend as you pass by).

The empty square in the middle of the



window called the Bi-directional control is the important one for me. Click on it anywhere that you want the density of your blend overlay the strongest. The point of greatest density is represented by a white spot which fades to black towards the edges.

The horizontal rectangle below this square and its vertical equivalent at the right side are actual line graphs of this density ratio. Try free hand drawing these curves with the left mouse button down and watch the change on the centre square! Hold down the right button and a straight line will join your beginning and ending point.

When a function is as complex as this blend window, I strongly recommend making a few charts for yourself such as the ones illustrating this article. Re-read the excellent manual written by Heidi Turnipseed and supplied with Photon Paint.

This is one of the best manuals without any illustrations that I have ever read. It is a pity that Ms Turnipseed was not granted a few graphics in this, the manual to the best graphic program available. She must have been shattered by the lack of visuals. The cover of Photon Paint's packing box is filled with beautiful examples of what it can do. I believe the upper left image is one of Ms Turnipseed shattered.

In line with the intent of this third in the series of suggestions on how to use various art packages, here are a few more specific ways to get the most out of Photon Paint.

Does the location of the menu containing the tools and/or palettes bother your vision of the screen? Just grab the screen-box at the top of the screen and place the gadgets at the bottom or anywhere else on the screen. Hit the dot in the square at the left and rid yourself of the whole thing. There are even two arrows, one up, one down, at the extreme right of the tool menu which gives you half of the palette display or a full one with the swirling maelstream of a 3D colour mix cube. The Keu f10 takes this entire FAST MENU and COLOUR PALETTE away and returns it as you toggle the key.

The traditional "hidden at the top of the screen pull down with right mouse button" menu holds several new joys under the PREFERENCE MENU (PREFS for short). In the window brought up by the selection of SCREEN MODE you are presented with a truly international choice of screen modes. Choose the American N.T.S.C. (sometimes known as "never the same colours") or the British P.A.L. ("Perfectly All Lovely") to match the monitor specs for the country you are in. If your present paint program does not have the P.A.L. feature, you are painting on about a third less scream.

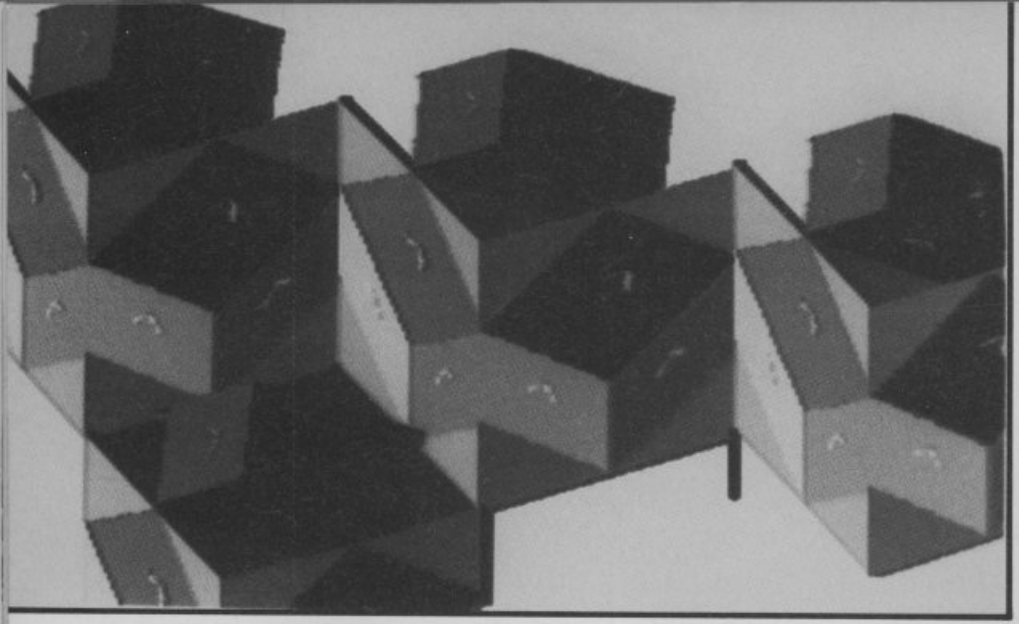
INTERLACE gave me more flickers on the monitor than I am accustomed to in the US. Editor, Stuart Cooke says the broader band line scan of N.T.S.C probably causes the difference — in America you have less so you get less. Humph!!!

One disappointment with the use of P.A.L while I, a visiting American, am over here — images done on a full P.A.L. screen lose the extra lower part when they are run in the NTSC format. I'll further test this when I return to the States.

Exact Colour when selected is a very tricky control. For all practical purposes it defeats the H.A.M. system of modifying the colour selected. This control modifies the adjacent pixels instead. Exact Colour allows you to erase a line drawn solid by mistake. Choose a pixel colour similar to the area on which it was drawn, and cover your mistake with Exact Colour activated. Read carefully on the Base Colours section in your manual which explains H.A.M. more fully. I oversimplify but believe that the general meaning of this section on Base Colours is "if it ain't broke don't fix it!"

It is good to have Workbench turned on so that you may access it for formatting a disk when you find your storage disk full. The "save" program is very kind in that it tells you when you have a full disk and lets you try again after you have formatted a new one.

Watch out, however, for the two different types of "save"! In the Project Menu you will find Save which writes over the original file. When the requestor asks "Overwrite existing file?" Click "No" if you are doubtful and go to Save As which gives you a chance to type in a new name and start a new file.



Blocks on Blocks — what has been wrapped around what?

An unusual approach to mouse control is included in Prefs. The Follow Mouse stirs old memories of C64 drawing programs for it will minutely trace your path like a faithful dog following along slowly several paces behind. The cancellation of this makes the mouse tracks act like a young puppy scamping about...cutting off corners and/or curves I quote from the manual. On the other hand, Mouse Speed controls the mouse admirably.

Photon Paint's Magnification Tool (a Sherlock Holmes glass for an icon) shows us how inadequate the enlargement tools of other programs are. Choose where you want it, how big, how little the degree of enlargement or reduction by mouse or by keyboard. And it all works so smoothly.

Users of DPaint II have long been annoyed by the inability to fill a previously filled shaped which has a variety of colours within the area. Photon Paint handles this problem easily in one of its three approaches to a Fill. All three work in collaboration with the mode selected from Mode Menu. You may fill and cover the area completely, blend into the area or add/subtract colour from the area designated.

To designate an area click on the Fill Tool. Move into the selected area as the word Back appears under the pointer. Press left button to fill all same colour pixels with foreground colours, right button with background colour. This is the same "go until you hit a different pixel colour" that DPaint II uses. Now for the new stuff. For a Boundryfill click twice on the Fill icon. The icon will change to a capital letter "B" and the pointer will have a Pick Bound beneath it as you move into the area you wish to select. Find the colour of the boundry you wish to establish by selecting it from the left side of the big box showing fairground colours up in the Fast Menu as it changes with the moving pointer. Release the left button when your boundry colour appears and the world under the cross hairs of the pointer changes to Bound. Now, select the colour you want to use to fill your "bounded" shape, position the pointer amd click.

For the third Fill (a "free shape fill") you select your Freedrawtool with two clicks of the left button and see the tangled line icon change to a capital "F".

Choose your colour for the fill, then holding down the left button draw an outline around the area you want filled. Release the button and fill will begin.

If I am grateful for the addition of overwrite files in H.A.M. let me express an even greater relief for the inclusion of Text (click on the box with an "A" in it). Select other than the standard Amiga Topaz 8 by pulling down Fonts and selecting Listfonts. If you want to use a disk of something other than the tired old Amiga fonts which never were very well selected in the first place, hold down your right button and go down the Fonts menu to select Change Disk. Type in your own path (include drive) to the fonts to be imported and use them. Don't forget, you may manipulate the words you set up with all the remarkable brush manipulators supplied on Photon Paint by capturing the word as a brush pix.

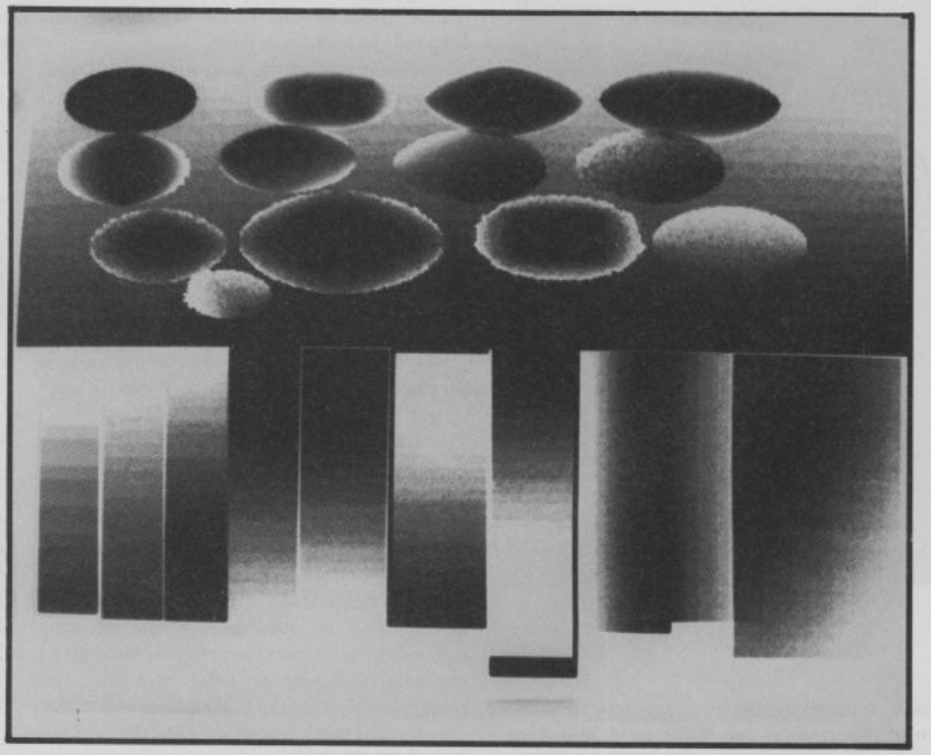
A Summary

Would I throw away Deluxe Paint II and DigiPaint now that I am using Photon Paint? Don't ask silly questions. Sure, it offers a whole new bag of tools (only some of which I have tried to introduce in this article), but they become a further extension of an Amiga graphics system as part of an interlocking program using IFF's rather than just a one shot program.

Many of the soft spots in Photon Paint are being carved as new tools are added in the "next version" all software programmers are always working on.

At the recent COMDEX ATLANTA'88 I asked two of the people who have been so important in preparing Photon Paint for the English speaking market, Ms Heid, Ms Turnipseed and Mrs Sandy Wordak, what happened to the icon which was on the earlier pre-release version (often called a "beta" version). What we now see after we boot up Proton Paint is an icon of an Amiga screen with a paint brush poised before it. Before, there was a funny looking little artist seated before the Amiga holding that brush.

Ms Turnipseed and Mrs Wardak did not know. I like to think he has gone back to Tel Aviv, Israel where he is assisting Oren Peli, the young seventeen year old who was the prime programmer on Photon Paint, to structure more tools for the artist as wondrous as he has done before. Please bring him back, Microillusions, to sit triumphantly in front of his Amiga with an even greater version. ***YA***



Blend is extremely complex — here are a few examples of what's possible.

Publisher: **Microillusions**
Supplier: Activision
23 Pond Street
Hampstead
London
NW3 2PN

In Your Own Image



Pixmate was developed by Justin V McCormick for *Progressive Peripherals* in the USA. The software came from an interest in the modern marriage of computer and space-age techniques for improving digital images. Such techniques were initially publicised by the "enhancement" of pictures coming back to us from the Moon, Mars and the Voyager probes.

The program comes on a single 3.5" disk and is accompanied by a manual which sets new standards for this kind of software. It contains a tutorial and detailed explanation of each process. There's lots of information about the Amiga graphics display if you are still learning. To its credit, *Pixmate* could be your first piece of software and you'd have no trouble using it. But nothing's perfect, the diagram on page R-65 is incomplete.

Pixmate requires 1Mbyte of memory to function in its entirety although the majority of processing works with a lo-res screen in a 512K machine. However some of the features which make *Pixmate* special are lost to the standard 512K A500 or A1000. This includes proper multitasking where *Pixmate* can, for instance, work in memory alongside Deluxe Paint and even find Deluxe Paint pictures in memory and process them. You can also run a number of *Pixmates* with lo-res screens at the same time.

Another factor in *Pixmate's* favour is quick and easy file management with multiple file selection from a list, previous and next file instantly selectable from the keyboard and wildcards.



Image processing with Pixmate can mean dazzling effects for your Deluxe Paint screens or picture enhancement or learning about computer display and print processes. Ann Owen gets pixel perfect.

Special effects

Like in *Deluxe Paint* there are two screens so you can experiment, with instant backup available. You can flip between screens or move and copy. These operations can be performed with special effects filters. At this point you can get right down to binary operations with logical, pixel and matrix operations available.

Pixmate works with any IFF file, compressed or uncompressed or palette information on its own or "brushes". It can handle a raw binary ASCII dump



Pussycat picture analysis. Pick your colour, pick your spot and Pixmate responds.

of the bitplanes, non IFF Digiview samples and Atari neochrome (equivalent to a 16 colour lo-res Amiga screen).

Everything on a screen is adjustable: red, green, blue; hue, saturation, intensity, colour bias and contrast. A colour can be selected from the screen, exchanged, copied, swapped or spread around the palette. You can play around with colour cycling, the position of the image on screen and convert to other screen modes and types, including HAM.

The simple operation of mirroring an image brings with it the options of thinner, shorter, wider or taller. Palettes can be matched, copied and exchanged between screens in memory or in disk files. You can swap or rotate bit planes and create custombit maps.

One of the most interesting abilities of *Pixmate* is to pull apart images in different ways. By extracting the red, green and blue information into separate files you can process the individual images and then recombine them. Is it art or science? Extracting the cyan, magenta and yellow images takes you into the world of colour printing; the world of pixels meets the world of dots. Grey scale information can also be extracted for the subtle conversion of colour to black and white image. Pixmate offers automatic and manual merging of these images.

Conclusions

I have found image processing — which seems fairly unique to the Amiga — a fascinating new pursuit. *Pixmate* contains more, and more sophisticated, features than its main rival *Butcher*. The overall feel is slicker, the manual vastly better. However you do need that 1Mbyte and £49.95.

If you are serious about image processing for whatever purpose, art, publishing or science, then *Pixmate* has to be your first choice. You will never exhaust the possibilities and there are new discoveries on almost every click of the mouse button. *YA*

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Bubble Bobble

Firebird's release of this classic coin-op hit finally comes out on the Amiga. Mary Branscombe puts her 10p's in.

■ **Now here's a game that should have been** released on the Amiga ages ago!

Bubble Bobble centers on two playing characters called Bub and Bob. They are in search of their girlfriends lost somewhere in the Cave of Monsters. There are 100 different caves for you to guide them through before you get to the dramatic last screen. However, between screen 1 and 100 are some of the most annoying puzzles ever devised for a platform game.

Bubble Bobble is a fairly accurate conversion of the coin-op classic (still knocking around a few of the arcades too!) and officially licensed by Tato, the company behind the original game. *Bubble Bobble* is, almost indistinguishable from the original.

So What Do You Do?

The caves you visit are all populated by different characters — mainly creatures called Benzo and Boris. These guys walk about the place occasionally jumping up onto a platform, getting in your way, and so on.

You, either as Bub or Bob jump about the different levels of each screen, and your task is to empty the screen of characters before moving onto the next. This is done not by shooting the 'baddies' as you would expect, but by blowing bubbles that enshroud your enemies. They then float up and stop somewhere leaving you the task of clearing them out by bursting the bubbles.

The enemies, after being burst turn into fruit, as is the norm with most Japanese games, which you can pick up for additional points.

If you don't burst the bubbles, the creatures escape — naturally they are a bit miffed at being captured, so they run about in a pretty agitated fashion which is, as you may imagine, not a nice thing as they can easily come in contact with you taking one of your five lives away from you.

Don't Take Too Long

If you take too long clearing a screen then Baron von Blubba appears. This chappie is merciless, and he hunts you down until you die.

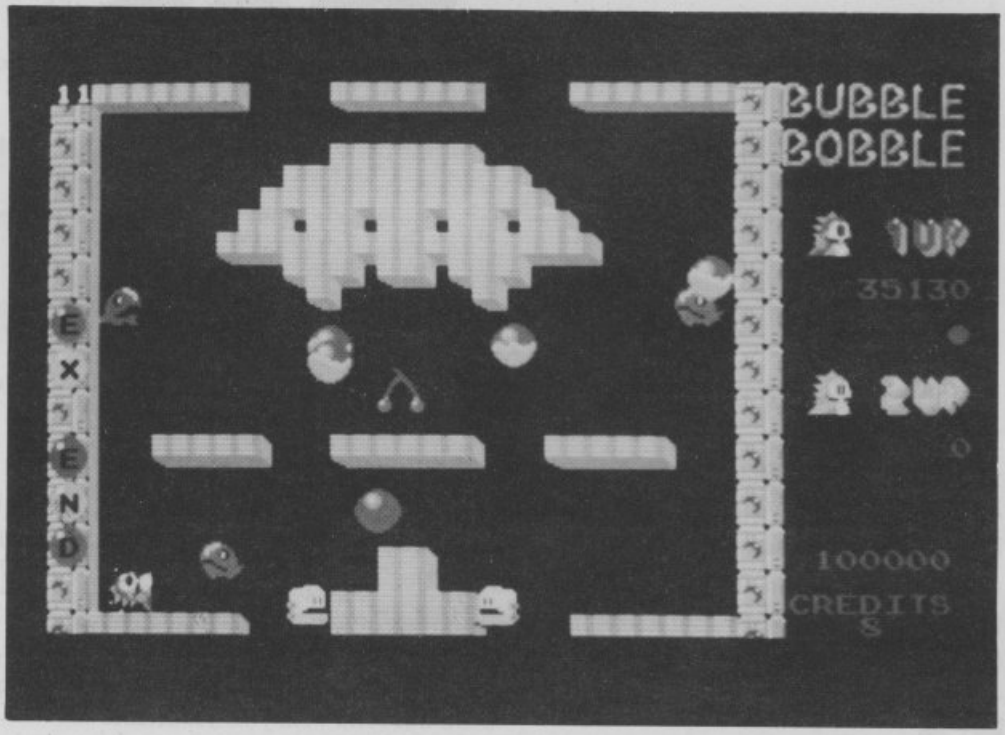
Two players can play the game at once, but watch out,when playing in two-player mode, two Barons appear, and both of you can be killed by either Baron.

The screens themselves are all fairly undemanding, it's just the characters that get in the way. Some screens you can complete even before the monsters have time to move, other screens require careful planning. Others need teamwork in order to effectively clear that level.

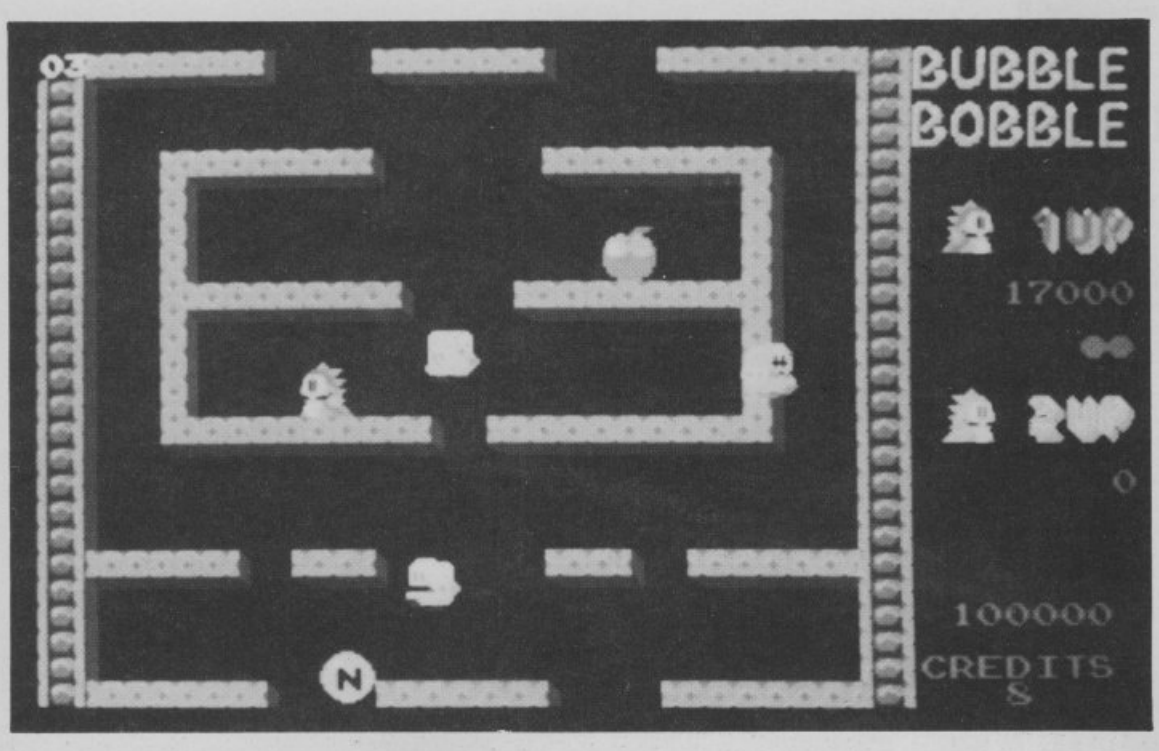
You cannot die by falling off a ledge or by being drowned (by bursting bubbles filled with water). The only way you can lose a life is by either being electrocuted (being hit by a burst bubble containing an electric charge) or by coming into contact with one of your opponents.

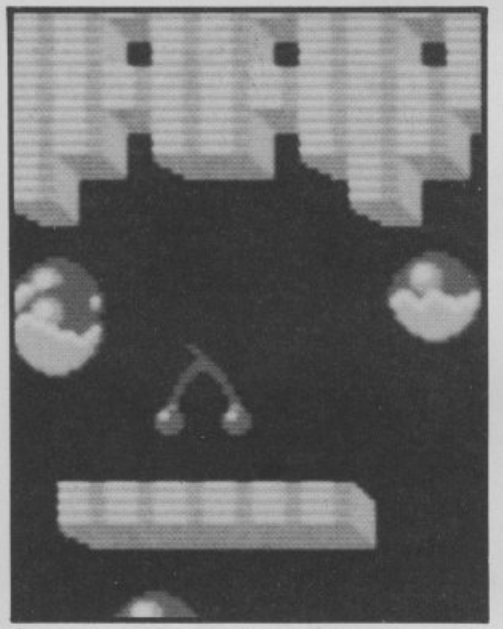
Help Is At Hand

The things that aid you in this game are, naturally enough, special fruit and sweets that appear randomly on the screen. Should you get a brolley then you move on by a number of screens. Various magic targets that you will find are also very useful — such as a special shoe that makes you go faster, a bubble gum wrapper (guess what that one does!) a bomb (!) and a chance potion that clears the screen of nasties, leaving weird symbols to be



Bubbles, Bubbles, Bubbles Galore! Bub and Bob take a tumble beating the beastly badies. Boom Boom.





Nearly there! Screen three and there's over 100 to go!

gobbled by you and your chum before you run out of time — you normally have 30 seconds.

Occasional letters appear in bubbles that float up. If you collect the necessary bubbles to spell EXTEND, then you move on a screen and get an extra life. Should you clear a screen quickly, then you stand to be rewarded in the next screen by high-point targets to be eaten; these include crowns, rubies and treasure chests.

At the very high levels the screens become a little less interesting, but nevertheless difficult to finish. It is safe to say that very few players will get as high as screen 70 without needing a friend's help, although selecting the 2 player option just before you die is a pretty good way of cheating your way to the top (but you will still have to start all over again from no points!).

Electrifying

There are screens to complete whereby you don't actually come in contact with the enemy. Instead you have to burst bubbles containing lightning bolts that speed across the screen from right to left. You have to avoid the lightning bolts set off by your companion, if you don't then you lose a life, lose more than a couple this way and you'll probably lose a friend.

Bubble Bobble has the unusual distinction of being a two player game but with a one player option (a bit like Gauntlet). There is scope for co-operation and there are many different ways of finishing off a screen. Even if you do die and have to start over again, the screens never become samey or boring because you can set up different strategies all the time.

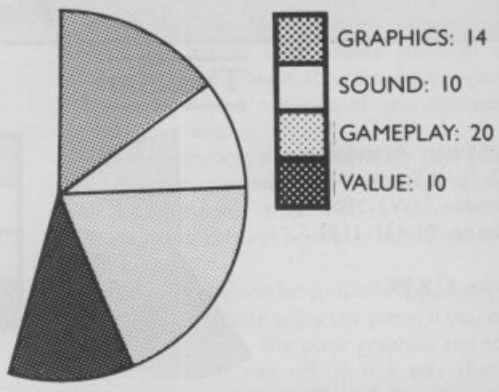
As far as being an Arcade conversion is concerned, *Bubble Bobble* is very good. The music is annoyingly catchy, the sound effects are passable, (if a little *passe*) and controlling the game from a joystick is very easy.

The idea for *Bubble Bobble* is suitably wacky, but then what do you expect from Taito? The two characters Bub and Bob are a hit in the arcades and even though this version hardly uses the Amiga's capabilities to the full there are some nice features that are not on the Atari ST version.

"Bubble Bobble is a real must for two joysticks (and their owners)"

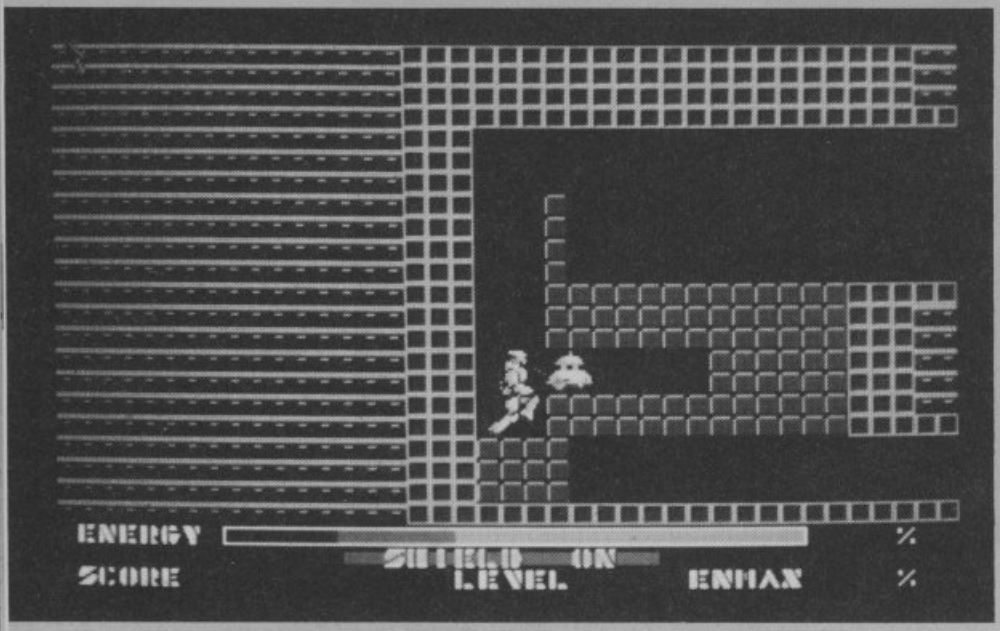
Bubble Bobble

Publisher: **Firebird Software**
First Floor,
64-67 New Oxford Street,
London WC1A 1PS
Tel: **01-379 6755**



REVIEW

Thexder



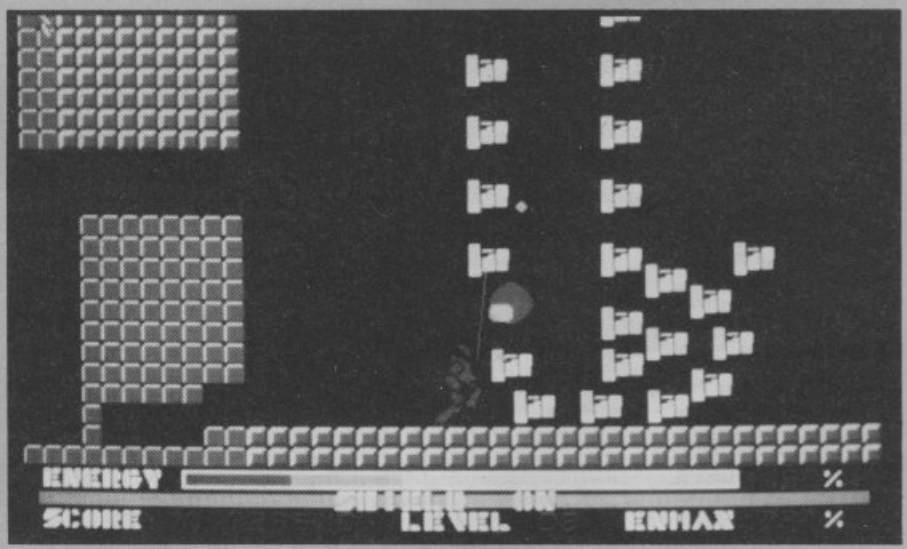
Gobots go botty! Part time Transformer Fred Reid comes down to Earth to zap a few aliens.....

■ **Have you ever played a game and not been** sure whether it's brilliant or pityfull? This is the dilemma I find myself in over Thexder. My first reaction was to draw similarities to some of my favourite C64 games, Impossible Mission, for one, and comparisons like this came a little too easily. We've come to expect certain standards for Amiga games, Thexder completely fails to make use of the Amiga's stunning sound and graphics.

Thexder is an arcade style game, featuring aliens and a robot. The robot has the unique ability to 'transform' into a fighter plane. Guess where they got that idea from! Aliens come in a variety of forms, but all have the ability to mercilessly track you down. The scenario is a series of rooms or caves, each containing various obstacles to be overcome and prizes to be won.

Your mission (should you feel inclined to accept it), is to rid each room in turn of nasties. No game would be complete without some method of judging your accomplishments; Thexder has an energy reserve, drained on contact with aliens, replenished by zapping special objects, measured as a percentage. Naturally, you set out with 100%, and when you've got 0% left, you're dead! There is a twist though, zapping certain objects increases your possible maximum energy (called Enmax) beyond 100%, allowing you to become less vulnerable. Unlike your energy, your Enmax rating cannot be diminished.

Each type of alien has its own attack characteristics, and it's worthwhile spending time working out the best way of dealing with each one. You may also encounter hidden aliens (usually buried in walls) which can wreak terrible damage on you but carries a big reward. Your robot's laser gun is fitted with an auto-aiming device, making zapping



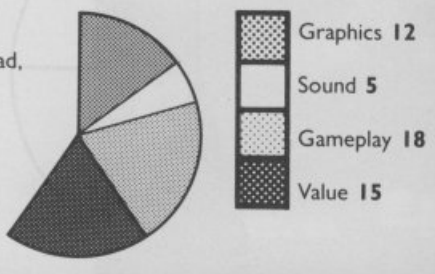
a bit easier, but carries a disadvantage. If your prey is not in direct line of fire, your laser tries to zap it anyway. In times of dire emergency, you can use your shields, a touch on the left shift key activates it. Although the shield doesn't last for long, it is pretty effective in a tight corner.

Also working against you is the music (grate doesn't it, more than a little like the theme music to the Magic Roundabout. The game designers have not seen fit to let us disable the music without losing the sound effects, it would certainly make the game a lot more enjoyable if they had! No use has been made of the Amiga's sampled sound facilities, with the exception of an unintelligible sentence at the start of each level — a little like running a Bentley on two-star. *YA*

Thexder

Publisher: **Activision**
23 Pond Street, Hampstead,
London NW3 2PN.
Phone: **01-431 1101**

Price **£19.99**



SEVEN CITIES OF GOLD





Gordon Hamlett tries his luck in the high seas as an intrepid explorer. Fame and fortune await!

■ ***Question.*** **What happened to all the dung** on Noah's Ark?

Answer. It was shoveled off and stayed there until Columbus discovered it in 1492! Apologies to all our American readers but playing *Seven Cities of Gold* instantly reminded me of the old joke.

Saying that, the game is not that bad, although I felt it could have been a lot better. I originally saw it a few years ago on the Commodore 64 and it seems that there has been no attempt to make any use of the Amiga's graphic or sound capabilities.



As most people believed that the Earth was flat in 1492, it was a case of venturing into the unknown for Spanish voyagers. However you think otherwise and this is your big chance to crown yourself in glory, or, if the joke is right, something else.

The New World awaits, the many islands of the Caribbean, the great empires of the Aztec and Inca. Spain expects great things of you and will reward you accordingly if you succeed.

The game is a mixture of strategy and exploration. It starts with the entire continent of the Americas being an unknown and you must fill in your maps as you go along. Naturally, your ships can only hold a limited amount of cargo and it is up to you to find the right balance between men, food and goods, the latter being used for trading with the natives. On your return journey, there will hopefully be some space left for any treasure that you have acquired.

Sailing your ship is straightforward and there is even a form of autopilot. The only dangers are sailing into waters that are too shallow and being caught in a storm. Once you have landed, you can only see the land immediately around you. On the beginners level, native villages are marked and it is these that are the crux of the whole game. Natives can be dealt with either by combat or by finding the chief and attempting to trade with him. Conquest is the quicker method but the natives do have long memories.

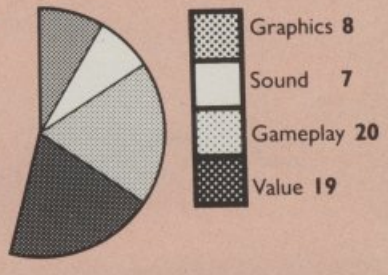
As you explore, you might find it wise to leave caches of food so that you don't always have to return to your ship. Native bearers might reveal the location of hidden silver mines although their information is not always accurate. Finally, you can establish forts and missions as you attempt to expand your empire.

If the Americas are too tame for you, you can set up your own random world to explore. Although random, they do conform to the geological and cultural principles contained within the program.

If the idea behind *Seven Cities* appeals to you, then you will certainly enjoy the game. If you come across it by chance, the poor graphics and sound are likely to put you off. It is a pity that the programmers were not allowed to enhance the game, rather than make a straight copy of an existing version. This is not the way forward. *YA*

Seven Cities of Gold

Publisher: **Electronic Arts**
Langley Business Centre
11-49 Station Road
Langley
Nr Slough
Berks
SL3 7YN
TEL: **(0753) 49442**



Graphics **8**
Sound **7**
Gameplay **20**
Value **19**

DeskTop

Fancy yourself as a press baron? Setting up a fanzine? Product or event to advertise? From page to printer, your Amiga can get you into publishing. Ann Owen assesses the true costs and wonders whether Your Amiga magazine has got anything to worry about from its desktop publishing readers?

DTP (Don't Touch a Pen ever again) is now a respectable activity for a micro. It's been advertised on television so it must be! When computers first came along the buzz phrase was "paperless office". The computer industry's attitude has since changed to "if you can't beat them, join them".

The general idea is that we use our personal computers to create beautiful looking paper documents to give to our friends and colleagues at work. It has even got to the stage where DTP is linking up with the traditional typesetting and printing industries to offer "professional" facilities to desk top publishers.

The Amiga is now well-endowed with the software to make desktop publishing a reality. The question is "how far do you want to go?" If it's a neat page of text you are looking for then any of the available wordprocessors will do. If it's a novel you are writing then I would have to recommend *WordPerfect*. The new *Brown Waugh* wordprocessor *Excellence* may prove even more suitable when it arrives because of its typesetting support. If the page needs banner headlines and pictures to give it impact then *ProWrite 2* can incorporate IFF graphics from your copy of *Deluxe Paint*. And it previews colour on screen and supports a *Canon, Apple, Okimate* or *Xerox* colour printer.

Your Font is what you Get

Beyond the single page and the text-only novel there are many exciting publishing possibilities and this is where the true desk top publishing packages come in. They offer a screen representation of a page into which you import text and pictures, mixing them together and varying their size and position inside columns and boxes. You will probably prepare the text beforehand in a wordprocessor and import it although the DTP program (such as *PageSetter)* may have a text editor as part of its facilities. Graphics too can be imported from specialist software, e.g. *Aegis Draw* for line drawing, *Deluxe Paint* for artwork or *DigiPaint* for digitised pictures. DTP programs like *PageSetter* and *City Desk* also provide mini graphics programs where simple line drawings can be created and text characters enlarged or rotated.

Back on the page itself the text and graphics are "pasted down" and at this stage, depending on your ambitions, you may need to consult a book on design. Alternatively you can experiment until you get the effect you require. Much depends on the aims of the page you are designing. If you are designing a number of pages for a booklet or magazine then presumably you will want them to have a consistent style. This can be achieved by saving one page design and retrieving it as page number two, adding new text and graphics, retrieving it as number three and so on.

Stylish Text

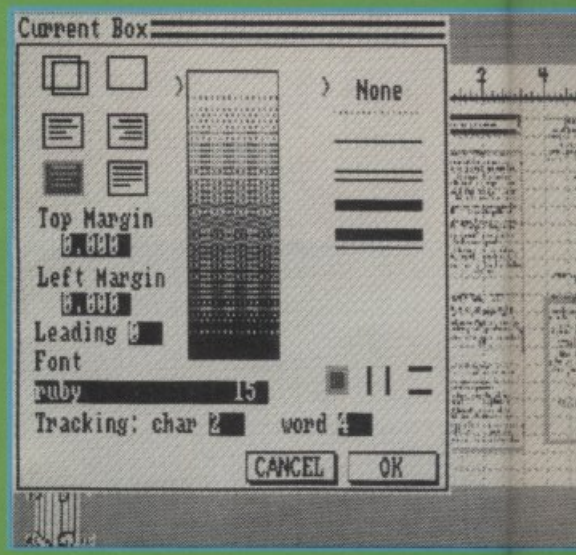
The basis of DTP on the Amiga is as simple as that. The first element of style is the text itself. There are many ways of achieving a text style on a printer. The standard Amiga fonts can be "dumped" to a printer so that they will look approximately the same as on screen.

Wordprocessors and DTP software share the advantage that they can load alternative fonts — and there are many available both in the public domain and as add-on disks for commercial packages — and print them. You shouldn't ever need more than two or three different type styles on a page but different documents require different typestyles to give them the right impact. Special characters (such as a pound or a copyright sign) can be incorporated into documents by loading a special font file.

Now we are back to the question of how far you want to go. With a dot matrix printer we have come to the end of the line. The bit-mapped fonts and graphics can be successfully dumped to eight or 24 pin printers, the page design is translated from screen to printer with adequate accuracy and your artwork is photocopiable for distribution. A colour printer will enhance a document but printing will be slow and wide distribution of artwork only possible via a print shop with a colour copier. What else is there?

Ins and Outs of Laser Printing

If software sells hardware then DTP on the Amiga is going to mean the acquisition of a laser printer. The laser printer can produce a bit-mapped dump faster and to a higher quality than a dot matrix printer. But it especially enhances DTP output because it can print text in a variety of high quality fonts. These fonts can either reside permanently in the printer

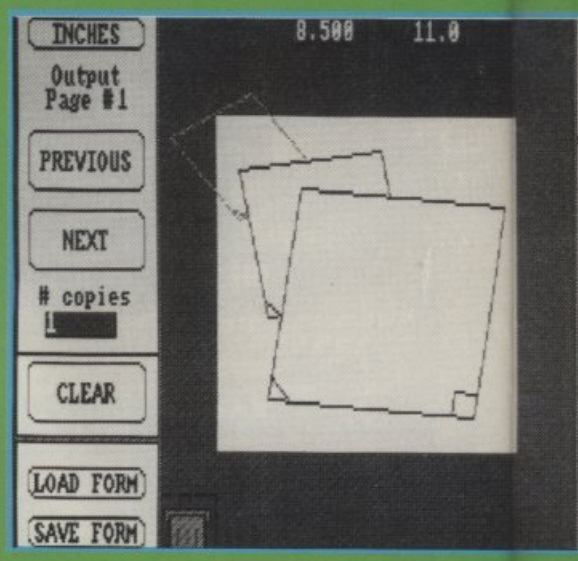


PageSetter

or they can be downloaded into the printer's memory before use. The desktop publishing program then sends commands to the laser printer to reproduce these typefaces in a page layout which you have designed on screen.

There are currently two types of laser printer — although there are many manufacturers — available to the desk top publisher, those compatible with the *Hewlett Packard Laserjet* and those with the *PostScript* page description language. There are large libraries of typefaces available for both types of printer from a variety of sources.

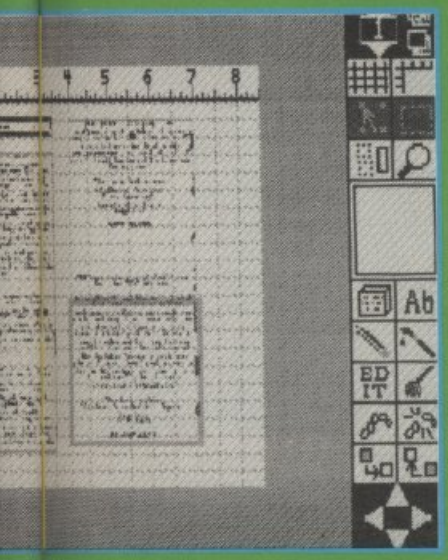
Because the Amiga is only just becoming a desk top publishing computer, few typefaces are available on Amiga format disks, indeed usually only those supplied with the DTP



LaserScript

programs themselves. *City Desk* supports *Hewlett Packard* resident fonts such as *Courier* as well as *PostScript Courier, Times* and *Helvetica*. *Page Setter* provides scaleable *PostScript* fonts in *Times* and *Helvetica*.

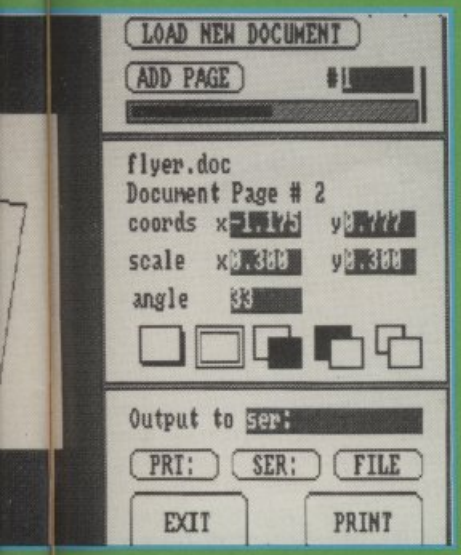
If you wish to use a *Hewlett Packard* compatible laser printer — currently the cheaper end of the market — then only *City Desk* and *ProWrite* are currently suitable for



your purposes and you may need to purchase soft fonts. If your finances stretch to a laser printer with PostScript then *PageSetter* with *Laserscript* and *City Desk* will both do the job. *New Horizons* have just announced *ProScript* for *ProWrite* so that wordprocessor will also output PostScript compatible files. PostScript is also the most suitable format for sending to a typesetting bureau although in the UK you will probably have to transfer your file via modem either directly to the bureau by telephone or onto an IBM PC or *Macintosh* disk.

Conclusions

It isn't worth buying a PostScript compatible printer for use with *City Desk* or *PageSetter/LaserScript* until you have evaluated the potential of Professional Page. If you require PostScript results then investigate the sending of files to a bureau at between £5 and £10 per page of type which is then suitable for a commercial printer.



It is worth buying a HP compatible printer for City Desk because of the availability of decent soft fonts at reasonable cost.

We will have to reserve judgement on packages such as *Prowrite* and *ProScript* and *Professional Page* although it looks like *PostScript*, despite its cost, is getting good support. There are already PostScript add-ons for the *Hewlett Packard* laser printers (JetScript) and other PostScript emulations are about to appear in other manufacturer's printers *(e.g. Toshiba)*. There were also reports earlier in the year that Commodore would introduce their own laser printer. If the software houses have guessed right, it has got to be PostScript compatible!

There is no doubt that the Amiga is capable of meeting the requirements of all categories of desktop publishers. Some may wish only to print cards or invitations with *Deluxe Print*, others I am sure are looking forward to creating their own comics or newsletters with the likes of Professional Page. We'll continue this look at DTP on the Amiga next issue with a step by step look through some of the possibilities and a discussion of some of the features of DTP design which may, as yet, be unfamiliar territory.

City Desk

City Desk is from American company *MicroSearch*, programmed by *Sunrize Industries* and available in the UK via *Precision Software*. At £99.95 it's one of the best value packages I've seen for the Amiga. The software comes on two disks with clip art and laser printer fonts included. The manual has good and bad points. It is comprehensive with a neat layout but it suffers from a number of typographical errors, not a good advert for DTP! All is forgiven however because of an excellent index. An update sheet is supplied with the latest version 1.1a rather than an entirely new manual.

It is important to note that, although working in a 512K machine, *City Disk* really requires 1Mbyte or more to do your work justice. Otherwise you will be plagued with "OUT OF MEMORY! OK" requesters; not OK actually! The memory squeeze is confirmed by the need to print documents to Preferences printers from a separate program called CD Print. Also in the manual we find "Higher levels of magnification use larger amounts of chip memory than do low levels" i.e. get a memory upgrade!

Page Attributes

City Desk demands that you work in a logical order: choose the printer type first, set up the measurements of your page and only then import graphics and text. A page created for one printer cannot be used with another type.

Page and text attributes both have default and current page settings, offering the best of both worlds, a "template" and flexibility on any individual page. I liked this feature and the clarity of the settings requesters. If you establish setting which you want to apply to other documents then they can be saved from the "preferences" menu. This is not be confused with Preferences on Work Bench.

Graphics

Definitely a strong point with some fairly useful clip art supplied and an add-on disk available. *City Desk* will accept any mode IFF file except HAM and will convert colour into grey shades using a dot pattern of your choice. The graphic has then got to be "clipped" before use. This is a once only operation. Prepared clip art is directly loaded into the page. There is total flexibility in placing and sizing the graphic on the page display at any time during the page makeup process. An invisible grid which can be adjusted down to one point accuracy to guide the objects into place.

If you wish to produce a simple black and white drawing or logo then the graphics editor itself features cut, paste, resize, erase area, freehand draw, quick (broken), slow (continuous) line, box, fill enclosed area, rotate, flip (mirror), magnify (zoom working) and various brushes, fine, medium, thick and small and big square.

Lines between columns and a solid line around the margins can be generated automatically by switching them on. A choice of boxes is offered for graphics and there is a box drawing tool for keylines and boxes. These can be used to reserve a space on the page for "dropping in" a photograph.

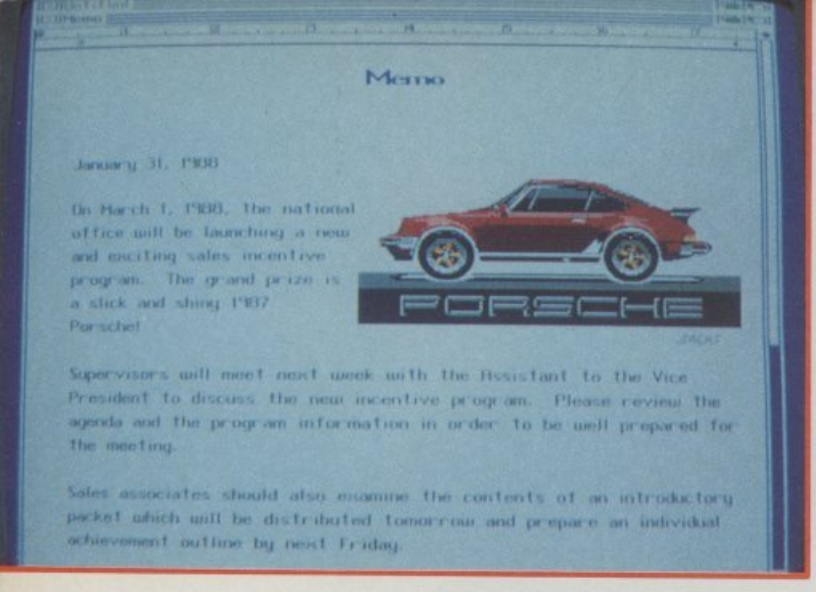


City Desk page display.

Test is Flowing

We come to what I think is *City Desk's* strongest asset, its typesetting features. The flowing of text within the columns of the page and around other objects (text blocks, line or graphics) is fast and effective.

The program invisibly splits an imported text file into suitably sized blocks but all linked as a "chain" of text. If any layout changes occur then it is a simple matter to reflow text for a new "best fit". The links between blocks can be broken and (re)made at any time. An





ProWrite 2



Professional Page produces colour separations which can be used by a commercial printer (CX)

object on the page can be moved around or saved separately.

Text can be re-edited in a limited fashion, perhaps to cut or add some text to fit the page. You shouldn't be checking spelling at this stage and *City Desk* does nothing to pretend that it's a wordprocessor.

What it does do is intelligently import text from Notepad, *Scribble!* and *WordPerfect*, interpreting codes for bold, italic and underline. If you are using a dot matrix printer then you'll appreciate the fact that all Notepad fonts and styles are retained.

Typesetting

Another exciting feature of *City Desk* for serious desktop publishers is the embedded commands for typesetting control. Each mnemonic command e.g. tabset is followed by its parameters, all enclosed within square brackets.

These commands can be used to control font type, point size and text styles such as bold and italic and the stretching, shrinking and enlarging of Amiga fonts. The commands provide precise control over every character in a document.

Layout, such as text margin, justification, indentation and tab stops can be set. Considerable subtlety can be achieved with further commands to set paragraph spacing, spacing and leading between lines (mutually exclusive) and sentence spacing. For instance by automatically removing all character spaces after full stops, and defining 'sentspace n' you can subtly adjust the appearance of the type.

Experimenting with these commands is very easy and rewarding. Two further important typesetting features are firstly the ability to tie words together — some combinations of words can lose impact if broken on the page; and secondly the command 'widowon' ensures that single lines of paragraphs are not left hanging on their own at the top or bottom of a column or page.

Conclusions

City Desk, with its ease of use, powerful typesetting features, standard units of measure, clip art and laser support, is currently my favourite choice for DTP. You'll certainly get good value from it if you already have or are willing to invest in a memory upgrade and, if you are using a *Hewlett Packard* laser, suitable soft fonts.

Roundup of other DTP software

PageSetter and Laserscript

PageSetter from *Gold Disk* started DTP on the Amiga and an excellent package it is. A text editor and graphic editor are used to import or create material which is then placed on a single page display into predefined columns. There are three levels of magnification onto the page. Text styles can be redefined from a list of Amiga fonts and boxes moved around. There is a choice of box styles (drop shadow etc) and line artwork. One page is viewed at a time but you can quickly change to any of a series of pages, up to 99.

Printing from *PageSetter* is restricted to Preferences dot matrix printers. *Hewlett Packard* Preferences does not appear to work. The *Gold Disk LaserScript* software provides a set of PostScript compatible fonts and a program to generate any point size. The fonts must be used in *PageSetter* before printing via a translation process in a separate *LaserScript* program. This means that you will have to do some editing of old *PageSetter* files before being able to use them with a PostScript compatible printer.

ProScript for ProWrite

New Horizons have announced a new piece of printer support software for *ProWrite*. The USA price will be $49.95 when it arrives later this year. *ProScript* takes a *ProWrite* document and translates it into a form that can be used by a *PostScript* compatible printer. The results of the translation can be sent straight to the printer or saved to a file for later printing. Ifthe document uses PostScript fonts (which are included with *ProScript)* the printer will use the actual fonts that are resident in the printer. If a non-PostScript font is encountered the bitmap image of the font will be downloaded to the printer. The colour graphics of *ProWrite* are translated into shades of grey before printing.

In addition, *ProScript* gives options to reduce or enlarge the printout, choose paper size, print only even or odd pages and control the number of grey shades used for graphics. *ProScript* also helps with printing mail-merged documents.

Professional Page from Gold Disk

We can only bring you news of this new DTP program from Canadian software house *Gold Disk* but what news! The program has been out for a few months but is still undergoing development with free updates to early users. Page composition and typesetting features seem to be the strong points of the new program. Page sizes up to 17" by 17" are available and design templates can be repeated. A document can be up to 9999 pages. The most exciting new feature however is colour, although not on screen. There is a colour separation program which can produce the artwork required by a commercial printer.

The typesetting features of *Professional Page* rely on PostScript fonts up to 127 points in size and these are combined with Amiga bitmapped graphics and "structured" graphics on screen. The six main typeface families have

screen fonts "tuned" to those which appear on the printer.

DTP Hardware

Scanners:
The main way of converting printed artwork or photographs into graphics data. The operator rolls the scanner over the artwork on a flat surface. The *Cameron handy scanner* is the only one announced so far with Amiga software. Warrington based AMS have been promising their *Finesse* DTP software for the Amiga and they now have a very good looking scanner to go with it. But when?

Digitisers:
Interchange of IFF graphics is easy on the Amiga so digitised images can be used in DTP. Images are grabbed from video cameras or video recorders. *Precision's Digipic* and *Digiview* from *Haba Marketing* are suitable. These are black and white digitisers but can achieve colour by the use of colour films fitted over the camera lens. True colour digitising is on the way however with the announcement of the VD3 + Digitizer from *BC Marketing* (01- 907-3636).

unit	abbreviation	value
millimeters	mm	25.4mm = 1 in
centimeters	cm	2.54cm = 1 in
inches	in or "	1 in
feet	ft or '	1ft = 12in
picas	pc	6pc = 1in
points	pt	72pt = 1in
cubits	cb	1cb = 18in

Units of measure supported by City Desk — City Desk manual 6- 35

Laser printers:
The Hewlett Packard Laserjet series is well supported and many other manufacturers have emulations on their printers too. The *Epson* GQ3500 with HP *Laserjet* emulation and 2Mb memory is a good buy. QMS are marketing an add-on called *JetScript* which (for £1995) adds PostScript to a *Hewlett Packard*. PostScript printers include QMS' own and the *Apple Laserwriter*.

Colour printers:
These are supported by Preferences 1.3: *Hewlett Packard Paintjet, Xerox* 4020, *Okimate* 20, *Apple Imagewriter, Epson* JX80, *Epson* EX800, *Citizen* HQP-40.

[italic] or [it]	*the italic attribute*
[bold] or [bd]	**overstrike or bold attributes**
[underlined] or [un]	the underline attribute
[plain] or [pl] or [p]	plain text has no attributes.
[compressed]	Sets compressed attributes. Valid only on HP laser fonts.

Embedded commands in City Desk give precise control over every character in a document — City Desk manual 6-37

PostScript

PostScript is a complete page description language encompassing type faces, line drawing, tints (shades of grey) and effects such as rotation, mirror etc. *Adobe Systems* developed *PostScript* and have licensed it to a number of laser printer manufacturers, notably *Apple*. Typefaces have now even been designed exclusively for PostScript as opposed to being copied from existing designs. The Stone typeface available in *ProWrite* is a case in point.



Some City Desk clip art. It doesn't appear to take full advantage of PostScript for redrawing

City Desk and *Pagesetter/LaserScript* make use of the typefaces, line drawing and shading facilities but fall short of the latest PostScript software.

The importance of *PostScript* might be demonstrated by the fact that new computer designs are about to appear which use Display PostScript for their screen displays, true WYSIWYG! This is a solution to the current problem that the screen fonts and printer typefaces are still drawn from different sets of data although much effort is put into making them look as alike as possible.

The words font and typeface have almost become interchangeable in computer jargon. After all both are sets of characters with a consistent design. It is noteworthy that the typefaces, some centuries old, are winning out and will form the screen displays of the future.



True Cost of DTP

Starting out

Deluxe Paint	FREE
Notepad	FREE
Promise Spellchecker	£35
City Desk	£99
Citizen 120D	£150
Panasonic	£150
Star LC10	£150

Professional setup

Deluxe Paint 2	£75
Wordperfect	£200
Pixmate	£50
City Desk	£99
HP Laserjet	£1800
QMS JetSet Postscript	£1000

Printing

When you've created your page of artwork, you may wish to print it for wider distribution. We called into Kall Kwik Printing to see how much it might cost us to print from a complete page of artwork supplied by ourselves.

Black and white printing done single sided on A4 photocopy typepaper costs from:

100	£9.80
500	£18.20
1000	£28.70
additional 1000s	£21.00

For colour printing by Quick Colour. With this process you just supply colour artwork, no separations are required! Prices for single sided A4 on glossy paper costs from (per copy):

100	£1.25
200	£0.70
500	£0.33
1000	£0.20
2000	£0.14

Kall Kwik make the point that all orders are treated individually and the above prices are guidelines only to help you cost work-desktop publishing project. You may wish to print double sided or have booklets collated and bound with a card cover. *YA*

commodore

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Amiga A500 with 512K RAM, 880K 3.5" disk, mouse, software	£425
Amiga A500 TV As above, plus A521 TV/composite modulator	£445
Amiga A500M with A1081 high-res colour monitor	£675
Amiga B2000 with 1MB RAM, 880K 3.5" disk, mouse, software	£999
Amiga B2000M As above, plus A1081 hi-res colour monitor	£1245
Amiga B2000 XTM As above, plus PC XT bridge board & floppy	£1745

Add £50 for A1084 in place of A1081. Prices include 15% VAT, a FREE copy of DeLuxe Paint, FREE delivery to your door, one year warranty. Overnight delivery £12 On-site maintenance option available.

PERIPHERALS AMIGA

A521 TV/composite modulator	£25	A2088 PC-XT bridge board with 5.25" internal disk drive	£499
512K plug-in RAM/clock (A500)	£99	A2286 PC-AT bridge board with 5.25" internal disk drive	£699
A1081 high-res colour monitor	£275	A2092PC 20MB internal hard disk with MS DOS controller	£525
A1084 high-res colour monitor	£325	A2092A 20MB internal hard disk with Amiga DOS controller	£625
A1010 3.5" external disk drive	£185	A2094A 40MB Amiga Dos hard disk	Call
Cumana 3.5" external disk drive	£129	Supra hard disks 20MB - 250MB	Call
NEC internal drive (2000 only)	£129	Citizen 120D 120 cps, F/T, NLQ	£185
A2010 internal drive (2000 only)	£175	Star LC10 120 cps, F/T, NLQ	£225
Genlock B2000 video controller	£225	Precision printer 480 cps, NLQ	£399
A2052 2MB internal RAM card	£375	Canon PJ1080A colour, 80 dpi	£499
		Xerox 4020 colour, 240 dpi	£1125
		HP LaserJet laser, 300 dpi	£1995

CREATIVITY AMIGA

De Luxe Paint II (PAL)		£59.95
DigiPaint 4096 colours		39.95
De Luxe Music (PAL)		59.95
Page Setter		94.95
City Desk		89.95
Animator Apprentice		179.95
ProWrite	Wordprocessing fully integrated with graphics	89.95
VizaWrite Desktop	High performance desktop publishing wordprocessor	79.95
Word Perfect	Amiga version of the No.1 best selling wordprocessor	199.95
The Works	Analyze + Organize + Scribble, integrated desktop	139.95
Publisher Plus	Enhanced version of the original desktop publisher	99.95
Flow	The Idea Processor from New Horizons Software	69.95
PixMate	Professional image enhancement straight from NASA!	44.95
Prism Plus	4096 HAM colour paint pack 1024 x 1024 (needs 1MB)	54.95
Calligrapher	Professional font editor, fonts up to 160 x 256 pixels	74.95
De Luxe Video II	Create all types of video presentations with ease	59.95
Aegis VideoScape	Full 3D animations in all resolutions with overscan	124.95
Pro-Video CGI	Professional video titler with fonts, extra fonts available	159.95
Aegis Animator	Full storyboarding package, includes Aegis Images	94.95
TV Show	PAL image presentation in IFF or HAM with overscan	89.95
DigiPic	Fast frame-grabber, 32 colours or grey scale	299.95
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PRODUCTIVITY AMIGA

SAM Basic		£89.95
A/C Basic		154.95
A/C Fortran		229.95
Lattice C 4.0		144.95
Lattice C Professional		299.95
MCC Pascal		69.95
64 Emulator	Use your C64 programs and files! Includes cable	69.95
SuperBase Personal	Relational database power, without programming!	79.95
SuperBase Professional	With Forms Editor and DML program language	194.95
Acquisition (V1.3)	Relational database with programming language	224.95
Maxiplan 500	Ultimate Amiga spreadsheet, + text/graphics/speech	89.95
Maxiplan Plus	As Maxiplan 500 above, plus powerful Macro language	129.95
VIP Professional	1-2-3 compatible spreadsheet + database & graphs	99.95
Logistix	2048 x 1024 spreadsheet, database, graphs & calendar	99.95
Businessware Pack 1	Invoicing, Sales Ledger, Stock Control, by Panmead	159.95
Businessware Pack 2	General Ledger, Purchase Ledger, by Panmead	159.95
Intro Cad	Entry level CAD package, printer or plotter output	54.95
Aegis Draw Plus	Comprehensive CAD with multiple layers & windows	124.95
X-Cad	Professional CAD system (needs 2MB)	424.95
MCC Assembler	Professional development system with linker & libraries	59.95

128

Commodore 128D			£399
Commodore 128			199
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SuperBase 64 & Plus/4		24.95	
SuperBase: The Book		11.95	
SuperBase Starter 64		14.95	
SuperScript 128		29.95	
SuperScript 64		24.95	
PetSpeed	Oxford Systems' best selling Basic compiler	(state 64/128)	19.95
Oxford Pascal	Complete J & W Pascal, with extensions	(state 64/128)	19.95
Oxford Pascal 64 (tape)	As above, for C64 tape users		19.95
Cobol	Complete COBOL package from Abacus	(state 64/128)	29.95
Super C	Complete C language to K & R standard	(state 64/128)	39.95
Hack Pack	All-in-one programmer's Toolkit/Ram-disk	(state 64/128)	19.95
Oxford Basic 64	All-in-one Basic compiler, Toolkit, compressor		19.95
1750 Expansion RAM	512K Expansion RAM cartridge for the C128		149.95
RamDos 128	Lightning-fast RAM-disk for 512K expansion RAM		29.95
1764 Expansion RAM	256K Expansion RAM cartridge for the C64		99.95
Anatomy of the 128	The 500-page insider's guide to the 128		9.95

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Metacomco, the authors of AmigaDOS, announce the release of version 2 of their unique single pass Pascal compiler. It is the most powerful and useful ISO Pascal on the Amiga with the friendliness and ease-of-use of a Turbo Pascal type environment.

The new manual even includes a section covering conversion of Turbo Pascal programs to Metacomco Pascal.

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Other extra features in the new release (which are optional extensions to the ISO standard) include:
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- Separate compilation and conditional compilation
- Single and double precision floating point
- Full 32-bit pointers
- Bitwise integer operations
- Enhanced I/O error handling
- Sequential and random access files
- OTHERWISE in CASE statements
- Complete access to the graphics and sound capabilities of the Amiga, with extensive examples
- Includes linker and MAKE utility
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CLI — One Step At a Time

In this second part of our series on the Command Line Interface (CLI) Burghard-Henry Lehmann shows how we can use it to take a closer look at the contents of our disks

■ **CLI, or the Command Line Interface,** gives the user direct access to Amiga DOS. This is the main operating system of the Amiga and handles all disk and many of the Input/Output operations.

In the first installment of this series I mentioned that you use CLI first and foremost to get more detailed information about the contents of your disks — either on the screen or on the printer. For this CLI has two commands which you will use most often: *Dir* and *List*.

In this article we will deal mainly with those two commands and the various options they incorporate.

Using Dir

Dir, which stands for *directory*, is the command that you use when you want to find out about the contents of one of your disks.

If you enter the command on its own you'll get a listing of the names of all the first generation directories. These are the directories at the top of the tree, and the files which are not sorted under a specific sub-directory (see the first part of the series for more information on the tree structure of Amiga disks). That is, you'll get a listing of the root-directory or directory of the disk at which cd — the current directory pointer — is pointing at. For example, if cd is pointing at the Workbench disk, you would get a listing of all the first generation directories of the Workbench disk and all the files which are not sorted under any of these directories. If you enter:

```
cd "copy of a500 wb 1.2:system"
or
cd df0:system
and then
dir
```

you'll get a listing of all the directories and files sorted under the directory "system" of the Workbench disk. You can also enter:

```
dir "copy of a500 wb 1.2:system"
or
dir df0:system
```

This has the same result, and I mention it, because in this way you can list the directory of any other disk, even though cd may point at, let's say, the Workbench disk.

If the listing given by **dir** is long you can interrupt it at any given moment by pressing the spacebar. If you then want the listing to continue, simply press return. You can also terminate the listing before time by pressing the Ctrl key and the C key at the same time.

The above two methods of interrupting a listing and terminating it before time can be employed with all CLI commands that result in a listing being produced.

The **Dir** command has several options to make it even more useful: If you enter:

dir opt a

you'll get a complete listing of the whole contents of a disk, that is, all the directories contained on that disk and all files sorted under those directories.

Dir opt d

gives you a listing of the directory names only.

The most useful option of the **Dir** command is the interactive option. If you enter:

dir opt i

you'll get a listing of the first item of the current directory. Then the cursor appears and then the listing stops. Now you may do several things:

■ You can press return and the next item will be listed.

■ You can enter "b" and the listing will go back to the previous directory level or be terminated all together if you are at the level of the original directory.

■ You can enter "q" to terminate the whole process and return to the normal CLI input mode.

There are two commands which you can use in the interactive mode, which you may find even more useful.

■ Enter **del**, which is short for *delete*, and the file the cursor is at will be deleted. In this way you can also delete a directory, but only if it doesn't contain any other directories or files. As a side note, there is a mechanism whereby a directory or file can be protected against accidental deletion.

■ The other useful command is "t", which is short for *type*. This gives you a printout of the contents of a file if that file is a textfile. If not, you'll get a lot of gobbledegook, because a program file does not make a lot of sense when interpreted in ASCII and printed on the screen.

Remember what I said earlier on about how to interrupt a listing or stop it all together. Naturally, this works with "t" too!

Sending Dir to the Printer

Instead of sending the listing of the current directory to the screen you can send it to the printer by entering:

dir > prt:

This works with everything I have explained about the dir command, except for the interactive option.

The > sign re-directs the output stream to the printer instead of the screen. "Prt", which is short for printer, is the output device. This abbreviation is always used in CLI when you want something to be send to the printer. Don't forget the colon after "prt", because this signifies that the printer is used as an output device instead of a disk. If you do not give the colon, CLI will consider "prt" as a file. It will then install a file called "prt", consisting of listing given by "Dir"!

If you want to try this enter:

dir > prt

Then:

type prt

You'll see now that, indeed, a file named "prt" has been opened and that it contains the listing given after the "Dir"!

This obviously means that you can use the > sign to send output to a file as well as to a device. Of course it is necessary to set up your printer before you can send anything to it. CLI will use the printer according to the settings in the set printer part of preferences.

Getting a List

The other important CLI command which gives you information about the contents of your disks is **list**.

List has the advantage that it gives you more comprehensive information about each file or directory on your disk. If you enter:

list

you'll get a listing of all the first generation directories and files cd is pointing at. You'll also get the following information after the name of the directory or file:

■ If it is a directory, it says *Dir*. If it is a file, the length of the file in bytes is given.

■ Next follow four letters which represent the so-called protection flags. **r** means that a file (or directory) can be read. **w** means that it can be written to. **e** means that it can be executed. **d** means that it can be deleted.

■ Next follows the date that the directory or file was installed or last altered. This relates to the date as stored in the system of the Amiga. Later on I will explain how you can set the current date and time from CLI. If the file has been installed or changed one day before the present day, the date is given as *Yesterday* and if it has been installed or changed today, the date is given as *Today* — as you would expect.

■ The hour, minute and second the directory

Special Characters Used for List p	
?	Matches any single character.
%	Matches the null string.
#<pattern>	Matches zero or more occurrences of the pattern which follows it.
<pattern1><pattern2>	Matches a sequence of pattern <1> followed by pattern <2>
<pattern1>|<pattern2>	Matches if either pattern <1> or pattern <2> match.
()	Groups patterns together.

or file was installed or changed is the next information to be listed.

■ The Amiga allows you to add a comment of up to 80 characters to each filename. If such a comment has been given, it is listed underneath the filename and preceded by a colon.

The Options of List

The List-command has a number of options available to make it even more useful.

By combining **list** with the command **to**, which is quite often used in CLI, remember, how in the last article we transferred CLI onto the RAM disk with the command sequence: **copy c to ram:**. You can send the listing to a different device as with the **dir** command. For example:

list to prt:

will send the listing to the printer.

list to outfile

will create a file called *outfile* and store the listing in that file. You can then use the CLI editor or a wordprocessorto modify *outfile*. You can even list *outfile* using the type command which was mentioned earlier.

The **List** command has several options concerning the date listed with a directory or file:

list nodates

gives you a listing without the dates.

list dates

is a bit of an unnecessary option, because it lists the dates as it does by default!

More interesting are **since** and **upto**. If you enter:

list since 5-may-88

all directories and files which have been created on and after the 5th of May 1988 will be displayed.

list upto 5-may-88

will list all the directories and files which were created before and on the 5th of May 1988.

Another useful option of list is the "s" option. If you enter:

list s abcd

all files and directories whose names contain the string "abcd" will be listed. This command sequence is handy for searching for a particular directory or file of when you can only remember part its name.

There is a more complex system of searching for directories and files whose names match a certain pattern of certain characters.

Figure 1 gives you a list of the special characters which you can employ to search the listing for a certain pattern. For example:

list p a bc

searches the names of the directories and files of a disk for patterns like "AC", "ABC", "ABBC" and so on. If a match is found, the directory or file is listed in the usual way.

Finally, you can have a *quick* listing which gives you only the names of the directories and files. This is a bit superfluous since it gives you the same type of listing given by the **Dir** command which we have already looked at. You use this option by entering:

list quick

Great with a Disk Editor

The next option we will look at is **keys**. To find out about this enter:

list keys

This adds the block number of each file or directory header to the listing. This is useful if you have a disk editor. You can then call that block up without any trouble and trace through the file, block by block.

Associated Commands

In the rest of this article I'd like to deal with some of the associated commands we have come across while looking at **dir** and **list**.

The first one of these is the **Date** command. Enter:

date

CLI now gives you the day of the week, the day, the month, the year and also the hour, minute and second as given by the real time clock of the Amiga.

By entering date with parameters, you can change the date and the time either in one go or separately. For example:

date 19-may-88 17:05

changes the day to the 19th of May 1988 and the time to 5.05 pm.

You don't have to bother about the day of the week since this is taken care of by the computer.

You can change the present date by entering sentences such as **date yesterday** or **date tomorrow**. This changes the date to yesterday's date or tomorrow's date respectively, pretty obvious really.

Changing the date and/or time from CLI is more convenient than calling up preferences every time you want to make a change.

You can also change the date and time of a directory or file to the present date by entering:

date to "our file"

where "our file" is the name of the file or directory that you wish to alter.

Program Safety

Protect allows you to change the protection flags of a directory or file. As I have already explained in my discussion of the **List** command, there are four protection flags used with each directory or file. You can protect a file against it being read (r), you can protect it against being written to (w), you can protect it from being executed (e) and you can protect it from being deleted (d).

The **protect** command works in a bit of a round-about way which you have to memorize well.

You give the appropriate letter if you want a directory or file *not* to be protected in that way and you protect a file in a particular way by omitting the letter which stands for the method of protection you want to be installed. For example:

protect "our file" rwed

will clear all four protection flags. That is, "our file" can be read, written to, executed and deleted.

If you enter:

protect "our file" r ed

the write-flag will be set, which means that our file can not be written to. It can be read, executed or deleted as normal.

Delete allows you to delete a directory or file, but only if that directory or file has not been protected against deletion as explained above. Since this command works without any fool-proofing, it is a good idea to set the deletion protection flag of all important files on a disk right from the start. Otherwise you can easily delete a file by mistake and CLI does not contain a un-delete-command!

Delete works like all other CLI-commands:

delete "our file"

will delete "our file".

Taking a Look

I have mentioned the **type** command twice in this article. This command is give you a printout of a textfile.

type "our file" to prt:

will send "our file" to the printer instead of the screen.

Using the command **filenote** you can, as mentioned with the list command, give an additional comment of up to 80 characters to a file. If you enter:

filenote "our file" comment "This is a comment."

the above comment or filenote will be added to "our file".

To substitute the comment already given with another one, simply give the above command with the new comment.

To erase the comment all together, enter:

filenote "our file" comment ""

Info is a one off command which is used without any parameters and which gives you various information about the disk (or disks — if you use several drives) which is mounted.

It gives you the size of the disk, how many bytes have been used, how many bytes are free, the percentage of free bytes, the read/write status of the disk and its name.

Also listed are the disks (or "volumes") available. This includes any disk which may not be mounted at the moment but at which cd is pointing at.

Info only gives you the full information of a non-system disk if you have two or more disk drives or have transferred CLI to the RAM-disk, as explained in the last article, otherwise it will give information of the system-disk only.

The System-Disk

At this point it might be worth mentioning that the Amiga distinguishes between a *system-disk* and any other disk.

A system-disk is a disk which can be used to start the Amiga off. The Workbench-disk or any other disk which contains Workbench is therefore a system-disk. The same is true for a disk which runs on CLI, that is a disk with a program that is not started off from Workbench but from CLI.

In a later article I will explain how you can set up such a disk. The advantage of using a disk with just CLI on it and not workbench is that CLI uses less disk space than Workbench.

You can make cd point at the system-disk by entering:

cd sys:

SYS is of course short for "system". *YA*

Next Installment

In the next part of CLI — One Step at a Time, I'll be explaining how you set up your programs so that they can be run from the CLI, showing you how to create new directories and detailing the following commands:

- RUN
- FAULT
- EXECUITE

The next issue of *Your Amiga* will be October/November 1988. Publication date is 16th September.

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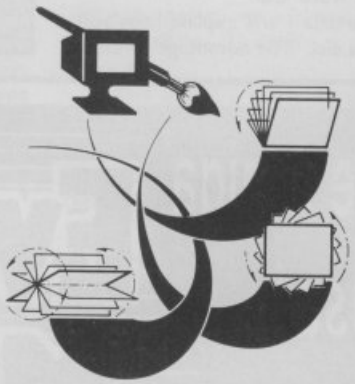
Home Movies

animation animation animation animation anima

Amateur Amiga animators should watch out for these desktop video packages. Ann Owen records the action

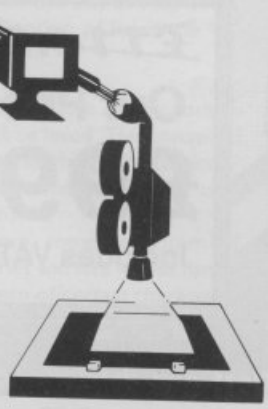
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EFFECTS



Poor Man's ADO

STAND



A Computerized Animation Camera Stand

■ **These two software effects packages,** Stand and Effects, give you creative control over the rapid animated playback of frames of IFF graphics. One, Stand, requires a megabyte of memory, both require lots of disk space.

Both packages come from Hash Enterprises in the USA and are marketed in the UK by Amiga Centre Scotland. They are part of a larger suite of software, all for graphics animation/presentation with a view to recording on a home or professional standard video recorder. The software is consistent in its operation with similar filing operations — very like Deluxe Paint — and menus.

The creation of sequences of frames, whether it be a spinning logo in the Flip effect, or a camera pan and zoom in Stand, involves a similar way of working. Each frame is a cutout from an IFF graphic background. The software accepts all types of screen, including HAM, and usually outputs a low resolution display with interlace on and with "overscan". This last feature is important for home video makers. It makes sure that any graphics fit the video display format.

An animation consists of the frames and a choreography. The frames can be saved in IFF format for further touching up in a paint package or in PACK form ready for realtime playback. The choreography is the control sequence, programmed by moving a cursor on screen or boxing a frame and edited by typing values into requestor boxes. The choreography can be saved separately and used on any set of frames.

Frames and Data

Stand is an Amiga version of a traditional animation technique involving an animation camera stand. The camera is mounted vertically on the stand with the lens pointed at a table beneath it on which the artwork is mounted. The camera can be raised and lowered and the table can move simultaneously. Stand achieves the resulting zoom and pan effects through software.

The Effects package consists of Flip — a logo animating program, Scroll — simple IFF screen scrolling and Wipe — a standard set of wipes. The two latter packages load IFF files and utilise the function keys to provide right to left and top to bottom scrolls and wipes. They are straightforward to use which is what you need when putting together home video titles or a business slide-style presentation.

Flip and Stand are more powerful utilities both using the same frames and data technique. Once the sequence of frames has been created it is "recorded" to disk. You will need to create both frames and data disks and disk swapping will be involved on a single disk system. A separate Display program is then used to reload the frames into memory and to play them back in realtime or frame by frame.

Conclusions

The software is easy to use with workmanlike menus and requestors, nothing fancy. The manuals are a bit disappointing especially that for Effects, which appears to miss bits out in the tutorial section. Am I also so incredibly out of date with my American grammar and spelling? Or didn't they use a spell checker?

I am just starting to experiment with a home video recorder and the results won't be going on public release just yet! But it's an exciting new area and acceptable results are easy to achieve. If you are serious about the video aspect then the software is designed to work with a genlock. This means that you can have two video sources, your Amiga plus a camcorder or second video, both being recorded in real time from the screen.

You could do no better than start animating on a budget with Stand and Effects which cost £35 apiece. *YA*

Read-Me

■ **Dear Editor,**
Congratulations on producing your bi-monthly specialist magazine for the Commodore Amiga. I bought your first edition, after quickly thumbing through it in my local newsagent, because you had a review of the database *Acquisition* from *Taurus Software* of Guildford. I am most grateful to your Ann Owen for pointing out the good and bad points!

Obviously this database is in competition with *Precision Software's Superbase Professional*. So, to be logical, you ought to soon review the latter and then make some comparisons with *Acquisition*. Such comparisons have been developed to a fine art in magazines for other computers. In the case of the *Atari ST*, there is probably more business software from which to choose.

Having said this, I also liked your advice on CLI commands, too, and your reviews on laser printers. I am particularly interested in Desk-Top Publishing.

One word of complaint, the ultra-small type used on pages 37 and 38 for the CLI commands is quite impossible for me to read without a magnifying glass, and yet you have wasted space above and below with large pictures of scissors!

If I really had to economize, I would buy your magazine instead of, rather than in addition to other mags!

Your questionnaire does assume that one is a besotted Amiga user, or an aspiring, besotted Amiga user. But, I am also interested in the Atari ST, particulary their Mega 4 + Atari Laserprinter.

M. Kingston, Yate, Bristol

■ If you are interested in chasing up Ann Owen's comments about Superbase Professional, draw your attention to the March 1988 edition of *Your Commodore*, the magazine that *Your Amiga* was incorporated in for a year before the June/July issue launch as a separate magazine. Should you require a back issue then you will get one from Infonet, the address of whom you will find on the editorial page. Comparison type articles will form a major part of *Your Amiga* in future issues.

Our brief introduction/review to laser printers has generated quite a bit of reader interest. Apologies for not bringing you the next installment of this article in this issue, however, we are waiting upon delivery of a new page printer that offers laser print quality at a much cheaper price. As soon as we get our hands on it then we will bring you the rest of the article.

Sorry about the illegible print on the pull-out, read on for more information on this front — ED

■ **Dear Editor,**
My question is very short compared with normal magazine questions, but it has bothered me for some time.

What I wish to know is, how is it that the price of the Amiga can vary so much from store to store. Not by a few pounds but by hundreds of pounds.

Is it also true that computers made for foreign markets are sold here cheap. Are these machines more likely to fail?

I hope that you can answer my questions and put my mind at rest.

By the way, the new magazine looks great, but it's a shame that it is only bi-monthly.

Waheed Rehman Malik, Birmingham

■ It can be a little unnerving when trying to purchase a computer only to find that visiting five different computer outlets give you five different prices for the computer that you want.

All computer manufacturers give a recommended retail price for their product. Usually this is the price that the computer will be most widely sold for. In the case of the Amiga this used to be £499 but is now £399. Obviously some shops do not sell at the RRP but at prices which are much lower. Technically the cheaper the dealer sells the computer, the less profit they make on each sale.

There have been instances where dealers have bought machines from abroad and then shipped them into the UK. The reason for this being that they can buy them cheaper and hence sell them cheaper while still making a reasonable profit on each sale. Be warned though. I know of one person who bought a Commodore 128 abroad only to find that when it died on him his guarantee was void within the UK. To get it repaired under his warranty he would have had to return it to the country from which it was purchased. The guideline is therefore this, should you buy a cheap Amiga — check the warranty cover.

Thanks for your comments about the magazine, and we agree it's a shame it's monthly — keep reading there could be a change in the pipeline — ED

■ **Dear Editor,**
As the newly formed Northside Amiga Group we are interested in informing our members of developments in computing for the Amiga. Our aims are to foster friendship and contact among Amiga users in the Dublin area. We provide a public domain software library for use by club members. We welcome contact from interested parties and other groups in Ireland and abroad.

Our meetings take place on the 1st and 3rd Mondays of each month. Discussions and demonstrations on topics of interest to Amiga users usually take place at the meetings.

I would like to extend a cordial invitation to all Amiga users in Dublin to attend our meetings at the Donaghmede House Social Centre, Dublin 13

Joseph Kiernan (sec) Swords, Co. Dublin.

Following the launch of Your Amiga as a 'real' magazine our mail bag has been bulging with your correspondence. Here you will find a selection of your comments.

■ We regularly receive requests for information on user groups at our offices. If you run or are starting up a local user group for Commodore computers please let us know so that we can pass the information on to other readers.

There are two national Amiga clubs that we know about. The first of these is the ICPUG organisation. This user group is set up to deal with all Commodore computers. Meetings are held in most major towns in the UK and regular newsletters are provided. For more information contact: ICPUG Membership Secretary, Jack C Cohen, 30 Brancaster Road, Newbury Park, Ilford, Essex, IG2 7EP. Subscription costs £10 per year (UK) plus an extra £1 joining fee.

The other group that we are aware of is the Amiga Users Group. This group can be contacted at: 66 London Road, Leicester LE2 0QD Tel: (0533)

550993. This organisation offers a bi-monthly news letter, users bulletin board and a public domain software library — ED.

■ **Dear Editor,**
Congratulations on a very good first issue. It is a pleasure to read a computer magazine that is not over-saturated with games reviews.

I found the "idiot's guide" to the CLI by B.Lehmann and A.Webb's "Trials and Tribulations" piece particulary interesting and helpful. Although I have had an Amiga for some time and have got by with various commercial programs, I have found the CLI very difficult to get to grips with, particulary since the Amiga manual is not very explicit about this to say the least. There is a tendency for some magazines to assume a certain level of familiarity with their subject machines which may be misplaced.

I also thought that your idea of including CLI reference sheets to fit into a personal organiser was inspired. You should consider including more of these in due course. My only criticism was that the typeface was a little faint. Also, if you had turned them round you could have fitted three sheets on one page of the magazine.

I was surprised to see no mention of the new dual ST-Amiga programs which are about to hit the software stands. I would have thought that this was a pretty significant development which merited some coverage. No doubt you are aware that a dual Amiga/ST format disk magazine is due for release. Oughtn't you get in on the act?

As a final comment, I am just a little concerned that, having suffered a dearth of specialist British Amiga magazines, we now seem to be getting new ones coming out by the minute. Competition is no bad thing up to a point, so long as it does not lead to trend to "lowest common denominator" editorial matter in order to retain a slice of what must be a limited market.

David Cotton, Leicester

■ The introductory course to using the CLI has been extremely well received. Over the next few issues Henry Lehmann will be revealing the mysteries of this section of your Amiga.

Apologies for the faint text on the CLI fax-sheets. The originals were much darker and easier to read. They unfortunately didn't reproduce that well in the magazine.

Because so many people thought that they were a good idea we will be continuing to produce new fact sheets in future issues. In this issue you will find a new set of CLI-sheets. Only slightly different to those produced last issue but hopefully much clearer.

Should there be any information that you would like to see on these sheets please let us know and we'll see what we can do. You may even fancy producing some sheets yourself for possible publication. Send them in, we'd love to see them.

I think that I have made my feelings clear about so called dual format disks in this month's editorial — what do the rest of *Your Amiga's* readers think. Dual format disks, are they a good thing or a come down for Amiga owners?

As to your comments regarding the number of new 16 bit magazines, I must admit that a large number seem to have appeared at the same time. This obviously goes to show that the publishing market has faith in the future of 16 bit computers. Don't forget it's not so long ago that most publishers were closing their computer titles. You are no doubt aware that *Your Amiga* is actually over a year old now, although it was published within the pages of its sister magazine *Your Commodore* until the June/July issue — we found that we simply couldn't give the Amiga the number of pages it now deserves while inside another magazine — ED

■ **Dear Editor,**
I am writing regarding the article entitled "Trials and Tribulations". It intrigued me because I am in the same situation as the author of the article found himself.

I recently purchased an Amiga and find it extremely hard learning how to use it effectively, especially the workbench. I too was a Commodore 64 user and I still can't figure out how to get *DeluxePaint* working.

I feel sure that many people who purchase the Amiga find themselves in the position that I am presently in and in the position that the author of the aforementioned article found himself in.

The manuals that come with the computer are of so little help, pressure should be put on Commodore to provide better ones so people like me can get down to learning and mastering the system as quickly and easily as possible.

With your experience of going through the difficulties of mastering how to program and use the workbench effectively, I would be greatly indebted to you if you could tell me the names of any books that you recommend and where I can get them from. I am looking for books that will cover all areas of Amiga programming which can take me from knowing little to being able to expertly program the system.

D.Sikder, Luton

■ If I was given a penny every time I've heard people moan about computer manuals, especially Commodore's, I'd be a rich man by now. Book publishers have always been quick to notice this and soon after the launch of a machine there is usually a plethora of 'how to program your xxxx' type book. For some reason this doesn't seem to have been the case with the Amiga, though things do seem to be looking up.

There are two books that I would recommend new Amiga owners get their hands on. Both are Abacus books and are available from Adamsoft at: 18 Norwich Avenue, Rochdale, Lancs ONI1 552. Tel: 0706 524304.

The first book is *Amiga For Beginners*. This probably starts at too simple a level for many people, detailing how to set your machine up and turn it on! Even so, there is a lot of information provided within this book that the newcomer to the Amiga will find useful. I've been known to refer to it myself on more than one occasion.

The second book is *Amiga Basic Inside and Out*. Ok, all you purists out there, Basic is not the best language to program the Amiga in 68000 or 'C' are much better and faster. Should you want to learn the basics of how a machine works Basic is still the quickest language to get used to. This book introduces the reader at quite a leisurely pace into using the Amiga as a programming environment. Graphics, sound, windows etc. are all covered. Once you've got to grips with these in Basic then you'll be ready to advance onto other languages or even machine code.

Allen Webb, the author of the 'Trials and Tribulations' article will be starting a Basic programming series in a future issue — watch this space — ED

Write in with your comments to *Your Amiga*, ASP Ltd, 1 Golden Square, London WIR 3AB.

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Your address;
Your telephone number.

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Would you like to share your knowledge of the Amiga computer with others? Have you written any software that you'd like to have published? Read on and find out what to do.

Amigart



■ **Some time after getting my** Amiga, I started to familiarise myself with some of the basic commands like Line, Circle, Locate etc., all of which were new to me, after upgrading from the CBM64. It soon began to dawn on me that programming the Amiga requires a completely different approach than what I was used to. Having printed a few simple statements on the screen with the locate command, I found that it was possible to draw lines which passed right through the text on the screen! Even different coloured dots, lines and shapes could be made to occupy the same character space. This obviously meant that the whole basic screen is permanently bit-maped.

Being interested in computer art, and, after buying the Amiga, and unable to afford the rather high prices asked for one of the commercial art packages available, I reckoned it would be possible to write a program, in Basic, that would allow me to create my own electronic masterpieces!

My first apprehensions were that Basic would be too slow for such an application, but this 'Microsoft' version of Basic soon proved me wrong on almost every count. This was something of a relief, as, although I'd become quite adept at machine code on the '6510', I hadn't got a clue or an assembler for the Motorola 68000! Anyway, several weeks later, I was adding the final touches to the Amigart program.

The Program

Owing to the fact that *Amigart* uses large arrays in its operation, the program is written in two parts. Part one sets up a function window on the palette screen which displays all available options along with a colour palette and colour controls. This section will chain load part two, which creates a painting and drawing window on the part screen. With Amigart, the user is allowed to draw freehand using the mouse or select one of the many options available such as box, line, circle, block copy, etc. There is a choice of eight colours, any of which may be adjusted at any time. A save option allows pictures to be saved to disk, or alternatively, colour schemes may be saved separately. For more accurate work, a crib can be called up to keep track of X and Y co-ordinates and pen colour.

Typing It In

Before typing in this program, please make sure that your Amiga is in 60 column mode, and the Interface is off. Type in listing one entitled 'AMIGART'. Next, place a 'rem' or apostrophy (') at the beginning of the line which contains the 'chain' statement. This will allow you to make any corrections before the next program is loaded in. When everything runs smoothly, remove the 'rem' and save program one. (AmigaBasic will remind you to save if you forget!).

Now type in program two called 'AMIGART.A'. It is most important not to run part two as it stands. Always save your work and use program one to load and run program two. Running program two on its own can cause a few problems, like erasing the options window on the palette screen and worst of all, turning every colour on the art screen black! If you forget and this happens, don't panic. Either press keys (A) and (.) together or position the mouse pointer at the top centre of the screen and drag the art screen down.

When saving part two, be certain to save it in an ASCI format, i.e. add (,a) to its title. This will ensure that it loads and runs from program one.

Using Amigart

The mouse is used extensively throughout the program. Unfortunately though, the familiar red arrow pointer is not really accurate enough for this application. So, I would recommend that the pointer be changed using 'Preferences' to resemble cross-hair sights as in fig.1. Make sure that the diagonal lines are in a contrasting colour, and that the set point is in the centre. Changing the pointer before you begin only takes a couple of minutes and is well worth the effort for more precise work. Also, change the mouse speed to 2, to avoid gaps in freehand lines.

Let Frank Bingley help you create your own electronic masterpiece.

When run, program one sets up the palette screen, and chain loads part two. At this point, you will be presented with a blank window on the art screen. Pressing the left mouse button will set a point in the present colour. To change colour, press (d) to display the functions window on the palette screen and click over the chosen colour.

Any of the colours can be altered at any time. To do this, call the palette screen and position the mouse over one of the red, green or club plus and minus boxes at the bottom right. Holding down the left mouse button will cause the colour to slowly change. How it changes depends on which box you use. All colours are made up of varying amounts of red, blue and green (RGB). Getting the

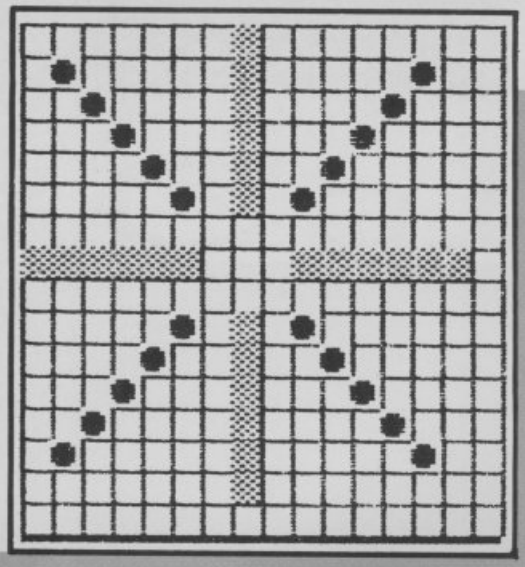


Fig 1 — the grid shows a more accurate pointer for the mouse. Use a contrasting colour for the diagonal lines and place the set point in the centre of the cross-hair.

quantities right requires some practice. As a general guide, see page 8-104 in the reference section of the Amiga basic manual which will give you some idea how to get specific colours. Click the OK gadget to return to the art screen.

To use any of the functions, press the required key and use the mouse accordingly. A quick reference chart of all options appears on the palette screen. Remember that the palette screen can be viewed by dragging the art screen down with the mouse, though it is not possible to choose or alter colours using this method.

Using the crib will display X and Y co-ordinates at the top left of the drawing window in the present pen colour. If you wish to preserve that part of the window under the crib, then press (x). This will save a narrow band across the entire width of the art window at the top of the screen. Pressing (r) will replace the drawing over the crib. Key (z) will update the co-ordinates.

To draw circles with *Amigart*, click the mouse where you want the centre of the circle to be, then click again at the left or right edge. The second click must be on a horizontal plane to the first, otherwise the resulting circle will be smaller than anticipated. The background turns cyan during this mode.

When saving pictures, any legal filename syntax can be used. e.g. — 'graphics: art/MyPicture' will save your work as MyPicture to a disk named graphics in a directory called art. Saving your work will also save the present colour scheme, but, if you use an Asterisk (*) as the first character in a filename, it will save the colours only. The same rules apply to loading files. Saving or loading files on another disk may bring you onto the workbench screen: if this happens, key (d) will take you to the palette screen.

Drawing Techniques

The paint command is a very handy feature of *Amigart*. However, it can also be a dangerous one. Painting in an area will fill it with and up to lines in the present colour. The area must be completely enclosed in the chosen colour, otherwise one pixel missing will allow spillage into large portions of the surrounding area! It's as well to get all painted areas out of the way before commencing any detailed work. If this is unavoidable then better to save first. The background colour for this mode is light brown.

Lines can be concatenated by storing up key presses in the keyboard buffer. Pressing (l) several times before clicking the mouse will allow you to draw a continuous line from point to point as you go. This technique also works well with the box function. In this case, lines or shapes can be drawn using boxes. This won't work with the circle command. Lilac is the background colour for line mode, and yellow/green for box.

Parts of a picture may be copied using the block copy facility. Owing to the fact that *Amigart* uses up most of the memory allocated to Basic, this is restricted to small sections only. The technique here is to click top left and bottom right of the desired block while the screen is red. The screen then turns dark grey. At this point, place the mouse pointed at the top left of where you want the copy to go. You will be informed if the block is too large.

When using the text function, remember NOT to click the mouse, simply position it where you want the text to go, then press (t). The colour of the text typed will be the present pen colour. The background colour will be determined by the pixel colour under the set point of the mouse pointer. If this is the same colour as the pen, then you obviously won't see what is being typed. This can be used to advantage — blocking out small areas of colour. The colour mode for this facility is royal blue.

Amigart is a simple to use utility which utilises some very fast graphic commands on the Amiga. It's very modest outlay (the mere cost of this excellent magazine, and a few hours typing) will allow anyone with the artistic ability the chance to produce professional quality electronic pictures. At the very least, should give you and your family many hours of creative activity. I hope you enjoy it.

Amigart

Program 1

```
' amiga must be in 60 column mo
de for this utility.
  DIM col(8,3)
  SCREEN 2,640,200,3,2
  WINDOW 2,"Functions",(0,10)-(63
0,176),14,2:CLS
  RANDOMIZE TIMER
  FOR a=0 TO 3:FOR b=0 TO 2:READ
col(a,b):NEXT b,a
  FOR a=4 TO 7:FOR b=0 TO 2:col(a
,b)=RND:NEXT b,a
  FOR a=0 TO 7:PALETTE a,col(a,0)
,col(a,1),col(a,2):NEXT a
  PRINT " COMMAND"TAB(13)"KEY"TAB
(17)"1ST CLICK"TAB(31)"2ND CLICK"
TAB(43)"3RD CLICK"
  PRINT " Line"TAB(14)"L"TAB(17)"
Begining"TAB(31)"End"TAB(43)"-"
  PRINT " Circle"TAB(14)"C"TAB(17
)"Centre"TAB(31)"Edge "TAB(43)"-"
  PRINT " Box"TAB(14)"B"TAB(17)"T
op right"TAB(31)"Bottom left"TAB(
43)"-"
  PRINT " Paint"TAB(14)"P"TAB(17)
"Inside area"TAB(31)"-"TAB(43)"-"
  PRINT " Save"TAB(14)"S"TAB(17)"
-"TAB(31)"-"TAB(43)"-"
  PRINT " Load"TAB(14)"F"TAB(17)"
-"TAB(31)"-"TAB(43)"-"
  PRINT " Crib Init."TAB(14)"X"TA
B(17)"-"TAB(31)"-"TAB(43)"-"
. PRINT " Crib Disp."TAB(14)"Z"TA
B(17)"-"TAB(31)"-"TAB(43)"-"
  PRINT " Crib Clear"TAB(14)"R"TA
B(17)"-"TAB(31)"-"TAB(43)"-"
  PRINT " Scrn.Erase"TAB(14)"Q"TA
B(17)"-"TAB(31)"-"TAB(43)"-"
  PRINT " Block copy"TAB(14)"W"TA
B(17)"Top left"TAB(31)"Bott.right
"TAB(43)"Top left"
  PRINT " Functions"TAB(14)"D"TAB
(17)"-"TAB(31)"-"TAB(43)"-"
  PRINT " Text"TAB(14)"T"TAB(17)"
Position mouse first, DON'T click
"
  PRINT :PRINT " HOLD LEFT BUTTON
 ON + OR - BOXES TO ADJUST COLOUR
"
  PRINT :PRINT TAB(14)"X"TAB(17)"
TO ABORT LOAD/SAVE OPTIONS";
  FOR a=0 TO 20
  LINE(0,8+9*a)-(630,8+9*a),2:NEX
T a
  LINE(119,0)-(119,250),2
  LINE(151,0)-(151,250),2
  LINE(289,0)-(289,250),2
```

```
  LINE(409,0)-(409,250),2
  LINE(520,0)-(520,250),2
  FOR a=0 TO 7:LINE(522,9*a)-(622
,9*a+9),a,b
  PAINT(523,9*a+1),a:NEXT a
  LINE(522,0)-(622,9),1,b
  FOR a=8 TO 13:READ d$:LOCATE a+
1,55:PRINT d$
  LINE(522,9*a)-(622,9*a+9),1,b:N
EXT a
  LINE(522,126)-(622,200),1,b
  PAINT(525,130),1,1:LOCATE 17,57
:COLOR 2,1:PRINT "O.K."
  COMMON col()
  CHAIN "AMIGArt,a"
  DATA .66,.66,1,0,0,.12,1,1,1,.7
5,.31,.4
  DATA "red   +","red   -","green
 +","green -","blue  +","blue  -"
```

Amigart A

Program 2

```
start:
  SCREEN 1,640,200,3,2
  WINDOW 3,"AMIGArt",(0,10)-(631,
185),14,1:CLS
  FOR a=0 TO 7:PALETTE a,col(a,0)
,col(a,1),col(a,2):NEXT a
in:
  DIM size% (3846):col=1
art:
  a$=INKEY$
  IF a$ =""THEN getmouse
  IF a$ ="p"THEN fillin
  IF a$ ="s"THEN BEEP:GOTO savefr
ame
  IF a$ ="f"THEN BEEP:GOTO frameb
ack
  IF a$ ="l"THEN GOSUB dline
  IF a$ ="c"THEN GOSUB dcircle
  IF a$ ="b"THEN GOSUB dbox
  IF a$ ="d"THEN GOSUB defpal
  IF a$ ="x"THEN BEEP:GET (0,0)-(
622,15),size%
  IF a$ ="r"THEN PUT(0,0),size%,P
SET
  IF a$ ="z"THEN GOSUB crib
  IF a$ ="q"THEN GOSUB clearscree
n
  IF a$ ="w"THEN GOSUB copy
  IF a$ ="t"THEN GOSUB alpha
getmouse:
  m=MOUSE(0)
  IF m=0 THEN art
  mx=MOUSE(1):my=MOUSE(2)
  PSET (mx,my),col
  GOTO art
fillin:
  PALETTE 0,.66,.53,0
  m=MOUSE(0)
  IF m=0 THEN fillin
  mx=MOUSE(1):my=MOUSE(2)
  PAINT (mx,my),col,col
  PALETTE 0,col(0,0),col(0,1),col
(0,2)
  GOTO art
saveframe:
  GET(0,0)-(632,15),size%
snam:
  LOCATE 1,1:INPUT "SAVE:enter fi
lename";na$
  IF na$="" THEN snam
  PUT (0,0),size%,PSET
  IF na$="x" THEN GOTO art
  OPEN na$ FOR OUTPUT AS 1 LEN=80
00
  IF LEFT$(na$,1)="*"THEN colscem
  FOR a=0 TO 176 STEP 16
  GET (0,a)-(632,a+15),size%
  FOR b=0 TO 3846
  PRINT #1,size%(b)
  NEXT b,a
colscem:
  FOR a=0 TO 7:FOR b=0 TO 2:PRINT
 #1,col(a,b):NEXT b,a
  CLOSE #1
  FOR a=1 TO 3:BEEP:NEXT a
  GOTO art
frameback:
  GET(0,0)-(632,15),size%
snam2:
  LOCATE 1,1:INPUT "LOAD:enter fi
lename";na$
  IF na$="" THEN snam2
  PUT (0,0),size%,PSET
  IF na$="x" THEN GOTO art
  ON ERROR GOTO trap
  OPEN na$ FOR INPUT AS 1 LEN=800
0
  IF LEFT$(na$,1)="*"THEN colscem
2
  FOR a=0 TO 176 STEP 16
  FOR b=0 TO 3846
  INPUT #1,size%(b):NEXT b
  PUT (0,a),size%,PSET
  NEXT a
colscem2:
  FOR a=0 TO 7:WINDOW OUTPUT 2:FO
R b=0 TO 2:INPUT #1,col(a,b)
  NEXT b:PALETTE a,col(a,0),col(a
,1),col(a,2):WINDOW OUTPUT 3
  PALETTE a,col(a,0),col(a,1),col
(a,2)
  NEXT a:CLOSE #1:ON ERROR GOTO 0
  WINDOW 3:BEEP:GOTO art
dline:
  PALETTE 0,1,.66,1
  GOSUB coord
  LINE (mx1,my1)-(mx2,my2),col
  PALETTE 0,col(0,0),col(0,1),col
(0,2)
  RETURN
dcircle:
  PALETTE 0,0,.66,1
  GOSUB coord
  CIRCLE (mx1,my1),ABS(mx2-mx1),c
ol
  PALETTE 0,col(0,0),col(0,1),col
(0,2)
  RETURN
dbox:
  PALETTE 0,.66,.66,0
  GOSUB coord
  LINE (mx1,my1)-(mx2,my2),col,b
  PALETTE 0,col(0,0),col(0,1),col
(0,2)
  RETURN
coord:
  m=MOUSE(0)
  IF m=0 THEN coord
  mx1=MOUSE(1):my1=MOUSE(2)
clear1:
  m=MOUSE(0)
  IF m<>0 THEN clear1
coord2:
  m=MOUSE(0)
  IF m=0 THEN coord2
  mx2=MOUSE(1):my2=MOUSE(2)
  RETURN
defpal:
  WINDOW 2
clear3:
  m=MOUSE(0)
  IF m<>0 THEN clear3
coord3:
  m=MOUSE(0)
  IF m=0 THEN coord3
  mx2=MOUSE(1):my2=MOUSE(2):IF mx
2<510 THEN coord3
  IF my2>72 THEN hue:
  col=INT(my2/9):WINDOW 3
clear4:
  m=MOUSE(0)
  IF m<>0 THEN clear4:ELSE RETURN
hue:
  IF my2>126 THEN WINDOW 3:RETURN
  hu=INT((my2-72)/9)
  IF hu=0 THEN col(col,0)=col(col
,0)+.004
  IF col(col,0)>1 THEN col(col,0)
=1
  IF hu=1 THEN col(col,0)=col(col
,0)-.004
  IF col(col,0)<0 THEN col(col,0)
=0
  IF hu=2 THEN col(col,1)=col(col
,1)+.004
  IF col(col,1)>1 THEN col(col,1)
=1
```

```
  IF hu=3 THEN col(col,1)=col(col
,1)-.004
  IF col(col,1)<0 THEN col(col,1)
=0
  IF hu=4 THEN col(col,2)=col(col
,2)+.004
  IF col(col,2)>1 THEN col(col,2)
=1
  IF hu=5 THEN col(col,2)=col(col
,2)-.004
  IF col(col,2)<0 THEN col(col,2)
=0
  WINDOW 2:PALETTE col,col(col,0)
,col(col,1),col(col,2)
  WINDOW OUTPUT 3:PALETTE col,col
(col,0),col(col,1),col(col,2)
  GOTO coord3
crib:
  LOCATE 1,1:COLOR 1,col
  IF col=1 THEN COLOR 0,col
  PRINT "x="MOUSE(1)"  y="MOUSE(2
)"  "
  RETURN
clearscreen:
  GET(0,0)-(632,15),size%
  LOCATE 1,1:COLOR 1,0
  PRINT "O.K. to erase screen ?"
ctest:
  a$=INKEY$:IF a$="" THEN ctest
  IF a$ <> "y" THEN PUT(0,0),size
%,PSET:RETURN
 CLS:RETURN
copy:
  PALETTE 0,.75,0,0
  GOSUB coord:PALETTE 0,.25,.25,.
25
  ar=6+((my2-my1+1)*2*INT((mx2-mx
1+16)/16)*3)
  ar=ABS(ar)
  IF ar> 3000 THEN copfault
  DIM bcopy(ar):GET(mx1,my1)-(mx2
,my2),bcopy
clmouse:
  m=MOUSE(0):IF m<>0 THEN clmouse
clm2:
  m=MOUSE(0)
  IF m=0 THEN clm2
  PUT(MOUSE(1),MOUSE(2)),bcopy,PS
ET:ERASE bcopy
copexit:
  PALETTE 0,col(0,0),col(0,1),col
(0,2)
  RETURN
copfault:
  PALETTE 0,col(0,0),col(0,1),col
(0,2)
  GET(0,0)-(632,15),size%
  LOCATE 1,1:COLOR 1,0
  PRINT "Block too large!":FOR q=
1 TO 3000:NEXT q
  PUT(0,0),size%,PSET:RETURN
alpha:
  PALETTE 0,0,0,.5
  pp=POINT(MOUSE(1),MOUSE(2))
  p1=INT((MOUSE(1)/10)+1):p2=INT(
(MOUSE(2)/9)+1)
  IF pp<0 THEN pp=0
  LOCATE p2,p1:COLOR col,pp
a2:
  a$=INKEY$:IF a$=CHR$(13)THEN al
ex
  IF a$=""THEN a2
  PRINT a$;:GOTO a2
alex:
  PALETTE 0,col(0,0),col(0,1),col
(0,2):COLOR 1,0:RETURN
trap:
  WINDOW 3
  GET(0,0)-(632,15),size%:COLOR 1
,0
  LOCATE 1,1:PRINT "SOMETHING WRO
NG HERE!!!"
  CLOSE #1:FOR q=1 TO 3000:NEXT q
  PUT (0,0),size%,PSET
  RESUME art
```


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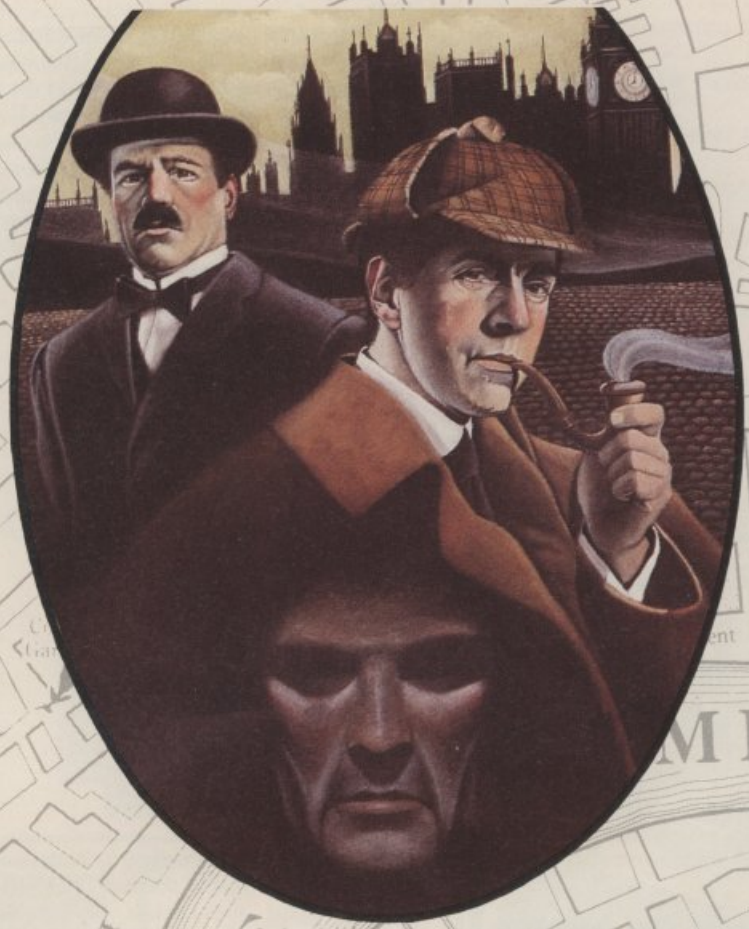
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SHERLOCK



When you, the solid, dependable Doctor Watson arrive at 221B Baker Street, you are both surprised and upset to see your friend Sherlock Holmes in a strange lethargic state. Nothing you can do seems to be able to arouse his interest and he seems totally unaware of anything going on around him. Mrs Hudson is worried sick about him and implores you to help him.

Trying to engage Holmes in conversation has no noticeable effect and it is only when you read the paper to him that he snaps out of his torpor. A couple of snippets catch his attention and his interest gathers momentum with the arrival of a strange cloaked figure, who appears to be a high ranking government official.

The story begins to unfold. There is to be a Royal Procession through the streets of London. The Queen in all her splendour will be in full regalia. Or at least she would be, if it were not for one very major problem. The Crown Jewels have been stolen from the Tower of London. Should they not be returned within the forty eight hours before the procession, the government will topple and Britain will be in international disgrace.

At last, a story for Holmes to get his teeth into. Scotland Yard is as usual, baffled and your friend is only too willing to offer his support. As to be expected though events take a sinister twist. From a series of clues, Holmes soon realises that he is being manipulated by none other than his arch rival, Professor Moriarty. Unwilling to accept this direct challenge head on, Holmes decides that there is only one way to get round this problem. Because Moriarty knows exactly how Holmes will react to any given situation, he will have laid his traps accordingly. The solution is simple. You, Doctor Watson will lead the investigation while Holmes assists you. The evil Professor will suspect this play.

So your journey around London begins. Although the game is not played in real time as such, every move that you make does take up a certain number of minutes and the jewels do have to be returned within forty eight hours.

Getting round London proves to be an interesting problem. There are two types of cab that you can summon — growler and hansom. One of them performs an immaculate service, the other is about as much use as a chocolate teapot. 'Westminster Abbey Guv? Never heard of it. New is it?' and you promptly get taken off somewhere totally different.

Once at the Abbey, you will have to take brass rubbings of certain tombs in order to discover more secret messages. From then on, your travels are likely to include the Diogenes Club, the British Museum, Trafalgar Square and of course the Tower itself, which is conveniently closed to visitors for repairs.

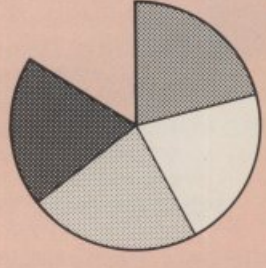
As with all *Infocom* games, the atmosphere is first class, combining detailed descriptions of Victorian London with some wonderful touches of humour. The packaging is also excellent and the game comes complete with a tourist map showing the location of all the places you are likely to want to visit and a copy of the Times.

This is actually a genuine facsimile of the Times, suitably doctored to include the snippets that first alerted Holmes. My only reservation about the game is that hints are included on the disk. My feeling is that this is far too great a temptation to put in front of the average adventurer although others may prefer to have help on hand. That aside though, *Sherlock* is an excellent adventure and one well worth adding to your collection. ■

Gordon Hamlett collects his deerstalker and pipe in order to sample the delights of Victorian London. Any similarity to a famous detective purely intentional.

Sherlock

Publisher: **Infocom**
Supplier: **Activision**
23 Pond Street
Hampstead
London
NW3 2PN
TEL:**01 431 1101**
Price: **£24.95**



Story **21**
Atmosphere **22**
Gameplay **21**
Value **21**

REVIEW

Star Fleet 1

Gordon Hamlett boldly goes where no reviewer has gone before. Or have they?

This game presents something of a dilemma for a would be reviewer. After loading it in and running the demo, it looks for all the world like one of the old games of Star Trek. Not the version released for the *Atari ST* by *Beyond*, but the really old type that you used to play on *Pets* and the like. Manoeuvring across the universe into different quadrants and sectors. Firing phasers and torpedoes at the enemy, docking with star bases and everything requiring vast amounts of energy.







Plenty to read

On the other hand though, there is the documentation. Reams and reams of the stuff. The 100 page Officers Manual gives details of the various commands available within the game. Then there is the Training Manual, a mere 70 pages long which can almost be subtitled Elementary Tactics for a would be Space Hero. All that remains now is to master a small 12 page volume on changes to the original manual as applied to the Amiga version (the original game was written for the IBM) and slip the Quick Reference card into your pocket and it's all stations go.

To be fair, the instruction books are excellent. A quick glance through will give you the basic idea and you can pick up more as you progress further. One final chilling thought though, one of the first things that you read is that not everything has been included in the books, there are other things that you will have to discover for yourself!

To Boldly Go?

So what of the game itself? Is it a souped up *Star Trek*? Well yes it is to be honest. There is no getting away from its origins. But *Star Fleet 1* has managed to get just about as far away from its origins as possible.

The Alliance has been behaving ostrich like for last few hundred years, sticking its head in the sand and totally unwilling to believe that the Krellan empire is ever going to be anything other than a spent force after the pounding that it took in the first galactic war. They reckoned without Henri Zae IV, the new Krellan emperor and self styled Messiah.

The attack when it came had total surprise. Alliance bases all over the Galaxy quickly fell. Every available Alliance pilot had to be recalled from duty in order to try and buy some time for the Alliance to get its act together. As if that wasn't bad enough, there were also the Zaldrons.

These reptiloid creatures had developed the technology to render themselves and their ships invisible, albeit at a cost of vast amounts of energy, and had now passed into Alliance territories totally undetected.

Your missions are graded. At the lowest levels, you only need to destroy few enemy craft. There are plenty of star bases for you to dock and repair at. The enemy are fairly static. Your only real problem is to complete the mission within the allotted time span. As your skill increases, so the missions become more difficult. Fewer bases, and larger numbers of highly mobile craftfrom both invading fleets. The rewards are plentiful though. Promotion can come quickly to those who consistently prove themselves in battle and there is a whole host of medals to be won for particular acts of bravery.

Under your own steam

Commanding your ship is achieved through a three tier control structure. Primary commands are the major, most frequently used ones — weapon systems, shields, damage control and navigation. The second level gives access to security systems, mine laying, transporter and tractor beam control. The computer commands allows you to launch reconnaissance probes, make an emergency hyperspace manoeuvre or enter a self destruct sequence if the situation is hopeless. All options can be selected from a series of menus so there is no need to remember a vast series of commands, only what they all do!

Your two main weapon systems both have their good and bad points. Torpedoes require little energy but you are limited to the number that you can carry. There is a chance that they will be deflected or a Krellan may decide to play unfair and move — they will not lock onto their target. Nor can they shoot through objects such as stars. Phasers on the other hand can. They will also lock onto a target but they do require lots of energy to operate. You can also lay mines which may prove useful against a moving or invisible target.

Not every enemy needs to be destroyed. You can disable one ship at a time and take it in tow back to a star base or beam some of your marines aboard to take prisoners. Capturing an enemy ship this way will increase your own ship's energy level. The problem with this is that higher levels, a prisoner might break out or a spy gain access to the decks of your ship, running amok and causing untold damage to your major control systems. This is where you need to make careful use of your internal security forces.

Defensively, you depend on your shields. There are four of these arranged round your ship and you can arrange them in various formations. If you can locate your ship on the edge of a quadrant, it is possible to get away with not having them all up thus releasing vital energy for other purposes. Once a shield is penetrated, you will suffer damage to one or more of your internal systems. These can be repaired but it will take time and energy to do so.

The other alternative for repairs is to dock at

Star Fleet 1

a star base. The only problem here is that you don't know where they are, at least at the start of the game. Because of their secret nature, you cannot risk giving their positions away to the enemy and so must find them for yourself. Star bases must be defended at all cost and you will be alerted if one comes under attack. Again though, docking and repairing uses up more of your precious time.

Navigation can be done automatically or manually. The playing area is an 8 x 8 grid of quadrants, each of which consists of a 10 x 10 matrix of sectors. To move your ship, you must specify both a heading and a distance factor. This is one part of the game that took some getting used to. The obvious way to arrangethe headings would be to have zero at the top of the screen and move round clockwise so that 90 was at the right hand side, 180 at the bottom and so on. For some reason that is not immediately clear, the programmers chose to have zero at the right hand edge of the screen and work back anti-clockwise.

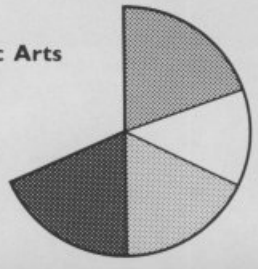
The game is nothing to get excited about graphically. Apart from mission briefs and the like, there is only the one main screen, subdivided into several windows. This lack of graphics is a throwback to the game's IBM origins, a machine not noted for its artistic capabilities. Sound too is limited to a series of minor effects plus a whole series of not particularly well implemented classical themes — Ride of the Valkyries, Academic Festival Overture, Chopin's funeral march and an absolutely dreadful Also Sprach Zarathustra (the theme from 2001). There is also a bit of semi-audible speech.

By and large though, strategists are not too bothered about what the game looks and sounds like. Challenge is the be all and end all. *Star Fleet I* certainly offers that in abundance as you strive to reach the rank of Admiral Emeritus. The game system fits together very well and control of the game is simplicity itself. There is no pressure on you to make a move quickly as the game does not play in real time. You can sit and ponder for as long as you want.

Certainly, the idea behind *Star Fleet I* is not original although there are many original ideas within the game. Whether you want to play the game on its own merits or go on a nostalgia trip, *Star Fleet I* has lots to offer. Very easy to get into, there is always the compulsion to fly just one more mission. Very highly recommended. ***YA***

Star Fleet I

Authors: **Interstel**
Suppliers: **Electronic Arts**
11/49 Station Road
Langley
Berks SL3 8YN
Tel: **0753 49442**
Price: **£24.95**



Graphics **13**
Sound **10**
Gameplay **23**
Value **22**

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REVIEW

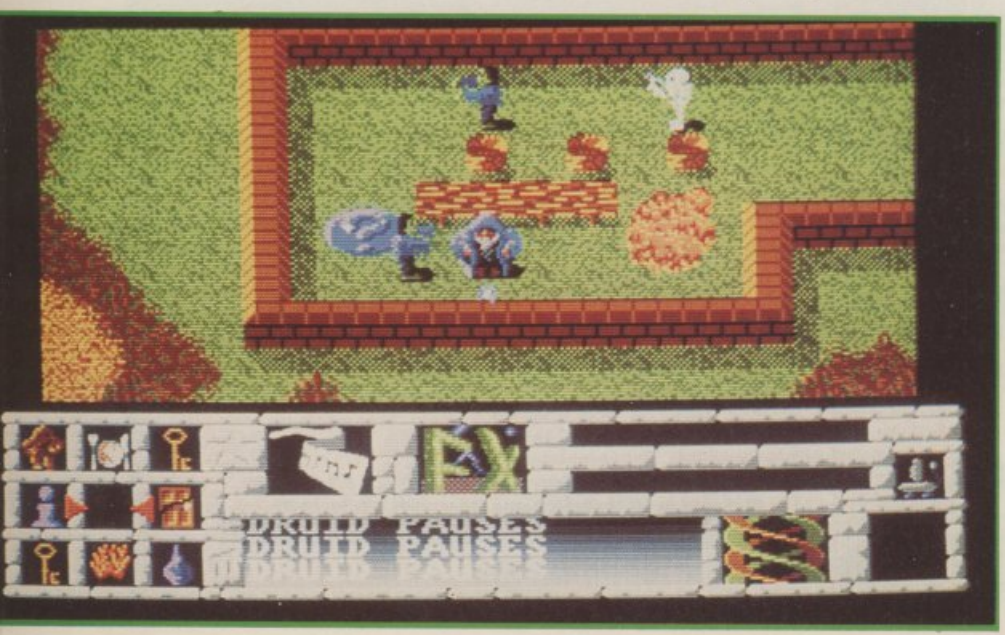
Enlightenment



Gordon Hamlett sets off on yet another quest to save the world!

Although you, Hasrinaxx, played a vital part in expelling Acamantor over one hundred years ago, a series of disturbing events lead you to the inevitable conclusion that he has returned and is once again trying to exert his evil powers over the land of Belorn. Your apprentice has been zombified and the villagers of Ishmar have also joined the ranks of the undead. A thunderclap makes you look up and there, in the sky, is an image of the Dark Mage himself. It seems to be mocking you and you vow there and then to use all your druidic powers to destroy this evil for ever.

Subtitled Druid II (although I have not come across the original on the Amiga), *Enlightenment* is a superior Gauntlet clone cum arcade adventure. The playing area is depicted in raised 3-D graphics rather than the usual top down view and the effect works well. The graphics are excellent.



Your quest starts in the village of Ishmar. All around you, the undead villagers are rising from their graves to attack you although a quick blast of lightning from your fingers soon dispels them. You will need more than that weapon though if you are to succeed in your task. Your travels will take you through ten different lands — desert, swamps, snow and caverns among them, each with their own selection of monsters all hell-bent on your destruction. On top of that, you will also have to find a way to broach the five level castle of Acamantor himself. In order to hamper you even further, there are also Acamantor's demon princes, all of which need special magic to destroy them. Contact with any of these evil creatures depletes your constitution. This can be topped up when required with a Banquet spell, one of the more frequent spells to be found lying around.

Your method of survival relies very heavily on magic. Up to eight spells can be carried at any given time. You start off with five and there are plenty of others scattered round the land to replenish those already cast. There are a total of 32 different spells to be used. Some are defensive in nature, restoring your constitution or increasing your armour strength. Others will help you as you travel, opening locked gates, providing light in darkened areas or merely offering a minor clue. A third type is the offensive spell, destroying monsters or causing them to run from your path. There are two spells — the Horn of Baeon and Coin of Charon whose effects are as yet unknown.

Help is also on hand in the form of summoned elementals. The four elements, air, earth, fire and water each have an elemental associated with them that can be called to help you providing, of course, that you have the appropriate spell to cast. The Wispe, Golem, Phoenix and Kraken can follow you about or be sent in a specific direction. They will serve you until their strength is depleted. Alternatively, a second player can take independant control. Each elemental has its own strenghts and weaknesses. For example, the Kraken will not fair particularly well in hot or dry areas. The strength of your elemental can be topped up from a distance although again, you will need the correct spell in your armoury.

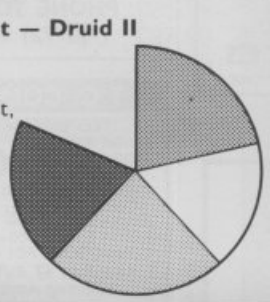
The game plays very well although I did have problems with the high score table in so much as the program crashed every time I entered my name. As I so seldom attain a place on a high score table, I found this particularly galling!

There is some spectacular music and sound effects to go with excellent graphics although the speech is a bit iffy. Mention must be made of the manual though. It looks slick and professional and it is only when you start to read the introductory story that the fun starts. Leaving aside the spelling, grammatical and factual errors, (of which there are many) this piece of prose is undoubtedly the worst bit of writing that I have come across for some time. It is so bad, it becomes extremely funny. The author obviously doesn't know what half the words that he has used mean. "Piercing stench" and "chants being spoken" are two examples that stick in the memory. Never have I seen such an apalling use of adjectives and adverbs and I must admit that I am surprised Firebird let it through. Their documentation is normally first class.

That apart though, *Enlightenment* is an excellent game and can be strongly recommended. ***YA***

ENLIGHTENMENT — DRUID II

Title: **Enlightenment — Druid II**
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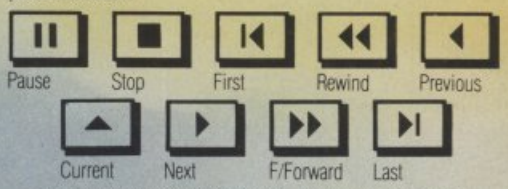
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