THIS MONTH

Printed in the U.K.

Arabesque

P I X E L

C R U N C H E R S

Two new "pixel crunchers" are reviewed in this issue. Andy Dance discovers whether the new bitmap and vector drawing program from Compo, Arabesque (above), is really an illustrator's dream come true, while Joe Connor looks at Invision Elite (below), a new graphics package from Power Thought Software of Ontario, marketed worldwide by DMC.
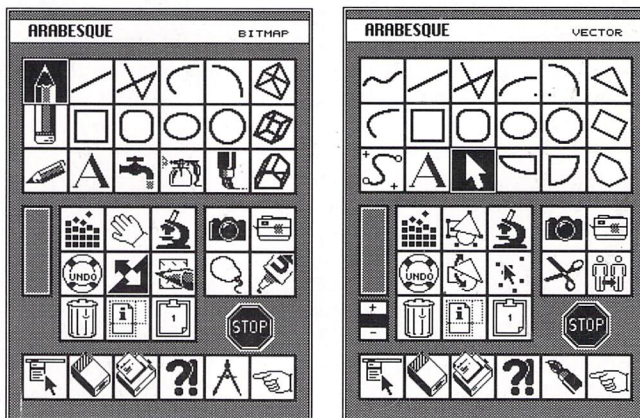
Invision Elite

Drawing Outline Fonts

MULTI

Peter Crush reviews an accessory that produces multiple copies of any WP or DTP file very easily by intercepting whatever your ST sends to the printer, capturing it and replaying it at a greater speed and as many times as you want.
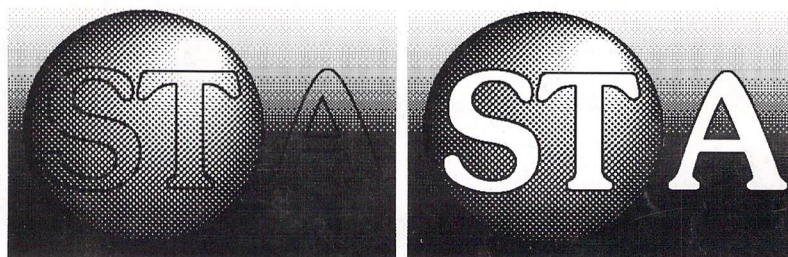
PRINT

Graham McMaster starts a tutorial series on designing fonts, with special emphasis on the drawing of outline (or vector) fonts. This month he starts off with a general overview of design considerations.

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CREDITS

Typeset on an Atari ST using Timeworks Publisher v2, with some help from Page-Stream v2.2 and CompoScript.

Text Preparation: Redacteur 3.

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Mark Baines	Joe Connor
Peter Crush	Andy Dance
Jon Ellis	Ofir Gal
William Hern	Paul Keller
Graham McMaster	Evelyn Mills
Günter Minnerup	Piper

Contributions

The articles in *ST Applications* are written by users for users. Everyone reading this magazine will have something to contribute; even if you do not feel able to do a full-length review or article there is the Forum section for short hints, tips and questions. If you are interested in writing for *ST Applications* - regularly or irregularly - please write for a copy of our terms and conditions. We always do our best to reward quality work with appropriate remuneration.

AVR Taken Over By HiSoft

Luton-based hardware 'veterans' Tony Racine and Dave Woodhouse have sold their development house 2-Bit Systems Ltd (better known under their trading name of Audio Visual Research) to HiSoft. Dave and Tony started out shortly after the ST was released and have produced most of the best-selling sound samplers for the ST and Amiga. Their range included the ST Replay series and Mastersound, as well as a handful of professional 16-bit sampling and mixing hardware for the music industry. The latest release from AVR was Video Master, which was reviewed in issue 28 of ST Applications. Their entire range was marketed by Microdeal.

As a result of the buyout, AVR's Luton office has closed and Dave and Tony have moved to HiSoft's Bedford base, where they will be employed as Technical Managers for AVR products. The AVR name will be retained and used on all present and future hardware products, with the HiSoft name being used for software releases. AVR's links with Microdeal have not been severed completely. HiSoft are to control the production and distribution of the AVR range but Microdeal will continue to handle the marketing and sales of the final products.

HiSoft's David Link commented: "We shall be producing new hardware titles for these machines [Atari and Amiga] as well as investigating other platforms and we shall be concentrating on multimedia solutions for popular home computers."

Atari News

The STFM has risen from the dead and re-entered the computer market with a very attractive £159 price tag! This is not a joke but an all out attack on the games consoles. Atari claim that the drop in price has been made possible owing to improved technology. The only drawback is that the machine comes with 512k and will be neither cheap nor easy to upgrade because of its design. Atari are no doubt hoping that some of the chain stores who have stopped stocking ST software may be persuaded to change their minds, assuming of course that the STFM sells in large enough numbers to re-vitalise the user base.

The STFM was withdrawn in favour of the STE almost 18 months ago in an attempt to encourage software houses to write programs which take advantage of the STE's extra features. However, this never materialised, with most companies writing software for the old STFM to ensure compatibility and a larger market for their products. The re-introduction of the STFM at such a competitive price is primarily aimed at the console market. Atari's hope is that parents will rather pay a few pounds extra for a 'real' computer in preference to buying a games console. It is widely rumoured that the 520 STE will drop to £199 and the 1040 STE to £249 within the next few months.

As expected, Atari were pushing the Falcon at the week-long CeBIT Show in Hannover at the end of March. They claim that 80 products are either available or under development and that the emphasis appears to be on art and music packages. A number of games were also on display, the most notable of which was a space "shoot 'em up" which featured true colour texture mapping in real time. Numerous hardware products were also on show, including an accelerator board which doubles the speed of your Falcon and lets you add 128 megabytes of memory.

Commodore's answer to the Falcon, the A4000/030, was also unveiled at the Show. It costs £999 and comes complete with 4 Megabytes of memory, an internal 80 Megabyte hard drive and of course the 68030 processor. It does not include a DSP but Commodore stressed that the DSP will be added later this year and will eventually be standard on all Amigas.

Sam Tramiel has confirmed that a third party developer has produced an adapter which will plug into the SCSI II connector on the Falcon and allow an Atari SLM printer to be used. It is likely that the same device will allow other DMA devices to be plugged into the Falcon. The only way you can use a SCSI device with both computers (although not a the same time!) at present is to make up a DIY cable to allow you to plug in your host adaptor and SCSI II cable and a switch to let you disconnect power from the host adaptor when you are using the Falcon. Regrettably Mr T didn't say who the developer was or when the adapter would be ready!

Atari's Bob Brodie recently announced that it will not be possible to place Multi-TOS into the Public Domain. Earlier this year he made it clear that he would like to do this but that there were problems. He elaborated on the 'problems' a few weeks ago. Apparently Atari's licensing deal with Digital Research for including the GEM interface with their computers requires that they pay a fee to the latter for each unit sold. As GEM is incorporated into Multi-TOS, they are unable to distribute the product without a charge for it. It is expected to cost about $100.

Atari are to make available an upgrade kit for Falcon owners who buy the machine without the internal hard drive and want to purchase it later. It will come complete with Multi-TOS, Speedo GDOS, 14 Bit Stream fonts and Atari Works, bringing it into line with machines purchased with the in-built hard drive. However, the upgrade option will feature IDE drives of 80, 120 and 200 Megabyte capacities. No prices had been set as we went to press.

Read_Me 1st

Subscription Expired? If you received this copy of *ST Applications* through the post, check the first line of your address label carefully: if it reads STA30, then your subscription has expired with this issue; if the information line reads "Complimentary Copy" you have been sent a free evaluation copy of *ST Applications*. Either way, you must take out a new subscription in order to receive further issues.

Information

Advertising

There is a limited amount of space for commercial advertising in each issue of *ST Applications*. Contact Nicky Wilson on 0602-410241 for further details and to request a media-pack. Subscribers can place free classified advertisements - see page 57 for details.

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Disk Mags

These are bi-monthly compilations of the best PD software to come to our attention in the preceding couple of months - not magazines on disk. The next Disk Mag, DMG.34, will be dispatched a few days after this issue is sent out.

Have Europress Software Abandoned The ST?

Europress Software have recently extended their ADI range of educational software to take in the 4-7 year olds. The 'new' range is called ADI Junior and will feature products for 4-5 year olds and 6-7 year olds. Regrettably, there are no plans to release these products on the ST.

Similarly there are no plans to upgrade STOS Basic and Compiler to run on TOS versions above 1.62. However, this is being worked on by a third party and it is expected that the upgrader program will also allow already compiled programs to be modified to run on all TOS versions.

A rumour that Jawx Software (the French team behind STOS) are working on a complete re-write of STOS has come from 'a reliable source'. The new Basic programming language is provisionally titled 'Super STOS' and is due out towards the end of the year. Despite the name and the fact that the same programming team are said to be involved, it is not expected that Super STOS will allow you to load programs written with the original STOS.

The Great Falcon Cover Up!

If you bought issue 12 of EMAP's Atari ST Review, you can't have failed to notice the sticky label pasted over the editorial on page 6. You may have thought that it was merely a last-minute stop press announcement that the publication had been purchased by Europress Publications, but you'd be wrong. There were more sinister reasons behind the 'cover up' as you will no doubt have found out if you steamed it off!

Vic Lennard's editorial stated that the current issue (12) of the magazine was to be the last. He laid the blame firmly at Atari's door blaming them for, amongst other things, creating a stagnant market in anticipation of the launch of the Falcon. Atari were also criticised for their attitude towards the computer press. He claimed that they had refused to lend a Falcon to any ST magazine for a full in-depth review. They are also alleged to have cancelled a press conference in January owing to insufficient software releases having been completed by that date.

He also stated that towards the end of last year, Atari were bypassing normal distribution channels and selling machines directly to independent retailers when many developers were still waiting for their machines. I can personally back up this allegation as I am aware of a computer store in Edinburgh who were selling the Falcon at that time. So, what did Vic Lennard get in return for his outspoken comments? He got a sticky label pasted over his face!

2nd Edition From Kuma

Kuma Computers have just released the second edition of The Commercial Games Programmers' Guide by David Gibbon. The book is billed as being a complete guide to the computer games industry and how it works. It does not teach you how to program but instead gives you tips for programming games in the commercial world on all major formats. It does this by showing how professional programmers organise their code, explaining how to develop your best ideas into top selling games, examining the complex issue of copyright, advising how to present your game to a software house in a professional manner and even looks at how to go it alone and market the game yourself. The book also contains a comprehensive list of software houses, distributors, duplicators and computer magazines. The Commercial Games Programmers' Guide costs £9.95 and is available from your local bookstore (ISBN 07457 0155 8) or direct from Kuma Computers Ltd, 12 Horseshoe Park, Pangbourne, Berkshire RG8 7JW.

Pure C: the latest upgrade is Version 1.1; the new features include auto dependencies, project search and multiple file search, and bindings for the new MultiTOS and Falcon-Functions. There is a special price for students: 248DM plus 20DM p&p (they need a copy of their student identity card and payment by advance with Euro cheque); the full price for Version 1.1 is 398DM. This program has the best on-line help I've ever seen on Atari computers and has a full source level debugger (features lacking in Lattice C 5.52).

The resource editor, ACS 1.05, supplies Hypertext help about all calls used by ACS, so when you're programming with Pure C you have instant information for all ACS calls and commands (they are very well documented). I love this!   *(Mario Gardenghi)*

Pied Piper

A young band who have signed with Phonogram use STs. Not much of a news piece, but this band were so impressed with it, they've named themselves Atari Teenage Riot. Discussions are currently going on with Atari to see if they can use the name, with the group going over to visit Atari at the CeBit show and Atari's Darryl Still invited to a studio to see them perform. Actually, he was invited to listen to them, but that became impossible once they'd blown up the studio's rather expensive speakers with their individual sound of Rave/Techno Punk with lyrics like "Video junkies gonna fuck you up". This is the sort of thing your parents might forbid you to listen to, and hence already has a market. Hopefully, Atari will realize the potential of the free publicity and let them carry on with the name.

Apparently because of "pressure from the independent market", Atari are to re-launch the 520 STFM at the attractive price of £149. This will put it in direct price competition with the SNES and Mega Drive, and will have the advantage over them of being a learning tool and having substantially cheaper software, so being more attractive to parents. The advantage to independents in stocking this is "margins are very low on

the SNES", so there's more money to be made for them. This could have a knock-on effect for us since more machines being sold will mean more software being produced. The Amiga A500 has also gone down in price to try to compete, but only to £199, and there are reputedly only a few weeks of stock left before it waves its last goodbye.

The Sun, sometimes mistaken for a daily newspaper, is currently going through an anti Sega and Nintendo phase. As part of it, they'll be offering 'real' computers as prizes every day. To be more specific, STs. Another good bout of publicity.

The £399 Falcon seems to have disappeared over the horizon, being replaced by a £599 entry-level machine, but there are on-going rumours about the possibility of a "consumer" version of the Falcon making an appearance at a lower price, though missing out on some of the ports of the professional model. News from CeBit indicates that the new case for a Falcon is still some way off. When asked about it, Atari said that developers would be shown any changes four months in advance, and so far no-one had been shown anything.

There were no major announcements from Atari on the hardware side, but there was a show of support from over 40 developers, leading to Atari stating that there are more than 80 products currently in development. Third party add-ons have already been demonstrated, such as the accelerator board from GE-Soft

which allows for memory of up to 128MB with the processor running at double speed, though the Mac and 486 emulators were only mentioned as still in development, not shown. Software from Eurosoft was allowing full 24-bit colour both with Photo Studio and the Home Video Kit.

There are now real Falcon games coming out, some from firms which had previously dumped the ST. Silmarils showed Transartica and the renowned Ishar, whilst giving previews of Ishar II.

Something which caused a chuckle was that on a big video screen, Dell were showing a piece of software in action on a standard 386 machine which took 8 seconds. They then proudly displayed their own machine doing the same thing in just 6 seconds. Just across from them was a stand which took great joy from this presentation and whistled to the spectators to show their own machine doing the same thing with virtually no delay time. The machine they were using was the Falcon.

The Falcon is currently coming over in quantities of "500 to 1000 per week" and is instantly being taken by pre-orders. The last two weeks of April will suffer from lack of stock as the air deliveries finish, with the sea deliveries coming in at the beginning of May, after which there should be rather more reasonable quantities. At present, the machine is mainly going out to independents rather than high-street

chains such as Comet and Dixons, as Atari are concentrating on the music market initially.

From the early stocks, it seems that the 1MB machine is unlikely to appear until mid-way through the year, by which time the exchange rate may again have gone through convolutions and the £599 price tag currently associated with the machine may drop again to a more reasonable level. The 4MB version with 64MB hard disc is currently the easiest to get hold of.

Atari may soon be advertising! They now think they have a range, rather than just a machine, with the Lynx, ST and Falcon now available. This means they can use the 30-second slot to promote Atari as an image rather than one particular product. If the range extends further (the Falcon 040 and Jaguar/Panther/Cockroach console) the ads can still be put to use. Well, that's the current theory, but no ads yet. Keep watching.

Some no-news that may turn interesting: When asked about whether they'd be producing a "character" for their machines, like Mario, Sonic and Zool, the best response I could get was "we can't say anything about that at the moment". Not a "No". This gives the impression that the illusory character is connected with the fictitious console and both may be out on the mythical release date.

Piper

Falcon Fodder

With Falcon030 machines finally shipping, Mario Gardenghi remembers the Falcon030 software previewed at Codex '92 and trusts that much of it will now be finished and on sale real-soon-now.

At Comdex '92 there was a Kodak Photo CD player running on both a TT030 and an Atari Falcon030, staffed by Michael Bernards of Color Concepts. Michael is one of the original Calamus programmers from Germany. Kodak is very excited about the relationship with Atari: when they first developed Photo CD they intended it for use at home by consumers.

With the Atari Falcon030, Atari has brought the Photo CD back into the family room. Michael Bernards spent a week at the Kodak facility in Rochester porting the Photo CD Toolkit and the Photo CD slide show utility to the Atari platform. He and Eric Smith then spent the week just before Comdex perfecting the MiNT CD-ROM XA file system driver for use on Falcon. He is now back in Germany finishing the developer tools for Atari/Kodak Photo CD. Photo CD is implemented on the Falcon as follows:

1) Atari will sell a low cost ($20-$30) package (Atari Photo CD Access) that will allow users to view Photo CD disks, and perform the same functions as a Photo CD player from Kodak (zoom, rotate, etc.) as well as save the files in standard formats such as Targa and TIFF. This package will also support the interactive Photo CD Disks that Kodak is producing such as, "From Alice to Ocean," a narrated guided tour across Australia. This product should be ready for shipping in late February.

2) There is a developer kit that allows 3rd parties to directly access all levels of Photo CD in their applications. Use of this kit in their software will incur a royalty of 5% with a $2.00 minimum and $3.00 maximum royalty per copy, payable to Atari on a quarterly basis. The developer kit is already available (on which planet? - Ed) and it costs $700.00.

3) As TOS is revised, there will be new calls that applications can make to support various picture formats, including JPEG and Photo CD. The application won't have to

know anything about the file format, other than that the user wants to load some sort of graphic. (This is how PICT works on the Mac to support Quicktime, JPEG, and Photo CD.) When these new O/S calls become available (mid-'93), anyone who has purchased the Atari Photo CD Access package will have access to Photo CD in any application that supports the new O/S load graphic call.

There is already a Kodak Photo CD import driver for Calamus SL. It was demonstrated at Comdex by DMC Publishing (Canada); it's good to show Photo CD implemented in a real application in addition to the demonstration slide-show.

Also at Comdex:

Digital Optical Analog demonstrated **Blackmail**, their Falcon-based digital phone mail system (about $150 to $250) that allows users to call in and use their touch-tone phones to navigate through various selections and options to leave messages etc. This is a new developer to the Atari platform, previously making their product for the NeXT. Using the Atari Falcon030 to operate a voice mail system will save thousands of dollars. They are based in the U.S. and have representatives in Germany and the U.K. This product is available from February (if no delay occurs owing to necessary telephone company approvals).

MicroCreations showed off **GIME Term**, and **GIME BBS**. These are fully featured term programs that incorporate unique graphic and sound capabilities. They also have a new terminal program called Rapier. They are working on updates to these programs that will allow interactive simultaneous data, graphics, and voice communication using a Falcon. As a person draws a picture on one Falcon, it will appear in a window on the Falcon connected at the other end of the telephone line. This should be available late 1st quarter '93.

STraight FAX was demonstrated.

This is the software that will be bundled with Atari's own DSP Fax-Modem. It is similar to the popular Windows product from Delrina, WinFax.

Shown by *Compo* was the well known word processor, **That's Write!** It is a full-featured word processing package with spelling checker, mail-merge, and now has improved multiple document handling (up to 10 documents at a time!). The new version of That's Write, using **Speedo** fonts, is already available, and retails for $259.95. They also demonstrated **That's Address 2**, a database product that integrates with That's Write! That's Address 2 will be available first quarter of '93 for $99.

Diamond Back III is an easy-to-use hard disk backup program that supports floppy backup, as well as any popular tape drive. This is ideal for musicians to back up song data.

Atari showed **Concierge** (ST-Sutra) running with **Speedo-GDOS**. Version 1.0 of Concierge will have integrated Word processor, Spreadsheet and Database, with full Spelling checker and Thesaurus. Upcoming updates will have telecommunications and drawing modules also. Concierge with SpeedoGDOS can be run on a 4MB floppy system that has a 1MB ramdisk (for fonts and GDOS drivers), but optimally should be run with a hard drive. Concierge will sell as a stand-alone product for about $125.00, and could be bundled with Falcons equipped with hard disks.

Falcon GCR from *Gadget by Small* (USA): the Mac emulator version for the Falcon. It must be connected in the internal expansion connector. Available in June.

Screen Blaster from *Overscan* (Germany): a very smart piece of hardware that must be placed in the video port of the Falcon without soldering or opening the machine. It offers 800x600 resolution with 256 colours (a very good resolution for Multi-TOS - plenty of space for windows!) and 880x608 with 16 colours with SVGA monitors. Already available.

De-interlacer from *Retour2048* (France): allows you to work with 640x400 True Colour in non-interlaced mode.

Over Genlock from *Overscan* (Germany): a professional genlock to use in conjunction with their own software for video titling: Overlay. Already available.

Matrix Grabber from *Matrix* (Germany): a True Colour digiti-

zer grabbing at 2 images per second at 320x200. Can work with higher resolutions. Already available.

Home Video Kit from *Eurosoft* (France): a complete video kit containing a true colour digitizer, a genlock, video titling software, a photo retouching program. All this for less than 200 dollars! Available in March.

JRI Genlock from *John Russel Innovation* (USA): a genlock designed specifically for the Falcon 030 and containing a video titling program. Available in the first quarter of '93.

JRI Grabber: a real time True Colour digitizer. Available in March.

In Digit from *Informatique & Nature* (France): a professional True Colour digitizer. Available in April.

TC Video Digitizer from *Rombo* (UK): a PAL/S-Video true colour video digitizer to insert in the cartrige port of the Falcon. The True Colour mode works in 320x200. In real time mode it works with 256 colours. Available in April.

Video Master from *AVR* (UK): a true colour video digitizer for the Falcon and ST/E. Available now.

Synthetic Arts from *Cybernetix* (France): a true colour bitmap graphic program with a user interface designed for interlaced modes. It supports overscan and non-overscan modes and all Falcon video modes. Features a lot of professional tools and incredible shading effects. Available from March.

D2M from *Parx* (France): a True Colour all-resolutions program that supports GEM, SpeedoGDOS and MultiTOS. Available in June.

Meridian from *Lexicor* (USA): True Colour bitmap program, similar to Prism Paint. Available in March.

Phoenix from *Lexicor* (USA): a professional program for 3D rendering and raytracing with True Colour graphics that supports CAD 2.0 3D2 objects, multiple textures (marble, wood, image remapping) and contains basic functions for animations. Already available.

Chloë from *Business Assistance* (France): a very powerful raytracing program with a host of objects. Better and faster than DKB and POV, it features a GEM user interface and support for 68882 mathematic co-processor. It's compatible with all the Falcon video modes. Version 1 is already available, and version 2 which does all of its number-crunching with the DSP will be available in June.

Timix from *Business Assistance* (France): a 32-bit retouching program. It'll be available in September.

Photo Studio from *Eurosoft* (France): a 24-bit retouching program that is both cheap and powerful. It's compatible with all Falcon resolutions and it's been designed specifically for True Colour mode. There are rumours that this program could be bundled with Falcons.

Photo Studio Pro from *Eurosoft* (France): the bigger brother version. Manages 32-bit graphics and uses the DSP for all calculations. Available in June.

The Falcon versions of **Retouche CD** by *3K* and **Cranach Studio** by *TMS* are on the way.

DynaCADD for the Falcon from *Ditek* (USA): a new version of this powerful and versatile CAD program for Atari with 3D rendering. Available in March.

Autodesk Animator from *Dancing Flame* (USA): this incredible application for the PC will be available for the Falcon in June.

Chronos from *Lexicor* (USA): the long-awaited key-frame animation package that is able to generate automatically all the images between the first and the last. Available in March.

Toki Line Test from *Yeti Software* (France): a professional program for animations production. It uses the True Colour mode for a high quality video, and it permits audio-video synchronization and image painting. Available in June.

Toki Story: an accessory for the above program, creates storyboards, screen-play, scripts and scenario designs. For producers and directors, it's useful for TV spots.

Toki Toons: the cheap and cutdown version of Toki Line Test. For comic creation (Marvel, DC, Dark Horse, Image, etc). Available in June.

Toki Video from *Yeti Software* (France): gives everyone the tools to direct, edit and produce their own videos. This package will record video sequences, edit them, add titling and special FXs and record the final product on a VCR. Very similar to Premiere 2.0 for the Mac. Available in July.

Easy Fancy from *Lepine* (France): the first interpolation software for the Falcon's True Colour mode. Like MORPH for the Mac it can generate all pictures in between when given the first and the last. Available in the second quarter of '93.

Color Thing from *RCS Management* (Germany): the Falcon version of "Paint Thing" for the Amiga. This is a 24-bit graphic card for video animations in delta compressed format. Available in July.

JVC Interface from *Excelsior/JVC* (France): software for the management of all audio/video systems made by JVC (CD, DAT, CDV, tuner, amplifiers, TV, recorders, etc.). Available within a month. There may be a PD version (a cut down version, I presume).

Interfaces for Digital Audio Devices from *Shift Computer* (Germany): a collection of interfaces for CD, DAT, DCC and Minidisk. Available in April.

Picture Telephone from Matrix (Germany): a kind of video-telephone inside a window on the Falcon desktop. Available in March.

Microsoft Bookshelf Front End from *Codehead* (USA): this is a program for using Microsoft Bookshelf on the Atari.

Comics Maker from *LogAccess* (France): for comic production. This program uses libraries (sold separately), puts the images together, and adds text to the comics. It needs SpeedoGDOS. Due in the 1st quarter of '93.

Light Shows from *Staszak* (France): a powerful live system for light/music synchronization management. Available in June.

Bit Bopper from *Tecnation* (USA): accepts audio signals as input and converts them into graphics based on the signal's frequency and rhythm. Available in July.

Tevisa from *Labo Neyrac* (France): a system for the creation of multimedia terminals. Available in June.

MEM from *JL Universität* (Germany): the Falcon version of Multimedia Application Development Environment. Available in the second quarter of '93.

Assemble/Debug IV from *Brainstorm* (France): the fastest assembler for 680x0 processors, it's eight times faster than Devpac!!

FalcOS from *Lionet/Europress* (France): the Falcon version of Amos Pro Basic Game Creator. Available in June.

DSP-MOO from *Maxon* (Germany): an object oriented modular development environment for the DSP. Available in the second quarter of '93.

GFA Basic 4.0 from *GFA/Richter* (Germany): the new version of this incredible BASIC for the Falcon. Available in March.

4T FX from *D2D* (UK): a direct-to-disk four channels with DSP-generated effects. Already available.

DigiTape from *Trade It* (Germany): a direct-to-disk six channels with DSP-generated effects. Available in March.

DSP Synth from *JCD* (France): capable of reading midi files and passing them to the DSP, it plays them as it would a normal synthesiser. Available in the second quarter of '93.

Kurzweil Emulator from *DVPI* (the suppliers of Session Partner in Germany): it emulates the Kurzweil K2000 on the Falcon! Available in March.

Planet from *Rhythm'N'Soft* (France): a sequencer featuring direct-to-disk functions and realtime DSP data compression. Available in the first quarter of '93.

International TOS Software Catalog: a 500-page catalogue reviewing almost all software available for the ST/E, TT and Falcon! The reviews are small but well done with screenshots. The price is very very low: $12!

Falcon Games:

Street Warriors from *Excelsior* (France): a Street Fighter 2 clone.
Unknown Ocean from *Excelsior* (France): an adventure.
I forgot the name from *Eurosoft* (France): an arcade with fast scrolling action, similar to Sonic.
Alone in the Dark from *Infogrames* (France): the revolutionary game for PCs, soon available for the Falcon!
Suriya from *Lankhor* (France): an adventure with speech synthesis.
Black Sect from *Lankhor* (France): an adventure.
Vroom II from *Lankhor* (France): the sequel to Vroom features 4 players at the same time on screen. A quantum leap from Vroom!
Raiden from *Imagitec* (UK): an arcade conversion.
Steel Talons from *Koveos* (UK): a 3D helicopter simulation.
Cyber Assault from *Koveos* (UK): a 3D adventure.
Tornado Flight Simulator from *Digital Integration* (UK): a 3D flight simulator.
Striker from *Rage* (UK): a soccer game.
Eclipse from *Eclipse* (UK): a space game that uses the DSP!
Road Riot 4WD from *Images* (UK): coin-op conversion.

Mario Gardenghi
Italy

More Refill Kits

Themis UK are one of a number of companies offering refill kits for inkjet and bubble jet printers. They sell a starter kit comprising of a detailed instruction sheet, a syringe and a 60ml bottle (or bottles) of ink. Once the user has the 'kit', 60ml and 400ml bottles may be purchased separately. Kits for the Canon BJ10e, Star SJ48 and similar cost £33.95 and the HP Deskjet version costs £28.95 for the ordinary kit or £82.95 if your Deskjet uses the high capacity cartridges. Refill bottles cost £17 for the 60ml size (most models) and £75 for the 400ml size (most models). The prices quoted are for black ink and are exclusive of VAT. Coloured kits are available for a few pounds more as are coloured refill bottles. Themis kits are currently available for 46 different printers and more are being added. For more information contact Themis UK, 1 Wellesley Parade, 481 Godstone Road, Whyteleafe, Surrey CR3 0BL; Tel: (0883) 623366; Fax: (0883) 626777.

Silica Recommend Printer

Silica Systems have decided to stick their necks out and recommend a colour printer for use with the ST range of computers. They are recommending the Seikosha SL95 as being the best budget-priced colour printer after extensive tests which included day in, day out printing, speed trials and software compatibility testing. The Seikosha SL95 is a 24-pin printer with 9 resident fonts, a 43k buffer, a semi-automatic single sheet feeder, paper parking and a push tractor feed. It runs at speeds of up to 64cps in LQ mode and 192cps in draft.

Silica are currently offering a free printer starter kit with every printer (from any manufacturer) purchased. It consists of a printer cable to connect to the ST, paper, labels, envelopes and custom written printer drivers. The Seikosha SL95 costs £222 and further details can be obtained from Silica Systems on 081 309 1111.

News In Brief

Riverdene Making Music

Riverdene PDL have recently secured the exclusive rights to Guitar Tutor by Mick Waite. Guitar Tutor starts at the basics of playing a guitar by teaching the structures of major, minor and seventh chords. The program runs on any ST/E with 1 Megabyte of memory and a colour TV or monitor. Guitar Tutor costs £4.95 and is available from Riverdene PDL, 30a School Road, Tilehurst, Reading, Berks. RG3 5AN; Tel: (0734) 452416; Fax: (0734) 451239.

Format Drops By 10%

Future Publishing have announced their July to December 1992 sales figures and six of their nine computer magazines saw a substantial drop in sales. Monthly sales of ST Format, their only Atari based title, dropped from 69,509 copies to 62,210. However, this still leaves the magazine well ahead of its competitors. Europress had not released the figures for Atari ST User as we went to press, but it is expected that they will also be in for a drop, probably to about 35,000 copies.

Computer Show Moves

The 8th International Computer Show has been moved from July to November. Westminster Exhibitions, organisers of the Show, claim that the re-scheduling is as a result of pressure from exhibitors, preferring an event closer to the peak pre-Christmas sales period. The 8th International Computer Show will now take place from 19th to 21st November at Wembley Exhibition Centre.

Recycle Your Unwanted Software And Books!

Purple Mountain Computers have initiated a recycling program for computer books, magazines and software by buying, selling and exchanging second hand goods. They currently have 10,500 computer books and magazines as well as about 1,100 programs. All their software is listed in their publication CompuNews, which is free on request. The books are listed in their disk catalogue which costs $1. They buy, sell and exchange goods for the ST, Amiga, PC, Mac, Commodore 64, 8-bit Apple and CP/M machines. For further details contact Purple Mountain Computers, 15600 NE 8th Street, #A3-412, Bellevue, WA 98008, USA; Tel: 206 399 8700.

Upgrade Your Falcon!

Gasteiner Technologies have just released a 32MHz accelerator board for the Falcon. Its features include support for SIMM modules, allowing up to 32 Megabytes of memory to be fitted, a VME bus to allow for further expansion such as graphic cards etc; and of course the obvious feature, a speed increase of approximately 75% over that of the standard Falcon. The 32Mhz board is easily installed and currently available at an introductory price of £599. For more details contact David Shaw at Gasteiner Technologies, Unit 2, Millmead Business Centre, Millmead Road, London N17 9QU; Tel: (081) 365 1151; Fax: (081) 885 1953.

Babble

All right, I admit it: I'm writing a lot about the Falcon and very little about the ST.

And it's not just a lapse.

Y'see, things changed a lot in '92. Most people would say that there were very few major advances, and things generally were pretty gloomy.

And they'd be right.

But what changed were perceptions, the way people looked at things. Consider our own market: Eighteen months ago we were still major players, now a number of software houses have said they'll be dropping production of ST software. The ST still sells, so there are now more owners than before. But someone said it was dying, someone else believed them, so now it is.

In other markets, look at what's happened: Windows is not a new product, the newest model isn't even last year's. But the impact of the product last year was phenomenal. Nowadays, very few people will buy a monochrome PC. Colour VGA (640x480) is the minimum, with resolutions heading up to 1280x1024. Without these sorts of resolutions, Windows isn't being used properly. Windows is a GUI, the software that's written for it makes use of that, and as we old veterans of GEM know, it's far easier to point and click than to have to go to classes to learn the commands for every new package. Computing has really hit the office.

With the advance in graphic capability caused by the needs of Windows, and the fall in price due to the competition, there was a large base of reasonably powerful colour computers with big memories and large hard discs sitting in homes to be used for the odd bit of work. And when the work was done, what else could such a thing be used for? Someone must have figured it out, coz in the last year it's got to the point where some games are developed on the PC rather than on the Amiga.

One of the big things currently causing rumbles is multimedia. No-one is yet entirely sure of what it is, but they're all getting interested in it. The basis of the idea is to combine pictures with video with high quality sound with just about anything anyone else can think of. Phillips is currently working on a standard FMV (Full Motion Video) which will allow films to be stored on CDs by compressing the video data at a 100:1 ratio. It suffers from certain limitations, such as the fact that the film would have to be really short (around 70 minutes), but once a standard is accepted, the next generation of software will rely on moving images instead of just pictures. Of course, Phillips isn't the only one looking for a standard. Panasonic are currently working on a similar system which will allow for 2 hours of high quality video, and in the USA there's an offering from TMM which uses fractal compression to get a compression ratio of around 500:1 at "near broadcast quality" (whatever that means). And Nimbus has managed to refine its CD tools so that it will churn out double density discs, storing 2 hours 15 minutes of film with the MPEG system, which can be read by CD players currently on the market. And, with specialized blue laser players, it can manage quadruple density.

We're now at a point where the market is "mature" enough to be able to accept these sorts of things. What is also needed if we do get as far as FMV is the ability to handle the soundtrack that goes with it, and that's one of the areas where the PC market is still very much in the infant stage. It's all a part of multi media, though.

Which brings me back to the Falcon. When the ST came out, it was a killer of a machine, better by far than anything else three times the price. It's stayed the same, the market has moved on, caught up with it and even sailed past. But the Falcon has addressed a part of the market so far missed by PCs, it's going for sound. Steinberg have already shown off an 8 track direct to disc package which will put it in competition with the digital recording machines currently taking the recording industry by storm. It will also link up with whatever digital video standard is accepted. And it's accepted the Kodak Photo CD standard. Sound and Vision. It's making a major play for multi media.

It's been many years since Atari made a major play for anything. This has re-awakened my flagging interest. If Atari have finally learned lessons about marketing, about supporting and encouraging software houses, about actually talking to us instead of pretending they live on Olympus, this could be the big turnaround, again marching at the forefront, looking at the others trying to catch up. I hope so.

When I see (and hear) it, I'll tell you about it.

Piper

Write 2 Reply

That's Write 2, the latest version of Compo's word processor, has recently been released. Peter Crush takes a long look at it, and tries to fathom out which of the many ST WPs is now the best.

Tempus Fugit, as they say in Alconbury Weston. It was in STA 8 that I reviewed the original version of That's Write, and that was in July 1991! Since then Compo's programmers have been busy making improvements to that earlier version, and the long awaited result is That's Write 2. The new package comes in a shrink-wrapped box containing a professional-looking A5 ring-binder manual, with its own library case, and three d/s program disks. The fully indexed manual is over 300 pages long.

To use That's Write 2 you will need an ST, STE, TT or Falcon which has at least 1MB of RAM, and if you are going to be working with long documents you would be well advised to have even more RAM than this. The program runs in medium and high res, and if you are in the money you can use a large screen monitor to display That's Write 2. Although you can just about get away with one double sided disk drive, for sensible use you need two floppy drives to run the program smoothly. That's Write 2 is so up to the minute, you can even specify the use of a 1.44 Mbyte High Density floppy drive, as used on the Falcon. However, the favourite option is to run That's Write 2 from a hard disk, and given the fall in hard disk prices, this is no longer such a luxury. The Installation procedure for That's Write 2 involves a little disk swapping, but it's very easy to do thanks to clear instructions in the Manual. Installation is of course quicker on a hard disk system, but whatever your set up, it's an entirely painless, techno-free zone.

Installation involves telling That's Write 2 about your system via a series of dialog boxes, and the correct font and other files are then extracted from the compressed files on the distribution
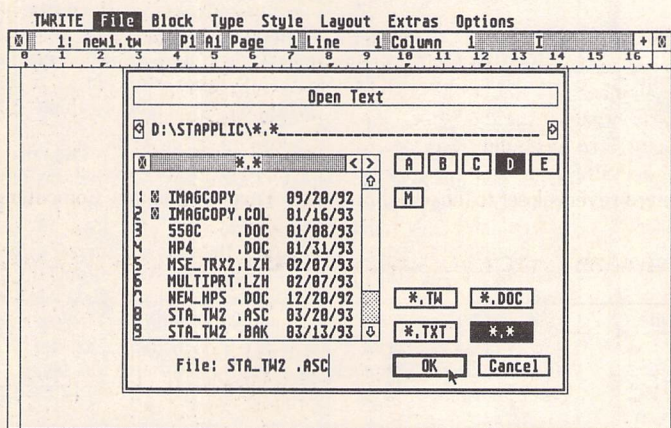
△ The blank opening screen of That's Write 2 minus scroll bars, but these can be reinstated if you like (see later). To load a file you can use That's Write 2's custom selector which is better then the usual Atari one, and has keyboard shortcuts for all its operations. Alternatively, you can specify the use of the normal or a replacement selector such as UIS III.

disks and written to either your working floppy disks or your hard drive. There is even a section in the Installation program which will make back up copies of the Master Disks before you start, it's all jolly helpful and foolproof. Although fonts are depacked and set up for both the printer and screen in the resolutions required, Compo have hidden away all these mysterious goings on from the user in both the Installation procedure, and to a large extent, in the use and running of the program itself. The result is you suffer none of the hassle usually associated with GDOS and other font handling systems that can make life difficult for those who don't have degrees in programming. The result: you can safely enjoy being fairly ignorant about the technical side of fonts, and concentrate on using them!

That's New 2!

The previous version of That's Write was v1.5, and it was released in early 1991. The cur-

rent v2 has a number of new enhancements and additions which builds on the features in the original. There are quite a few of them, so, taking a deep breath, here we go!

Up to nine documents can now be accessed on screen, and each documents has its own enhanced GEM window. This gets round the usual Atari limit of only four windows being available, and you can cut and paste text between them. The program's dialogue boxes are now movable on screen: simply drag them to any new position you like, and all of them have keyboard alternatives. There are the smart new-style pop-up menus for certain multiple-option dialogue boxes too. A "Page Preview" feature enables either a small scale or actual size display of your document to be viewed on screen within its own scrollable window, with all the pages of the document side by side within it. The "Automatic Correction" feature of the spelling checker can now recognise and correct erroneously trans-

posed characters whilst you type as well as correcting misspelled words and missing accents. The "Heading Level" function has been enhanced; this acts like a form of Outliner enabling you to hide or show paragraphs according to the "level" you optionally assign them. The paragraph settings feature now allow the definition of additional spacing before and after each paragraph if you wish. The blinking of the typing cursor can be turned On or Off, and you can chose whether or not That's Write 2 uses the built in That's Write file selector or the normal Atari (or alternative) file selector. (I plumped for the use of the excellent Universal Item Selector III, available from The ST Club, end of advert). Automatic Numbering and Automatic Calculations are now available from the "Instructions" feature in That's Write, and the Mail Merge function has been further improved. Support for compressed fonts via the supplied CFont Accessory is incorporated into That's Write 2, this saves disk storage space and ensures compatibility with "Fontkit" fonts. The "TRech" calculator Desk Accessory is included in the package, the results of whose calculations can be read into your document directly, and the DA can be called up by key shortcuts. In addition to these improvements there is also faster formatting (claimed 40% quicker), and an Online Help facility is now included in the program.

Horses for courses

The particular WP you chose could be determined by how many features you really need, to what main use you will be putting it, and the thickness of your wallet. Most WPs contain more features than the average user actually requires, but ST owners are generally a discerning, cultured

That's Write 2 in a Nutshell

So what exactly does That's Write 2 do, and how does it fit into the general ST scene of things on the WP front? Here's a quick rundown of the main features offered by That's Write 2.

* That's Write 2 uses its own improved GEM interface, making it immediately accessible and easy to use, and includes extra features not found in the ST's "standard" GEM, such as the ability to have up to nine windows open at once, and enhanced window manipulation.

* Text can be imported into That's Write 2 as ASCII or the default .TW format, and documents can have up to five columns of text per page.

* Whole paragraphs can be "tagged" with attributes of font, text style, justification, etc., which are instantly applicable.

* That's Write 2 is capable of using multiple fonts (up to twenty different typefaces in one document), but it doesn't use GDOS, and can load and unload fonts at any time. GEM fonts are usable, and Calamus fonts can be converted with a supplied utility program bundled.

* That's Write 2 is WYSIWYG, i.e. the screen shows a good representation of your actual text, with different fonts, styles and text sizes being evident.

* Printing of documents is handled intelligently by the program: if your printer has internal fonts which match those on screen, it will use them for quickness, or otherwise load the required printer fonts from disk. Printer drivers for all popular machines are supplied, and extra drivers are available at reasonable prices.

* Pictures in the form of IMG files can be imported into documents, and these can be moved about and re-scaled to suit.

* All the other WP features you would expect in an upmarket program are there, such as spellchecking, automatic correction, indexing, footnotes, endnotes and macros, etc., but there is no Thesaurus in the current version.

Upgrade Yourself

In the entry level WP stakes, Write ON is pretty hard to beat, being unique in offering multi-fonts and DTP-type features at a bargain price. Compo "gave away" Write ON on the Cover Disk of ST Format 33, with the option to purchase the manual, and apparently did well with this method of introducing the program to a wide audience. But That's Write 2 offers many professional features not offered by its younger sibling, and you might want to get the extra power. Registered users of Write ON can upgrade to That's Write for £79.99, quite a saving on the full price. Registered users of v1.5 of That's Write can upgrade to That's Write 2 for just £29.99, another pretty good deal. Compo promise that That's Write is an evolving product, with future extra features and developments guaranteed to keep it up-to-date.

Loads of Fonts and No GDOS

So what's all this talk of fonts, you may ask. You normally associate fonts with DTP programs and not WPs; early ST word processors such as First Word/Plus could certainly make no use of different fonts. That's Write 2, however, differs from what was once the norm in that you can have up to twenty different Fonts in a single document (if you have enough memory). You can type your text into a document in the default plain style, and later on restyle it (or parts of it) into a different typeface or typefaces. Most modern WPs for PCs and Macs have offered these sort of facilities for ages, and although Compo's Write On and the earlier That's Write could do this trick, it hasn't been widely available in many other ST word processors until lately.

Some of That's Write 2's fonts are the more attractive proportionally spaced ones, and so you should use the Tabs feature to make sure any columns, etc., are properly lined up. Instead of the conventional ST system font, the screen shows what you are typing in a more delicate Mac-like display. That's Write 2 can be configured to automatically load the particular Fonts you require so that they are all available to you; otherwise, it defaults to loading just the 10cpi Pica Font. However, you can load in any of the other screen fonts as you need them from the Type menu whilst you work. The printer Fonts are not loaded from disk until you come to actually print out your document. The way That's Write 2 handles Fonts is very user-friendly compared to the usual struggle with most multi-fonted programs, you don't have to understand anything to make it all function. Best news of all is that That's Write 2 doesn't use GDOS or any of its derivatives with all the associated complications involved. Three cheers for Compo!

If you want to, you can even UN-load a Font from the Type menu as you run short of RAM. That's Write 2 can utilise fonts from other sources, a Font editor program is supplied with the package to let you edit or create fonts, and there is also a utility program called C-FONT2 that can convert public domain Calamus fonts to That's Write or Write ON format. When you come to print out your document, you can choose to utilise your printer's own built-in fonts (as Protext does) for fast printing, or use the bit-mapped graphic GEM fonts supplied in the program, or a mixture of both! The setting up of the printer driver is very easy, being done during the Installation program which configures That's Write 2 to your system. And you can load in other printer drivers on the fly. Drivers for all major makes of printer are supplied, including Laser printers and HP DeskJets, and all those you would expect. There's even a new printer driver for the HP Laserjet 4 which enables output at 600 dpi, this being available from Compo as an optional extra for £4.99.
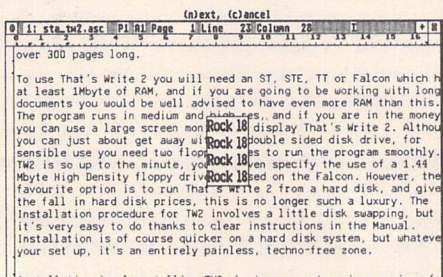
The Rockface font is shown in a little box over your document, and you can select N for the next font to go right through the loaded fonts, or C for cancel, which ends the show. Showing fonts does not affect any of your text; it is merely a quick way to view them and to see roughly how they will look in your document before restyling anything.
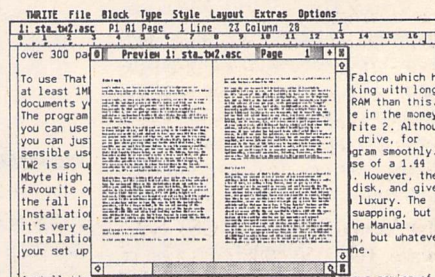
The preview feature in That's Write 2 is a handy innovation, and the little window can be moved and re-sized like any other GEM window as well as doing all the new Compo enhanced GEM window tricks. You can look at the layout of your whole document page by page in a reduced or full size and see exactly how it will appear when printed.
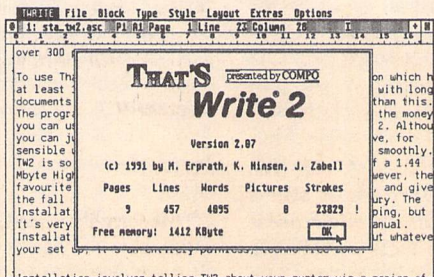
Plenty of information about the document you are working on is available at any time by clicking on "That's Write" on the menu bar. The vital statistics are all shown, how many words, pages, lines, pictures etc., and how much free memory your ST has left. Credits for the programmers are also shown - what a vain lot they are.
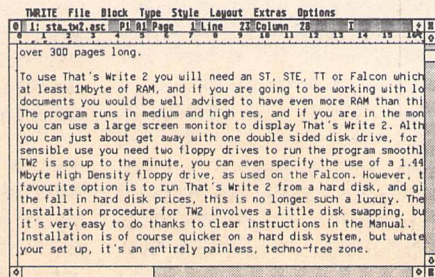
This screenshot looks different, because the little "+" symbol below the mouse pointer has been clicked on a couple of times, which switches the scroll bars on back into view. If you want more room on the screen you turn one or both of them off at will. This is a new Compo feature which enhances GEM, and the window can also be re-sized from any corner.
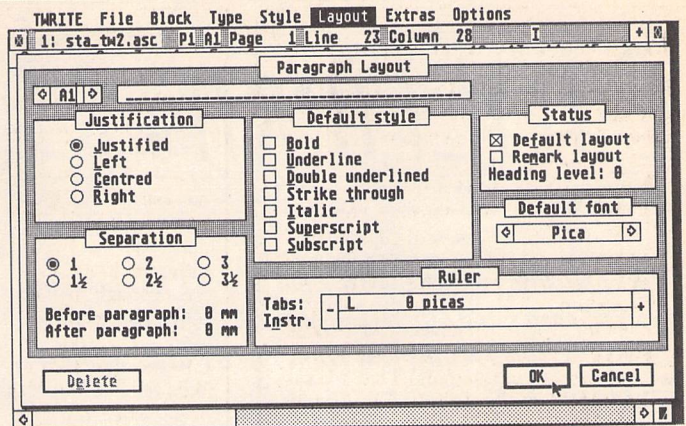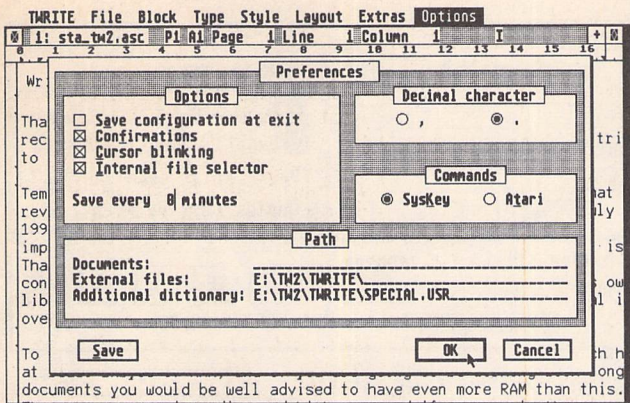
This option from the menu enables you to decide whether you want a flashing or non-flashing cursor, which file selector to use, the time period you want documents auto-saved at, and other things such as file paths and the keyboard system. Like all the other That's Write 2 dialog boxes, it can be moved around on screen, and even made transparent.

You can set up as many paragraph styles as you want with That's Write 2's paragraph layout feature. Switching between them is a simple matter either as you type, or reformatting after. It helps greatly to give them a descriptive name and letter, and sets of different paragraph styles can be saved and loaded to cope with many styles of layout.

group of individuals who will agonize over the minor differences and advantages of the competing software! So is there such a thing as the "ideal" WP? The admittedly cop-out answer is "No!" It's a very personal thing, you need to analyse your exact needs, and then see if you actually like the "feel" of the software to determine the best match. After all, it's no good buying a program packed with brilliant features if you don't like using it! So let's take a quick look at the competition - we'll skip the budget ones and compare That's Write 2 with the higher end products:

1st Word Plus (£79, GST Software, Tel. 0480 496666) is a bit of an old timer now, reliable and solid, but with no fancy features. However, it runs on a 520 ST with a single-sided disk drive, has a dictionary, and its WP files are usable with most other software. It doesn't look as if there will be any further development of this classic, which is a bit of a shame, but it's guaranteed a place in the ST Hall of Fame.

Calligrapher (£139, Working Title, Tel. 0865 883233). Calligrapher takes advantage of GEM very prettily, and can certainly use multiple fonts. This powerful software is more akin to a DTP or Document processor than a WP, and is therefore more complex to use. Probably the best "document processor" for the ST. Has 'pro' features such as a Thesaurus and an Outliner. Brand new versions have just been released.

Redacteur3 (£99, The ST Club, Tel. 0602 410241). Redacteur3 is

The Type menu shows how many fonts are loaded - you can have up to twenty in memory at once. The font shown ticked in the menu indicates the one in use wherever your cursor is situated. Other options from this menu include being able to view all the fonts in rotation, and you can even unload a font to make room for a new one.

probably the nearest thing to That's Write 2. It has power and speed, with better graphical abilities in terms of picture file formats usable, but is not so easy to use in the fonts department. A cross between 1st Word Plus and That's Write 2, with the speed of Protext! Popular with writers, but lacks a Thesaurus. A cut-down version is on offer for just £39!

Protext 5 (£152.75, Armor, Tel. 0733 68909). Protext is still a strictly non graphical affair, and is limited by the fonts available in your printer. Widely touted as the journalists' favourite ST text-cruncher, it makes no use of the ST's GEM interface, and compensates with speed, power and programmability. Has very good dictionary and thesaurus facilities, and is available for other computers too.

There are demo versions available for most of these programs, and you can't beat trying them out for yourself to really decide. There is of course no rule that says you can only have one WP; with the "junior" and cut-down versions available you could treat yourself to having a whole range of them!

Summary

Points For:

✓ Moderately priced, good specification

✓ Multi-font, but easy to use with DTP like features

✓ A good all-rounder, and the new features add to its appeal

Points Against:

✗ No serious faults; the manual could provide more of an over-

view, the ability to import other WPs' text formats would be handy, and a thesaurus would be a welcome addition.

There is no shortage of WPs for the ST, and so That's Write 2 is entering a crowded market. It scores by offering a very good range of features with ease of use and simplicity built in and technicalities hidden well away. The full use of GEM, with added customized enhancements of its own, will please the purists. And with promised development and support, along with other compatible Compo utilities and programs in the pipeline, the future looks bright. That's Write 2 is ideal for producing anything from personal letters to price lists, press releases, reports, student projects, etc., through to more complex work such as manuals or book manuscripts. Its printed output is attractive and quick and easy to obtain, even on budget printers. In fact, the more you use That's Write 2 the more you like it, and its user-friendliness is refreshing. If you are looking for a professional WP with good presentational abilities, That's Write 2 could be just right.

Product:	That's Write 2
Version:	2.07
Price:	£129
Supplier:	Compo Software
Telephone:	0480 891819
Manifest:	300p manual & 3 d/s disks
System:	All 1MB STs, STEs, TTs and Falcon

MULTIPRINT

The application of ink to paper via your ST has just got quicker, easier and altogether more multifarious with a £9.95 DA called Multiprint from The ST Club, as Peter Crush discovers.

I f you are serious about your ST computing, you would probably agree that once your basic silicon system has been established, you need a printer to complete it. Without a decent printer, your DTP, WP or Art software is not all that fruitful. And whilst I'm stating the obvious here, it's also true to say that most printer owners don't use them for mass producing their work. Its much more likely that if you need say ten copies of a document, you will print just the original yourself, and then photocopy it to beget the rest. So why is this?

Well, it could be that your printer is a fairly modest machine, and you don't want to wear it out too quickly! But it is often also a question of time, because unless you have a fast laserprinter, producing your original, let alone multiple copies, is a slow process. Text-only output is reasonably fast on most printers, but as soon as you want graphics, things go at a snail's pace. For example, it can take over twenty minutes to print out just one DTP page from, say, PageStream or Timeworks on some inkjet or dot matrix printers! The huge amount of information making up a 300 or 360dpi image has to pass from the ST down the printer lead, and you just have to sit and wait patiently! For this reason, very few ST owners even consider using their printers to produce multiple copies of documents; they just print a master and trot off to the instantprint shop. However, this situation could change with a utility called Multiprint, which enables you to reproduce as many copies as you want at a much faster pace.

Instant replay

The author of Multiprint is Jonathan Lawrence, whose excellent program Mouse Tricks 2 was reviewed in STA 26. With Multiprint's distribution also being handled via The ST Club, the software has a good pedigree. Multiprint has to operate as a Desk Accessory, and can thus be called up from within any GEM software you are running. The basic concept of Multiprint's operation is that it intercepts whatever your ST sends to your printer, captures it, and "replays" the information to the printer at greater speed, and as many times as you want. Data capture and storage is in a special Buffer set up by Multiprint. This is an area in RAM which can receive and store the output your program is sending to either serial or parallel printers. That's the theory, but how does it all work in practice?

Well, say you are using your wordprocessor and you are ready to print out a document; you call up Multiprint, set it to "Record" mode by clicking on the appropriate VCR-style button, and then print as normal from your WP software. Whilst the printer is receiving output from the ST, so is Multiprint's buffer, and a "copy" of your document then exists in RAM. You then call up Multiprint when the printing is finished and click on the "Stop" button to end the recording process. Now you can select how many extra copies you want to print out from within Multiprint's menu, which can be as many as you like. Click on the "Replay" button, and exit from Multiprint. The required number of copies will be produced as a "background task", so the printer churns out your copies quite independently while you can be simultaneously using a completely different program on the ST.

Accommodating old buffer

Multiprint's buffer can be set to whatever size you require, depending on your ST's memory capacity and the typical size of document you will be dealing with. This is also accomplished from the menu and the configuration thus set can be saved as the new default. You can even chose to save the "recorded" Buffer contents to disk, from where it can be reloaded into Multiprint at some later date. This way you can reprint your document without having to load the program that originally produced it, a feature that should have many uses. In addition to all this clever stuff, you can get Multiprint to compress the saved buffer contents, which will save up to a claimed 40% disk storage space on documents containing graphics, but not nearly as much on text-only files. Uncompressed buffer files are not in any special format, so programmers may find it useful to be able to examine their contents at leisure by loading them into a text editor such as EdHak. The compressed buffer files however are in a special format, something like that used for .IMG image files, and can only be used by loading them back into Multiprint. It is possible to convert compressed files into uncompressed files, and vice versa, all from within Multiprint. To assist you in getting the correct buffer size set for future use, both a visual "thermometer" bar and numerical statistics are displayed on Multiprint's main dialog screen. Reprinting the buffer contents is a doddle, and no problems were encountered with any of the software tried. The user interface is very slick and smart, and the program does everything it claims to do in a most professional manner.

Summary

If you have all the most up-to-date ST software going, maybe you can already specify how many copies of your document/picture you want printed. And if you're really lucky, all these programs will enable you to "multitask" and print in the background, whilst you do something more useful. And no doubt all your software can "print to disk" for convenient future real printing of your files.

But back in the real world, it's much more likely that many of your programs currently lack these features. Multiprint will however lend these features and flexibility to your software, and will work with virtually any program that prints out. Using Multiprint to produce multiple copies of price lists, newsletters, handbills, etc., could well appeal to many ST owners who don't own a laserprinter or photocopier, which is probably most of them! And if you're a real cheapskate (and who isn't these days?), by re-filling your inkjet cartridges you can produce professional-quality printing for little more than the cost of the paper you use. And you can't get much cheaper printing than that!

Points For:

✓ extremely simple to use
✓ can be loaded by The Chameleon
✓ produces multiple copies very cheaply

Points Against:

✗ no obvious drawbacks

How Much Faster?

Multiprint was tested with That's Write 2 and PageStream 2. First a page of text was printed out from TW2, with Multiprint recording. The page contained a range of different fonts and type sizes, and took one minute thirty-five seconds to print. The first few seconds were taken up with loading the printer fonts off the hard disk, which would admittedly take much longer with a floppy disk system. Replaying the same document from Multiprint took one minute twenty-five seconds, just ten seconds faster. All this proves is that TW2 has very fast printing routines to start with!

box>Next test was with PageStream 2, using a document consisting mainly of a large graphic file to furnish a more demanding trial. Time to print this A4 size page from PS2 was four minutes twenty seconds, using the same Brother inkjet printer at 180 dpi used for the

first test. The first one and a half minutes were taken up with the ST creating the page to send to the printer, which it always does when you click on its "print" button. Using Multiprint, the recorded file was printed in just two minutes thirty-seven seconds, knocking nearly two minutes off the print time, thus saving even more time than that taken up with composing the bit image to send for printing.

So what can you conclude? Multiprint does save you time, even with the latest and fastest software, and when cheating by using a nippy hard disk. If you use floppies, and have less speedy, older programs, Multiprint will be of even more use to you. And its background printing feature lets you get on with other things while the printer works away, enabling you to make the best use of your valuable time.

Multiprint's Essential Features

✓ Has an intelligent buffer that records data sent to the printer from the ST's parallel or serial port.

✓ The buffer size is fully adjustable, depending on how much RAM your ST has got to spare.

✓ Is controlled by an intuitive dialog box which features VCR-style buttons for ease of use.

✓ Works as a Desk Accessory, and can be loaded or unloaded by "The Chameleon" if not always needed.

✓ Works in the background, so you can use another program whilst your copies are printed out.

✓ Loads or Saves intercepted printer data to disk for easy future use of printer files.

✓ Compresses data for maximum use of disk space: average 300dpi DTP file to 40% original size.

✓ Loads and prints printer files produced by other programs, and can compress them too.

✓ Multiprint's buffer can be used to speed normal printing when not being used to record.

✓ Links with Mouse Tricks 2 so that you can set up user-definable keycodes to control it from non-GEM programs.

Product:................Multiprint
Version:.................1.01
Price:....................£9.95
Supplier:................The ST Club
Telephone:.............0602 410241
Manifest:................12-page A5 Manual and d/s disk
System:.................Any ST

Caxton Would Have Loved It

Using Multiprint is very straightforward, as you can see here. First step is to copy the MULTPRNT.ACC to your boot disk, so that next time you switch on your ST it's installed as a Desk Accessory and thus ready to be used from within any GEM program. From there on, this is what you can do with it.
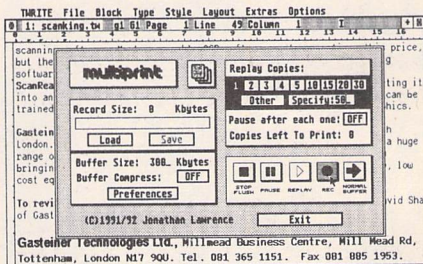
Using Multiprint from within TW2 or any other GEM program entails pressing the "Record" button, having first called Multiprint. It will now intercept any printer data that you subsequently send. Exit the DA, start printing from your WP and the whole event will be "recorded" into the buffer. Alternatively, you can activate the "Normal" mode, so instead of recording anything the buffer will simply speed up normal printing by smoothing the flow of information from your program to the printer, and thus free your ST a lot quicker than usual.

To get the optimum settings for Multiprint, these parameters can be altered and saved as the new defaults. For example, you can increase the buffer size if you need: only your ST's RAM limits what you can set. The amount of processor time shared between the background printing and the other program being

used can also be adjusted. To understand this in detail, read the 12-page printed manual supplied with the software, but you can get by without this if you're lazy, as the defaults already set up seem pretty useful as they are.
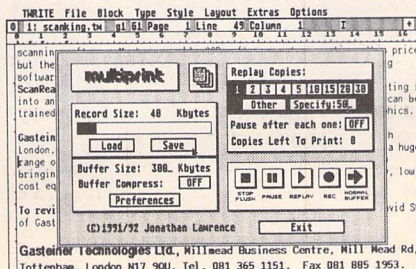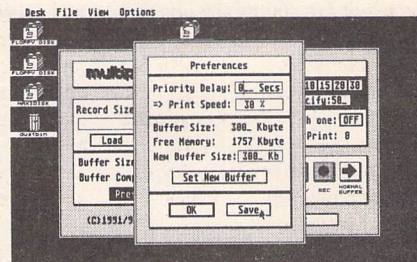
The page of text from That's Write 2 has been printed out, and calling up Multiprint shows that its buffer is partially filled, with 40Kbytes in fact. Whatever you printed has actually now been "recorded", and the Save button is now active, enabling you to make a permanent record of the file on disk

if you want. The Atari or alternative file selector is used to save the buffer file to whatever location you wish, including a RAM disk e.g. Maxidisk. Don't forget to press the "Stop" button to finish the recording, just like using a tape deck.

By setting the compression option On, the 40Kbyte printer file is reduced to just 23Kbytes. You will have to load the compressed file back into Multiprint to make any use of it at a future date, but at the moment you can decide to re-print your document from this dialog. Simply select how many

copies you want, click on "Replay", and Bob's your Uncle! Exit from Multiprint, and you can now get on with some more writing etc. while your multiple copies are being created by your trusty printer, which can be any old make or model you like!
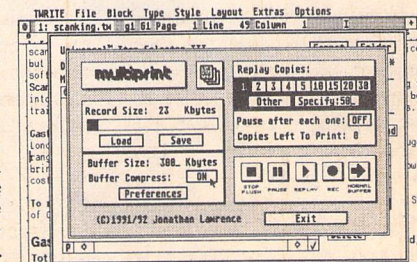
INVISION
E L I T E

The opening screen from Invision showing the Pop-out icon bar, the Status line across the top of the screen below the menu bar, and the desktop icons. Everything on the Desktop can be positioned as desired.

Invision is a monochrome art package developed by Harlan Hugh, Power Thought Software, of Ontario, Canada and marketed worldwide by DMC.

Most areas of Atari computing have several mature applications with loyal enthusiasts, pixel art packages are an exception. Basic applications such as Degas and NeoChrome have been superseded by a plethora of packages, all of which failed to establish a permanent niche in the market. I've always had to use a combination of art packages to get the job done. Each package has its own custom interface making the whole job more tedious than it should be.

Early on Apple avoided this muddle by introducing strict guidelines concerning the layout of the user interface. As a consequence of this rigid framework

one Mac application looks pretty much like another. Most Mac users don't ask for an enhanced custom GUI; they just get on with using the applications. Many of the best graphics applications around are Mac based, and so Apple probably got something right.

Now would be a good time for Atari to throw its weight around and give developers a shove in the right direction. The latest TOS versions provide an excellent user interface offering the right balance of features without becoming top heavy like the Mac System 7 and Windows GUIs.

How does all this relate to Invision? Unlike its competitors, Invision has largely stuck to the familiar GEM interface, adding a few Mac-like enhancements, such as Pop-out menus and a Status bar, where GEM falls a bit short.

This should stand it in good stead in the Falcon era and enable it to develop into a mature application.

Installation

Hard disk owners can copy the contents of both the program and data disks into a folder on the hard disk; floppy-based system owners can make working copies of the master disks. Starting the application begins a short animated sequence which is not to be missed (in fact, you can't).

Getting Started

The manual includes four exemplary tutorials, a quick tour round the interface, making the most of windows, a basic and an advanced tutorial. It was only by following the tutorials that the underlying importance of working with multiple windows became apparent.

Features

Most of the common draw and paint commands are accessed by selecting the Tools pop-out icon - no real surprises here. The Shapes pop-out menu was more interesting, enabling various filled shapes to be generated. Shapes can be outline only, fill only or both outline and fill. The polygon tool cannot generate regular polygons such as triangles, hexagons, etc., and the Erase options are called white and black rectangle for some strange reason. These are, however, minor irritations compared to the excellent graduated fill option. Enclosed shapes can be filled with patterns or graduated fills. To perform a graduated fill

the desired start and finish percentages are preset followed by two mouse clicks defining the lightest and darkest points. Three grey sets, comprising 32 shades each, are available. The active set is shown highlighted in the Status bar. Circles and ellipses can alternatively have a radial graduated fill applied. Instead of start and finish points, start and finish circles/ellipses are defined.

Invision uses the recently introduced Atari Clipboard protocol enabling Clipboard aware applications to exchange image and text data more easily. Better late than never I suppose, Mac users have enjoyed this feature for nearly a decade! A useful Desktop Accessory has been provided to grab screens from other Applications and place them into the Clipboard.

In addition to the usual GEM scroll bars, holding down the right mouse button inside the active window causes the cursor to change to a hand, in this mode you can pan around the drawing in real time as desired.

The active window displays the x,y coordinates, in pixels or inches, in the header bar. The dx,dy coordinates appear if the selected command needs a second point to be defined. A coordinate memory remembers the last point and can store up to nine points by assigning them to the F1-F9 keys. Pressing the appropriate function key recalls the point. Individual x or y components of a coordinate pair can also be recalled and utilised.

A common complaint about icon-driven applications is the time

The pattern and brush settings (3rd and 4th icons down from the top in the Icon bar) are adjusted by holding down the mouse button while scrolling up or down the icon bar. I would have preferred Pop-out menus like the other icons. Some of the file drop-down menu options also have equivalent Pop-out icons.
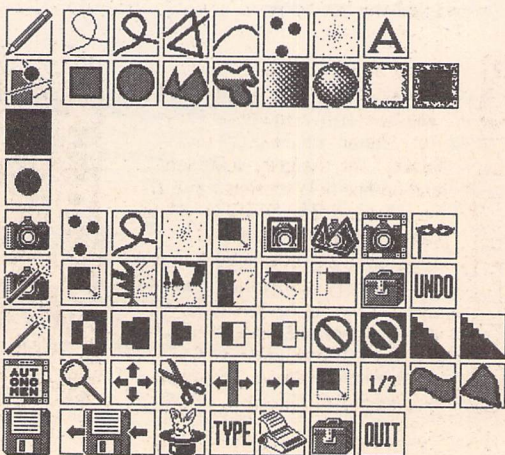
File		Window		Settings
Load Image		OLAF.CVG		Setup Font
Save Image	S	DBUNNY1.GIF		Font Style
Load Image As...		FALCON.IMG		
Set File Type		WOMAN.PI3		Set Block Drag
Create Image	N	KEYHELP.IMG		Automatic Mask
Load .CVG		ABSOL_1.FNR		
		INTHELP.IMG		Set Graduate
Print Image				Set Stipple
		Duplicate	[Tab]	Set Halve
Clipboard		Look		Set Special
Close All Windows		Full Window	[Esc]	Set Coords
Save Configuration		View All	[Return]	
Disk Utilities				Color Cnvt: 4
Help	[Help]			
				✓Ring Bell
Quit Program	Q			Disable Undo
				Drive Select
				Fast Response

needed to learn the function of each icon. Invision displays the FUNCTION of each icon on the right hand side of the status bar as the mouse passes over it. Additional on-line help is available by pressing the Help key or selecting Help from the File drop down menu.

Up to sixteen Custom Patterns can be defined. An image can be assigned as a Pattern by grabbing it from the active window. Patterns can be used as fills or brushes. The part of the pattern used for painting depends on the brush size and the origin. To position the desired part of the image under the brush it is easiest to select a large brush and enable paint with Pattern in the status bar. The image can now be scrolled under the brush to the desired position. Optionally black or white only parts of the pattern can be applied to the image. For example painting black only using a grey pattern will darken an image whereas painting white only will lighten the image. Patterns can be displayed in a window and edited like any other image.

Currently loaded images are indicated in the Window drop down menu. Selecting an image from this menu makes it the active (top) window. Alternatively pressing the 0 key on the numeric keypad cycles through the loaded images. Images larger than the screen extents can be displayed full screen by pressing the Return key.

A new image can be created by duplicating an existing image or selecting Create image from the File drop down menu. Three different preset sizes are offered dependent on the current screen resolution. Loaded images are automatically displayed in a suitably sized window. The usual tools are provided to scale and size the image together with two unusual options which make it easy to insert/remove areas along any edge

of the image. Entire images can be bent in either the vertical or horizontal axis along a Bezier curve using the Bend image function or even more dramatically manipulated using the distort function. To distort an image a block is marked which displays a frame, each corner of the marked block can now be repositioned. A click away from the marked block begins the distortion.

The Block commands are very powerful. Marked blocks can be used as a Brush to Paint, Paste and Stipple as desired. The active Copy method and Mask options determine the on screen result. The active Copy method and Mask status is shown in the Status Bar (T,C,I,O). Blocks can also be scaled, mirrored about either axis, skewed, rotated and inverted.

A range of Special Effects are grouped under a magic wand icon. These effects can be performed on a marked block or affect the entire image. Outlines can be thickened, thinned, contoured and anti-aliased (smoothed). Single pixels surrounded by pixels of the opposite colour can also be removed, which is useful for adjusting the contrast of halftoned images.

The zoom function provides magnification in steps up to 16 times full size. Pixel editing is achieved by holding the mouse button down, left to apply black and right to apply white. The UNDO key undoes the last edit. I wasn't very impressed with the zoom function - it's not up to the standard of the rest of the application or the competition. I would like to see features such as auto panning (STAD), use of drawing tools in zoomed mode (Arabesque), cursor hotspot view and background grid (MegaPaint) implemented.

Two different Undo commands are available. Image Undo/Redo toggles between the current screen and the image prior to the last operation. The second Undo function
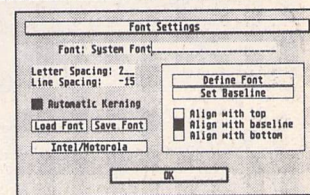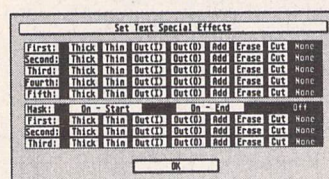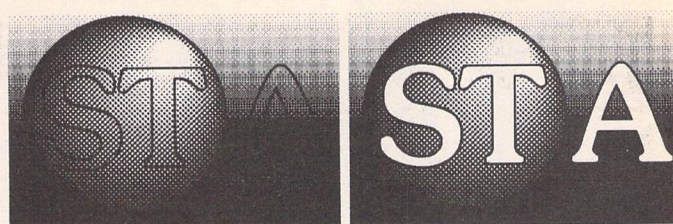
Top left: the background for the logo was created using the graduated ellipse and fill options. The text was created in a separate window, outlined, then thickened and cut and pasted into the background window with the copy method set to transparent.

Top right: to make the text stand out from the background a mask was created to hide the background. Masks can be automatically generated. Depending on the shape, the automatic mask may need to be manually edited; this is carried out by displaying the mask in an image window and editing it using the normal Invision tools.

Above left: text and mask special effects are applied using this Dialog. The result of each effect can itself be transformed up to five times for text and three times for masks.

Above right: control over most aspects of the Font are provided from this Dialog. GDOS format fonts created on an IBM compatible PC can be loaded by selecting the Intel button. Each character can be manually kerned using the arrow and shift keys.

undoes the last Block command. If necessary both Undo functions can be selectively disabled to conserve memory on machines with 1Mb memory but should only be used as a last resort.

Several tools are provided to ease the process of drawing regular shapes. An invisible snap grid can assigned different x, y spacings and snapped onto. A Lock function restricts the cursor to horizontal or vertical movement. The status of the Snap grid and Lock function can be toggled from the status bar. The Control key is used to restrict cursor movement enabling circles to be drawn using the ellipse command, squares to be drawn using the rectangle command and the aspect ratio of res-

caled blocks to be preserved.

Text handling

Invision .FNR or standard GDOS .FNT fonts can be loaded directly into Invision, which is a straightforward and effective way of providing a wide selection of fonts - GDOS itself is not needed. When a font is active a font icon appears below the pop-out menu bar, and clicking on this displays the font in a window which can be edited like any other image, neatly avoiding the need for a separate font editor.

Text is inserted into the drawing by selecting the text icon and clicking the starting point for the text. If the text extends beyond the window the window automatically scrolls, if the text goes beyond the
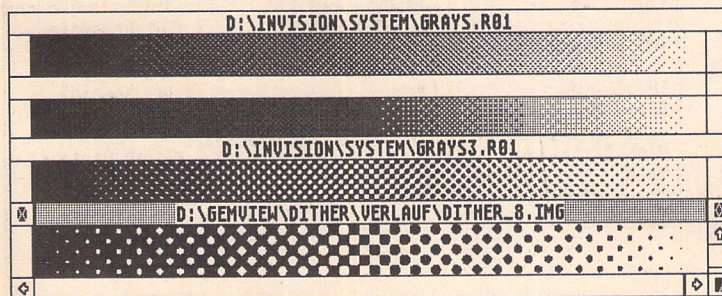
Many of the component parts of Invision are images which can be displayed inside image windows. Here the active 24-point Swiss GDOS font, the grey scale sets and on-line help screens have all been loaded. The DITHER_8.IMG image belongs to another application, Gemview, and, noting the similarity in format, I couldn't resist replacing the GRAYS3.R01 image: it worked perfectly. Don't try this at home, kids, or if you do don't blame us when you create a tangled pile of pixels!

The window illustration was converted from a 256-colour GIF file into Invision using the load image function. The appearance of the converted image is dependent upon the scale factor and Grey set selected. A good degree of control over the final image is possible.
Top left: Grey set 2, 4 times magnification, then scaled to half size.
Top right: Grey set 1, 2 times magnification, full size.
Bottom left: Grey set 3, 2 times magnification, full size.
Bottom right: Grey set 1, converted at full size then rescaled to twice full size.

Above left: the original face on the left has been transformed using the 'remove white dots' followed by the 'remove black dots' special effects, resulting in an overall increase in contrast.
Above right: the original Atari logo on the left has been transformed using the 'smooth with white' special effect, a small but significant improvement.
Below: An example of each different file format Invision can load. The Image Window shows examples of image bending and the skew function.

right edge of the image it automatically wraps to the next line. The Backspace key removes the last character, earlier mistakes can be corrected using the UNDO key, which deletes the text since the last carriage return. Control over the placement of the initial text character and the kerning between each character can be precisely controlled using the arrow and shift keys in combination. Subsequent repositioning of the completed text entry is achieved using the normal block functions. I found this awkward at first but it does seem logical that text should be treated like any other drawing element.

Text can be black, white or patterned. Combining text styles, patterns and masks enables a virtually limitless range of effects to be designed.

Import/Export

Invision imports most of the popular Atari file formats, the file extenders are automatically recognised. If supported images have been renamed with a different extender they can still be loaded by setting the file type in the File drop down menu. Calamus .CVG files are imported by selecting a separate option in the File drop down menu. After selecting the desired file the x and y sizes for the converted image is entered, a calculate option is provided which is useful to maintain the correct aspect ratio. Support for MacPaint and the popular GIF format forms the cross platform support necessary to extend the usefulness of any Atari application.

Export options are currently limited to only IMG and Degas format and this needs to be extended as soon as possible.

Output support for Epson compatible 9 and 24 pin dot matrix printers, Atari and HP laser and deskjets is provided. Images can be scaled and positioned on the page as desired using the print image icon.

Disk Utilities to create folders, rename files, delete files, show free disk space and format a floppy disk are provided.

Verdict:

Invision is not quite (but very nearly) the all in one pixel manipulation package I've been dreaming about for years. A most enjoyable and friendly application which has remained on my hard disk.

I particularly like the approach taken by the programmer, Harlan Hugh. The decision to stick with the GEM looks like the right one for the Falcon era. Add the built-in flexibility provided by the extensive use of images and Invision should

rapidly evolve to suit the needs of an increasingly demanding audience.

I'd like to see some of the photo-retouching abilities currently only provided by specialist applications such as Retouche or the Shareware Atari Image Manager (AIM) and Gemview included in Invision. The colour conversion options provided for GIF import and the commands to remove white and black dots are small but welcome moves in this direction.

GIF and MacPaint File support together form the nucleus of the cross platform support available using Invision. These are barely adequate and implementation of the currently unavailable file export formats should be a priority to maximise the flexibility of Invision.

The future for Invison looks promising; according to DMC by the time you read this there will be a new version. In addition to running in all resolutions on all Atari computers, this version will include a 256-colour mode, especially for the Falcon.

Summary

Points for: instant access panning and many other excellent features, friendly and flexible user interface, works at resolutions above 640x400, good range of import options.

Points against: no UK distributor yet, some transform functions are slow, poor (currently) range of export options.

Conclusion: the ideal upgrade from any first generation bitmap package, if you've just got hold of a Falcon be sure to get the new Falcon version.

Alternatives: As most of the art packages around will not work at higher resolutions, only MegaPaint Professional and Arabesque Professional are direct competitors. The Falcon version will be up against HiSofts's TruePaint.

Address v1.6
Dedicated Address and Telephone Book

Full GEM-based address book program with fully configurable label printing, telephone lists, and envelope printing options. Good search and sort facilities. Comes with Address.Acc - which gives window-based access to the database when in other GEM programs. ACC will time telephone calls, send addresses directly into wordprocessor documents, has definable printer macro buttons, and lots more.

Features:

➤ Store as many addresses in the file as your disk/memory will allow and have as many different files as you wish.

➤ Easily update, delete or add new addresses.

➤ Sort the address book by a two-field sort system to put the addresses into any specific order required.

➤ Use the Function keys as preset keywords, such as commonly used town name to speed up ADDRESS entry.

➤ Auto load an address file when the program is loaded.

➤ Print out addresses onto envelopes.

➤ Print out on labels - 1, 2, or 3 across the web. Label layout is fully configurable. You choose which addresses to print by using the Search feature.

➤ Produce a telephone list.

➤ Dial telephone numbers with a modem.

➤ Keyboard short cuts for most menu options, making the program a breeze to use.

➤ With the accessory you can call up an address whilst in any other GEM application (eg. to print out addresses or telephone someone).

➤ In the accessory you can use the in built timer to time a telephone call and keep a running total of call charges.

➤ In the accessory you have the printer macro buttons - 12 programmable buttons you can define to select different features on your printer. You are not limited to just Epson printers.

➤ 'Flying Default' feature in the accessory means that the Return key changes its use according to what is the most likely next choice.

degsoft software

Price, complete with two printed manuals: **£12.95**

The ST Club
2 Broadway
Nottingham
NG1 1PS

Mouse Master

Mouse Master allows mouse operations and commands to be recorded in the computer's memory and replayed at the touch of a key just as if you were moving the mouse. This overcomes the need to break your train of thought by stopping what you're doing and laboriously making the mouse commands which you use often. Ten different sequences of mouse instructions can be held in memory at the same time - each containing up to 100 commands, or 'events' such as clicking, double clicking and dragging.

Mouse Master can be used with any program which uses the mouse, though most of the package's facilities are available from a Desk Accessory, so it is best used with GEM based programs or the desktop.

£9.95

The ST Club
2 Broadway
Nottingham
NG1 1PS
Phone (0602) 410241

Comprehensive printed manual

Multiprint

Multiprint is an intelligent printer buffer that records data sent to your printer via the parallel port or serial port. Multiprint is controlled by an intuitive dialog box with VCR style buttons. Features iclude:

Replay of recorded data for high speed multi-copy printing of letterheads or leaflets.

Saving of data to printer file (*.PRN or compressed *.PCN) and loading of buffer with previously created printer file - for quick'n'easy reprinting at a later date. No need to rerun your DTP or art program.

Option for compressed buffer and printer files for minimum demands on memory and disk space. Average 300 dpi DTP data compressed to 40% of its original size.

Load and print printer files produced by other programs - and compress them to Multiprint's own PCN format for better use of disk space.

Background printing with "Priority Delay" allows you to share a chosen percentage of your computer's time with Multiprint.

£9.95

The ST Club
2 Broadway
Nottingham
NG1 1PS
Phone (0602) 410241

Comprehensive printed manual

This spreadsheet is going to prove a delight both to the tyro and the expert alike. It is on three single-sided disks - one is a junior version for those with a half-megabyte ST; another disk is the full version; while the third disk has accessories, utilities and demonstrations which are most helpful as a means of understanding the program's functions. The term 3D is somewhat loosely applied, as at no point are you working in a truly 3D environment - instead there is access to three spreadsheets which are interactive (i.e. data may be transferred from one to the other). This provides enormous potential as each spreadsheet runs from column headings A to JV horizontally with 2047 rows per column; there are also thirteen pages per spreadsheet.

The program is handled via pull-down Menus with keyboard shortcuts available for most functions; the manual is extensive, has all the information required and is well indexed. The perfect manual has yet to be written however, and this is no exception - occasionally a hunt is required to find the required information.

So - is the program easily to handle? Yes, and there are enough inbuilt features to keep the most demanding user happy. The 3D-Calc desktop has three icons representing the three spreadsheets available. Click on icon one and this spreadsheet is opened ready for use; it is one of the most eye-pleasing I have seen to date - big cell, big entries - no peering at the screen here! Labels and numerical values are entered in the usual manner using the arrow keys and return; a simple Esc deletes data from any one cell. The Help key gives access to a wealth of explanatory detail and may be used at any point during programming.

Evelyn Mills reviews a 3D spreadsheet program from Microdeal.

The manual has an excellent introductory session which explains in detail the entering, copying, clearing, addition and multiplication of individual and multiple columns. The handling of graphs is also explained here and the program is well endowed with 'entry boxes' to set various parameters. At this point, the examples on the separate disk should be loaded and studied - these are well chosen, allow further data entries or amendments, and provide an excellent tutorial in themselves. Run the cursor up and down the columns as you wish and, by looking at the top of the screen, you will find, at various cells, the formulae

required for each calculation - this is a permanent feature of programming and the examples should be studied well - you will soon find that the construction of formulae has been kept as simple as possible. Using these example files you can also play around with all graphing facilities.

Calculations

Formulae are entered in a very simple manner. Choose the cell into which you wish to enter one, press Escape should this cell need clearing, and then type in the formula. Nothing will be apparent in the cell itself as all entries are shown at the TOP of the screen. Press Enter or

Return when satisfied and, if correct, the result of your calculation will appear in this cell. A few examples of typical entries are: SUM(A2:A2O) will add all cells within this column range. SUM-NEG(range) and SUMPOS(range) handles negative and positive values. SUM(K(A):K(E)) will give the sum total of these columns. Subtraction is carried out using K for column: K(C)-K(D) will subtract column D from column C. These are examples of simple formulae; more complex ones are created logically bearing in mind that bracketed entries are always calculated first. Ideally, the Auto-calc should be left on when using your spreadsheet - this is discussed in the Manual in combination with column calc and line calc. But with big spreadsheets this is not really practical and it should be left off until the batch of entries have been made.

All cell addressing and mathematical functions are listed, along with their method of entry, in the manual - there is an excellent collection of trigonometric and logarithmic entries as well as the standard mathematical ones. You can also convert radians to/from degrees, calculate factorials of 'x', and round off numbers to required decimal places.

Financial calculations are not forgotten - investments may be computed, while simple entries such as FV(1OOO,10%,5) would return a value of 6105.10 - this being the future value of your account after 5 years, with an annual investment of £1000, and interest rate of 10%. (?!? - Ed.) Computation commands are plentiful and may be incorporated into the worksheet at any point.

Statistics, when handled properly, play a large part in the assessment of both financial data and research data of all kinds. 3-D Calc is particularly good at this, allowing the comparison of ranges

of numerical values in a number of ways - e.g. AVG(A0:A15) returns the mean of this column range while AVG(P(1):P(5)) returns the mean of cell contents on page 1 to page 5 in the column entered. All the well-tried and currently used statistical data formulae are there from standard deviation to variance (VAR) to T-Test, paired T-Tests, etc. T-Test entries could be in the form of: TTEST (C2:C10,D2:D10) - try it out on a couple of column entries to obtain the calculated t-value and degrees of freedom.

Graphing

Graphing facilities are available as bar graphs, line graphs, histograms, or pie charts. When graphing statistical values, you can have scatter and cumulative distribution graphs along with information ranging from averages and percentiles, to skewness and kurtosis. Information relating to all graphs (cell addresses, data range, increments, etc.) is entered via a dialogue box. The graphs themselves are accurate and well displayed and it is easy to switch from spreadsheet to graph and vice versa by opening and closing windows.

Databases and Text

Small databases may be set up where the lines represent the records and the columns the fields. A complete set of database statistical commands are available to search and locate both strings and values. The text option presents a blank screen that can be used as a word processor - use it as a scribbling pad, for label making, for addressing envelopes, or for developing programs to run in 3-D Calc. Cutting, pasting, block marking, etc., are all available for text entries.

Importing Data

There is provision for importing suitable ASCII files into a spreadsheet - after setting simple parameters, a 'Read ASCII file' prompt handles the operation very speedily. The facility to read .WKS files, as used by Lotus 1-2-3 and Symphony, are present with several limitations; files from Finance Manager Plus may be imported using a stand-alone program.

While the scope of 3-D Calc is vast, this is a spreadsheet which is very easy to handle. Entries are simple and swapping from screen to screen is readily handled; good alert boxes abound, while constant help is there via the help key. On the downside, 3D-Calc's screen redraws can be very sluggish when there is a lot of data in a sheet, and in these situations it is essential that the auto-calculation facility is turned off.


```
DEFINE BLOCK                                              OK

   Block dimensions          Attributes     Graph info
 Page   : 0_   to : 0_         HIDE
 Column : A_   to : E_        PROTECT        X-range
 Line   : 2___ to : 16__       ITALIC        Y-range
                                MARK        Data range

 Contents :    Precision : 0_
 "JAN_____

 Set attributes  Set contents  Set precision  Set graph info
```
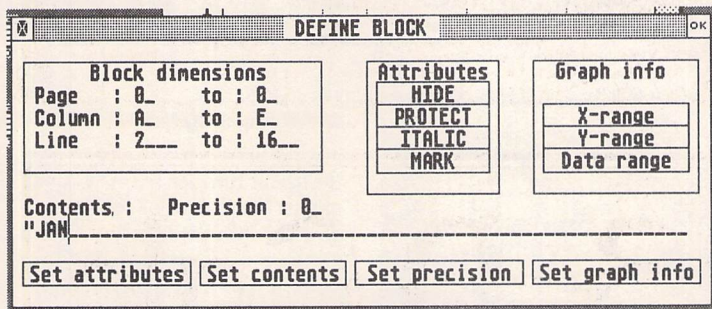
Product:...... 3-D Calc
Supplier:........Microdeal
                 P.O.Box 68
                 St. Austell
                 Cornwall
                 PL25 4YB
Tel:.................0726 68020
Cost:..............£29.95.

△ Figure 1.

Virtually every tool and function icon has a keyboard equivalent. A quick reference to these would be a welcome addition. Note the similar layout between bitmap and vector menus.
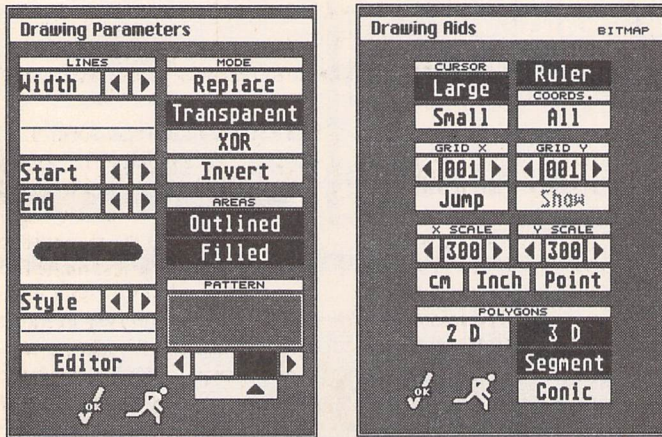
△ Figure 2.

Drawings aids are designed to make life easier and are largely a matter for personal preference. The 3D option is only available in bitmap mode and Show Grid can only be used in vector mode. In this example I have set the X/Y scales to give me 'true scale display' for an output device of 300dpi. Note the line editor, allowing the use of custom line styles.

Is Arabesque, the new bitmap and vector drawing program from Compo, an illustrator's dream come true? Andy Dance finds out if this really is the complete graphics package.

Arabesque Professional

Arabesque is a monochrome illustration package designed for the creation, manipulation and editing of both bitmap and vector graphics. Most of you will be familiar with bitmap graphics, perhaps less so with vector graphics. If you really haven't a clue what vector graphics are I suggest you take a quick look at Joe Connor's excellent definition in STA 13. The essential difference is that vector files contain a mathematica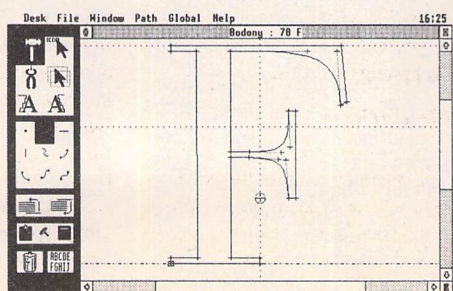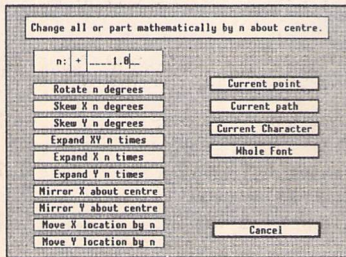l description of the image, whereas bitmap files describe the status of each individual pixel. This gives vector files two very big advantages. Firstly, the files are much smaller in size and secondly, vector images can be infinitely resized and manipulated without any loss of quality.

Any drawing package worth its salt must, as accurately as possible, emulate the action and feeling of drawing with a pencil on paper. Obviously, most people will be using a mouse and will therefore be relying on the program interface to be both fast and intuitive. Arabesque excells in this department, although some users may find the complete absence of familiar pull-down menus a little disconcerting at first. Instead, the user is presented with a pop-up icon menu which provides instant access to all drawing tools and program functions. Click the left mouse button on a tool icon, the menu vanishes and away you go - the right mouse button recalls the menu. Click the right mouse button on a tool icon and up pops a drawing parameter menu offering an extensive range of configurable settings that relate specifically to

the tool or function selected - these menus can also be called up directly with the help key. That's all there is to it, simple and fast. Well, almost all - to further speed you on your way the main menu always pops up at the current position of the mouse pointer. You will also notice, sooner or later, that there is no button to expand or reduce the window size. The reason is simply because the button is not needed, the window is either as big as the screen or the size of the specified drawing. It may seem odd to describe a program interface in such detail but all too often we see good programs wasted by clumsy interfaces (Megapaint springs to mind as a good example). O.K, back to Arabesque's "intelligent interface". The main pop-up menu has four groups of icons, drawing functions, block functions, production functions and program functions. This function grouping ensures that both the bitmap and vector menus are consistent and familiar in layout and functionality, the only difference being their specific drawing functions.

Thanks for the memory

Before looking at the drawing functions in detail I shall draw your attention to one of Arabesque's special features - dynamic memory management. This essentially means that you can configure memory allocation at the start of each session to suit your own needs and, during a working session, Arabesque keeps you informed of current memory status and allows you to intervene if memory gets short and needs to be

reconfigured. I know this may seem complicated at first, but graphics applications are always memory-intensive and any program that allows me, the user, to decide what is or is not possible gets my vote. Each drawing in Arabesque is defined as a page; up to 20 bitmap pages and 6 vector pages are allowed. The number of pages available will depend on the size you choose and the memory in your machine. Incidentally, all these settings can be saved as the default set and Arabesque will always, regardless of settings, give you one bitmap and one vector page to work on. Another neat feature is real time scrolling. A page size bigger than the screen can be scrolled in all directions by dragging with a hand pointer. This is an automatic feature when pasting blocks.

Bitmap drawing

Arabesque can load a wide range of file formats - IMG, STAD, Degas compressed/uncompressed, IFF and Arabesque format - in bitmap mode and in vector mode - GEM/3, CVG and Arabesque vector format. Colour images are converted using either grey scales or dithering. I'm not going to attempt to describe all the options here; suffice it to say that if the tool isn't there it's probably not worth using - I'm sure future users will argue that comment! Particular attention should be paid to the way that Arabesque creates drawing elements, for example a circle in bitmap mode. Selecting the circle tool takes you to the drawing page where you can roughly position the centre point, and a second

mouse click allows the radius to be specified. Now you have a circle that follows the pointer around the screen enabling accurate positioning with the third mouse click. If on seeing the circle you decide that it's not quite right you can call up drawing parameters with the help key and change the line thickness, fill pattern or whatever, click on OK and there's your new circle ready to be finally positioned - a very flexible way of working. This technique is employed for the other line elements, except bézier curves and 3D polygons which stay put once created.

Vector drawing

Creating objects in vector mode is slightly different, since all objects have their own frame and can therefore be resized and moved at any time. For example, a circle could be drawn anywhere on the page and then moved to its precise location. When you first move an object only the frame follows the pointer, making it difficult to position. Fortunately, Arabesque also provides a facility to drag the outline of the object itself for precise positioning. All the familiar vector objects are present, from ellipses and arc segments to parallelograms and polygons. By far the most impressive option here is bezier polygons. These are very complex objects that contain curves and lines, for example, think of the outline of a capital R. To create this shape a second bezier polygon would be required inside the first and for this a special 'jump' feature is included. Furthermore, the precise level of bezier calculation can be specified and tangents used to smooth joins between curves. As you can see this is a very powerful feature and one

that is perfectly suited to manual tracing of bitmap images. Images created in bitmap mode can be quickly copied to the vector mode for this purpose. Vector images can also be 'bitmapped', though at the moment I can't think of many reasons for turning a vector drawing into a bitmap image.

If gold stars were being handed out I would award Arabesque one for its Undo feature. There are two Undo options, 'every operation' and 'only after menu', available in both bitmap and vector modes. The first option will undo the last operation on the drawing and the second will undo every operation since the last time the main menu was called. Best of all, Undo works on all operations, including the fill pattern that fills the entire page and the time when you accidentally trash three hours' work!

Editing

Arabesque offers an astonishing array of image manipulation options in bitmap mode, everything from rotating and mirroring to squashing and perspective distortion. To manipulate an image it must first be copied to the block buffer, then altered and pasted back to the drawing. The block buffer can accommodate a maximum image size of 640 x 400 pixels and, consequently, that is the largest image that can be manipulated. This is a sensible restriction given the way that bitmap images gobble up memory. A thoughtful addition here is the facility to save block buffer contents to disk and so build up your own image library. Finally, block images can be used as fill patterns, either conventionally or twisted to fit the object being filled exactly. It is also possible to cut and paste
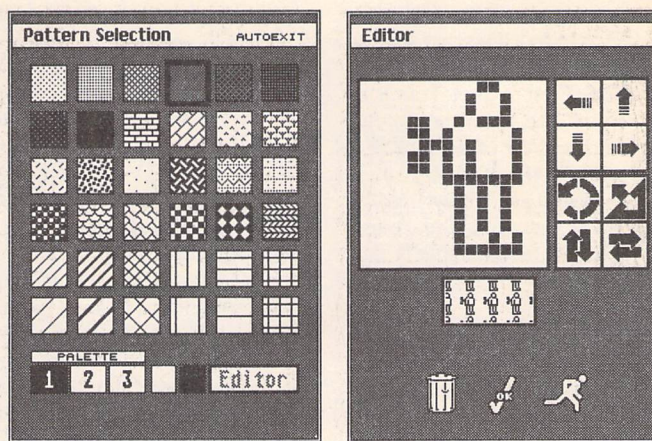
△ Figure 3.

There are three palettes offering a very wide range of fill patterns. The third palette is user-configurable and can be edited to provide custom palettes, an infinite number of which can be saved and loaded for future use. The editor is the same as that used for custom brush styles. The editor can also be used for grabbing sections of the drawing for use as fill patterns.

regular or irregular images of any size, although these can not be manipulated in the same way.

Manipulating and editing objects in vector mode is very simple and, above all, very precise. Frames, bézier control points and outlines can all be selected and quickly changed. Most importantly, when editing an object the part being altered is always visible, moving around the screen in real time, so that getting things right the first time is a real possibility. In days past, creating vector images was not a task to be undertaken by the faint-hearted. Here, in a very short time I was throwing down bézier polygons all over the place without a care in the world. O.K., so I'm used to using CAD packages, but after a while I did begin to wonder if I needed the bitmap mode at all. A similar block buffer is also available to store those handcrafted masterpieces. As mentioned, vector images can be enlarged without loss of quality, but any inaccuracies will be amplified! To avoid any embarrassing printouts Arabesque allows you to work on an image enlarged by a factor of 16, more than adequate for absolute accuracy. Oddly, the magnified image still only filled half the screen on my large monitor, an annoying feature that probably has a simple solution I've yet to discover.

Text, fonts and GDOS.

Just the mere mention of GDOS will, I'm sure, send shivers down many people's spines, so I shall

quickly emphasise that Arabesque does *not* require GDOS! However, should you have GDOS installed on your system, or use it regularly, Arabesque will happily read your Assign.sys file and make full use of the listed fonts. Users often fall foul of fonts (myself included on occasions) and it makes a welcome change to find a program that lets you get on with the job at hand. Both bitmap and vector modes use standard GEM bitmap fonts, although the vector mode does not support GDOS. The bitmap mode requires only screen fonts and the vector mode both screen and printer fonts. Arabesque also comes with a utility program, Fontmake, which converts Signum! fonts to GEM fonts. Users of Compo's C-Font will be able to convert their Calamus fonts to GEM fonts while running Arabesque by installing C-Font as a desk accessory. In case you're wondering, there is a special icon that allows the user to select desk accessories from the usual pull down menu. Arabesque is distributed with three fonts - Courier, Micro and Roman - to get you started quickly.

Once a font has been selected various text attributes, bold, outline, etc., may be added including line spacing and direction of text. As with the circle example above, text that has been typed follows the cursor around the drawing for accurate placement. A nice feature here is that text attributes can be changed from the keyboard as the text is typed and should you need to return to the text menu,
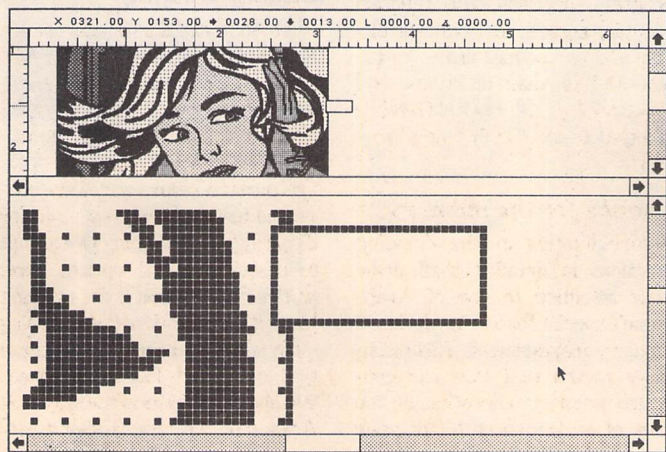
△ Figure 4.

All editing features are available in zoom mode. Note the co-ordinate display for accuracy.

the current cursor position is always retained. Entering text in vector mode is more akin to a DTP function. First a text frame is drawn and, like all vector objects, the frame can be easily modified later. Within the frame text may be left, right and proportionally justified or centred and make use of the attributes available in bitmap mode.

Printing

Arabesque does not use GDOS for printing, and printed output using the supplied drivers was very good, especially from vector mode. Although there is not a specific driver for the DeskJet range I found that the LaserJet driver worked well. In fact there are four LaserJet drivers each with a different resolution (75, 100, 150 & 300dpi) giving DeskJet users the choice of printing out at four different scales. Although I only tried Arabesque with the DeskJet, the other drivers would appear to cover most needs including Cannon's Bubblejet and Atari's laser printers.

Images can also be saved in a variety of formats - IMG, STAD, Degas PI3, IFF and Arabesque's own format - in bitmap mode and vector mode - GEM/3, CVG and Arabesque's own format. GEM/3 is the latest version of this format which saves bézier curves and is compatible with MS DOS machines.

Summary

As you will have gathered from my review I have found Arab-

esque very much to my liking and it certainly deserves its professional title. Arabesque aims to be the complete graphics package and it certainly comes closer to this description than any other package I've seen. Vector drawing is particularly good and serious DTP users will find this mode invaluable. One final reason for recommending Arabesque is that it is distributed and supported in the UK by Compo Software. The Compo help line and support service is free to registered users, a point that would not go unnoticed to users of professional software on other hardware platforms. Compo can also be relied upon for sensible upgrades and future product development. Talking of which, a few things have come to mind over the past week. A complete graphics package should have support for scanners, especially given the extensive bitmap facilities. Also I missed the hotspot feature available in Megapaint. Finally, why can't I use Calamus and Postscript fonts in vector mode? Creating high quality illustrations invariably involves typographical characters of some sort, a point highlighted by the quality of vector mode.

Arabesque is a first class piece of professional software, running on the worlds most secretive computer. All we need now is for Atari to implement a sensible marketing strategy (well, any marketing would be nice) and we'll have a system capable of taking on all commercii.

Conclusions

Points for:

✓ Intelligent interface
✓ Good range of powerful features, especially undo and zoom.
✓ Price, good value considering both bitmap and vector modes.
✓ Supports large monitor.
✓ Free Compo support.

Points against

✗ Nothing serious enough to stop me recommending it to anyone looking for a graphics package.

Alternatives:

I don't know of any other single packages that are as comprehensive in both bitmap and vector graphics, except Silhouette, which I have yet to look at. Look out for Compo's new vector autotracing program Convector Professional (£99) which hooks directly into Arabesque.

Silhouette (£59.95), Ladbroke Computing.

Product:	Arabesque Professional
Version:	V 2.14
Supplier:	Compo Software
	7 Vinegar Hill
	Alconbury Weston
	Huntingdon
	Cambs PE17 5JA
Telephone:	0480 891819
Fax:	0480 890787
Price:	£129 inc VAT
Manifest:	171-page ring-bound manual in slip case, 1 double-sided floppy disk.
System:	Monochrome monitor required. Runs on all ST/TT models with at least 1MB RAM.
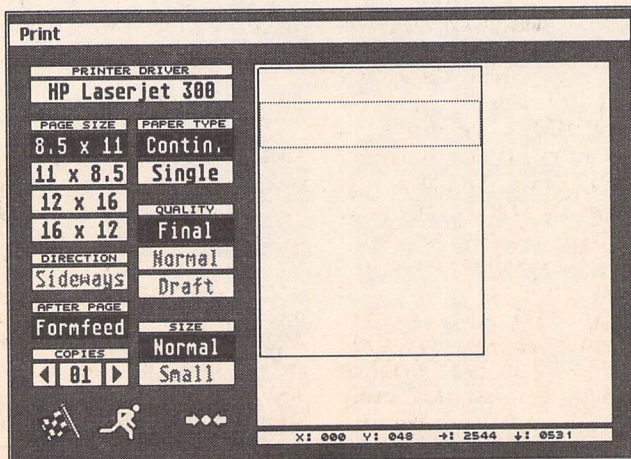
△ Figure 5.

All the familiar options for print control are here, including the option to change the currently installed driver.

The dotted outline represents the size of my current drawing page at the resolution of the selected driver.
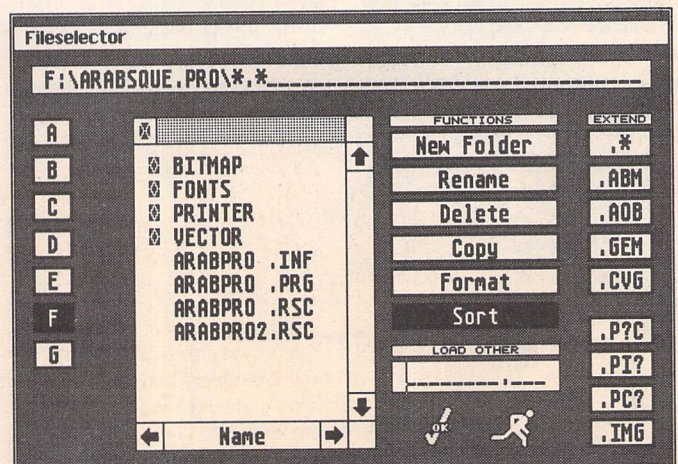
△ Figure 6.

Some users may be disappointed to find that they can't use their own replacement file selector. Personally, I found Arabesque's internal offering more than adequate and well designed. By clicking on the arrows either side of Name, the file size, date and time are also displayed. All paths and extension settings can be saved to speed up future access.

There is more to MIDI controllers than meets the eye. The MIDI spec allows for real time sound editing and effects control and with the advent of General MIDI, real time controllers are now catching on with users and manufacturers alike.

In this short series Ofir Gal will cover the use of MIDI controllers as a tool which can enhance your MIDI sequences, from simple control events to registered and non-registered parameters and General MIDI.

In Control

Bank	1151
Prg	4
Volume	OFF
Transp	0
Veloc	0
Delay	0
Length	OFF
Compr	OFF

△ Using the bank select option from Cubase's main page is not as simple as it should be. To select bank 9 you need to set the value to 9*128-1=1151. An easier way is to create a bank select object in the MIDI Mixer.

The MIDI spec supports 128 controllers which the user can use in real-time to affect sounds produced by the receiving synthesizer. Some controller numbers have been more or less standardised for a while, #1 - modulation wheel, #2 - breath control, #7 - volume, etc. Table 1 shows a full list for your reference. The MIDI spec also allows for two special cases of controller events, Registered and Non-Registered Parameter Numbers, or RPNs and NRPNs for short. The idea behind these is to enable the user to change internal, synth model specific parameters, without having to resort to system exclusive messages. Controller events are much more suited for real-time control than sysex because they are generally very short and can be compressed using Running Status as you will see later.

You could use RPNs and NRPNs to change filter cut-off point, resonance or the reverb amount on the bass drum half way through a song, as long as your synth supports them. With the advent of GM and GS, more synths now allow you to use RPNs and NRPNs.

Before you can use registered and non-registered parameters it is vital to fully understand how normal controller events work. In this article I will use Cubase to demonstrate some of the examples; if you use another MIDI sequencer check the manual if you are not sure how to send MIDI messages.

Simple Control Messages

The basic control message is very simple and is only three bytes long with the following format:

<$B0+MIDI Channel>,<Controller Number>,<Value>

The first byte is called the status byte and indicates the type of event. All controller events start with $B0+MIDI channel. The range of MIDI channel is 0-15 ($00 to $0F), control numbers range between 0 and 127 ($00 to $7F) and the same for values. Hexadecimal notation can be confusing to start with but in fact makes some sense when dealing with MIDI values which in fact represent computer byte values.

So if for example you wanted to set the volume on channel 3 to 80 you will need to send the following sequence of values:

$B2,$07,$50 or 178,7,80 in decimal.

Remember that channel numbers start at $00, so channel 3 is $02. The hexadecimal equivalent of 80 is $50. Upon receiving this message, your synth should set the volume on channel 3. If it doesn't, check that it recognises volume messages in its MIDI implementation chart, and that it is not somehow set to ignore this message.

If you use Cubase you can set up a MIDI Mixer object to do this: simply type the next line into the object definition box -<body-first>B0,07,xx

Cubase automatically inserts the MIDI channel for you and the object created determines the value in <xx>. A slider is probably the best choice and the value range is 0 to 127. This is another advantage of controller events over sysex messages - they are much simpler. You do not have to worry about check sums and most importantly, controller events do not choke the system; they are short and do not cause a 'glitch' in the music.

One controller which can be most useful but is often overlooked is #124 ($7C) which is Omni Off. There are some MIDI devices which have the annoying habit of defaulting to omni-on when first switched on - the Akai samplers are one example. You can send the following message to switch this off remotely at the beginning of a song.

$B0,$7C,$00 or 176,124,00 in decimal notation.

With Cubase simply define a switch object and enter the values B0,7C,xx in the MIDI message line. Then set the value range to min=0 and max=0 which will make this a one-way switch. Now put the MIDI Mixer in Replace mode and click on the switch, this will record an omni-off message at the beginning of the song. Portamento time can also be adjusted with controller #5, the message is $B0,$05,<value>.

MSB and LSB

You will notice that some controllers such as #0 and #32 are paired, with one marked as the Most Significant Byte and the other the Least Significant Byte. Behind these bewildering names is a fairly simple idea. Since MIDI values can only range between 0 and 127, in some cases this is simply not enough and with the arrival of General MIDI it was decided to assign the mostly unused controllers #0 ($00) and #32 ($20) as bank selectors and solve the embarrassing limit of 128 program change values. Since each can be set to a value between 0 and 127, 128*128=16384 value combinations are possible with two controllers ($4000 in hex) enabling switching between that many banks. This may seem over the top, but so did 128 program changes back in 1982.

The use of two byte values to produce a higher value is referred to in the MIDI implementation charts as MSB and LSB. To select bank 5 for example you need to send two three-bytes events - the first setting the MSB to 0, the second setting the LSB to 5.
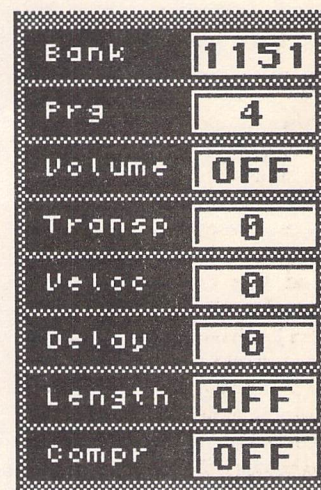
$B0,$00,$00,$B0,$20,$05

A slightly more complex example is selecting bank 134. Since the maximum value we can set in the LSB is 127, we will have to use the MSB. Setting the MSB to 1 gives 128 and a value of 6 for the LSB gives us the total 134.

$B0,$00,$01,$B0,$20,$06

Another way of looking at this is to take the number you need to send, divide it by 128 and put the result in the MSB and the remainder in the LSB. If you need to find the original value from the midi string use the formula: MSB*128+LSB=value. Theoretically, it should not matter if you send the LSB before the MSB, but some synths insist on this particular but quite logical order. Many synths do not respond to a bank change message unless it is followed with a program change message.

As if things are not confusing enough as they are, some synth manufacturers have decided to ignore the LSB, because at present

128 banks are more than enough. This is fine if you are sending the message directly from the MIDI Mixer in Cubase or a similar setup on another sequencer, but can be extremely confusing if you use the bank select function in the arrange page.

Running Status

Most computer users are familiar with data compression as used by programs such as ARC and ZIP. MODEM users will also be familiar with real-time data compression systems which can almost double transmission speeds ov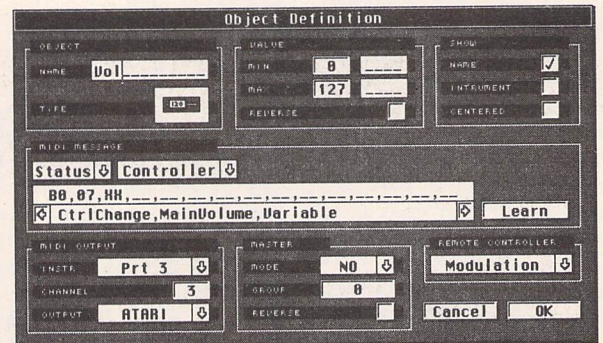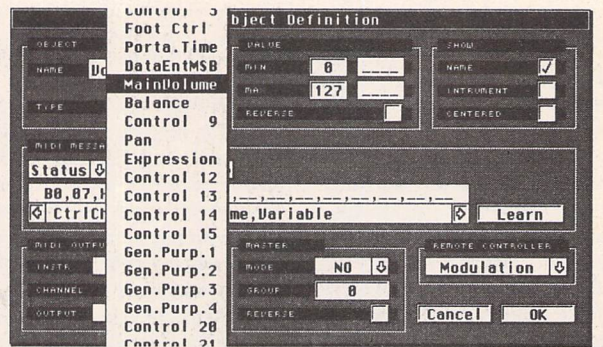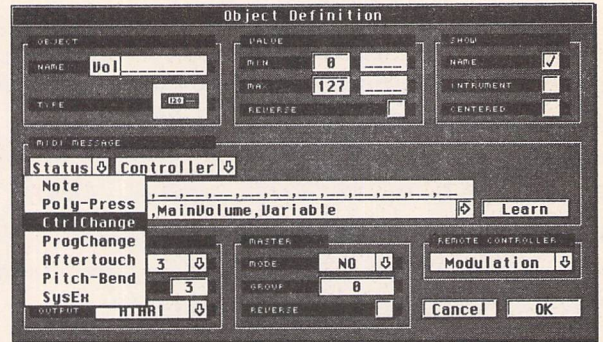er the telephone line. MIDI has its own data compression system which is rather simple but can be quite effective. Running Status is optional, you don't have to use it, but you're better off with it as it

can reduce the amount of data going through the MIDI chain and improve timing accuracy.

The compression method is based on the idea that a certain MIDI event is likely to be followed by events of the same type. If you are playing a sequence of chords all events are note-on events and if you move the modulation wheel, a sequence of controller events is generated. Under Running Status, the status byte is only sent once in the beginning of such a sequence and another status byte will be sent only if a different type of event appears in the MIDI data. As a result the amount of data that is generated can be reduced by up to a third. Taking into consideration a multi channel sequence with mixed event types a saving of approximately 20% is a more likely figure.

△ Creating a simple volume control with the Cubase MIDI Mixer. The pop-up menus make the job quite straightforward, so long as you know what you are after.

Table 1
List of MIDI Controllers

0	$00	Bank Select (MSB)
1	$01	Modulation
2	$02	Breath Control
4	$05	Foot Pedal
5	$05	Portamento Time
6	$06	Data Entry (MSB)
7	$07	Volume
8	$08	Balance
10	$0A	Panpot
11	$0B	Expression (volume)
16	$10	General Purpose 1
17	$11	General Purpose 2
18	$12	General Purpose 3
19	$13	General Purpose 4
32	$20	Bank Select (LSB)
38	$26	Data Entry (LSB)
64	$40	Damper Pedal
65	$41	Potamento Pedal
66	$42	Sostenuto Pedal
67	$43	Soft Pedal
69	$45	Hold 2
80 - 83	$50 - $53	Gen. Purpose 5 to 8
91	$5B	Effect 1 (Reverb Depth)
92	$5C	Effect 2
93	$5D	Effect 3 (Chorus Depth)
94	$5E	Effect 4
96	$60	Data Increment
97	$61	Data Decrement
98	$62	NRPN LSB
99	$63	NRPN MSB
100	$64	RPN LSB
101	$65	RPN MSB
120	$78	All Sound Off
121	$79	Reset Controllers
122	$7A	Local Switch
123	$7B	All Notes Off
124	$7C	Omni Off
125	$7D	Omni On
126	$7E	Mono Mode On
127	$7F	Poly Mode On

You can apply Running Status to the bank select message from the previous example. The old message was:

$B0,$00,$01,$B0,$20,$06

You can remove the second $B0 under running status to get:

$B0,$00,$01,$20,$06.

Registered Parameters

There is a limit to what can be done with standard controllers. First, there are only 128 of them while many modern synthesizers sport hundreds or even thousands of parameters. The second problem is the range of values is again

limited to a resolution of 128 steps. This is fine for most parameters but sometimes you just need more than that. The original MIDI spec allows for two special cases of control events, RPNs and NRPNs. RPNs are a standard and are the same on all synths and samplers that support them.

There are currently only three RPNs in general use with new ones occasionally announced. The three parameters are pitch bend range, fine tune and coarse tune. Of the three, the pitch bend range is probably the one you are most likely to want to change half way through a track, so I will use it in my example.

RPNs use the MSB·LSB princi-

ple so that more than 128 parameters can be accessed. To enable RPN control you need to send two controller events - #100 (LSB) and #101 (MSB). The values of these tell the receiving synth which parameter is to be changed. With pitch bend both values are 0. Two more events are required to specify the new parameter value and again the MSB+LSB are used. A combination of controllers #38 (LSB) and #6 (MSB) is used to allow for a wide range of values. This range is not used with the bender range parameter which typically can be adjusted between 0 and 24 in which case the LSB is set to 0 while the MSB is used to set the actual value. The full message is:

$B0,$64,$00,$B0,65,00,$B0,26,00,$B0,06,XX

where XX is the required value.

Running Status can be quite effective with this message and reduces it to 9 bytes, a reduction of 25%:

$B0,$64,$00,65,00,26,00,06,XX

▽ The pitch bend range object definition.
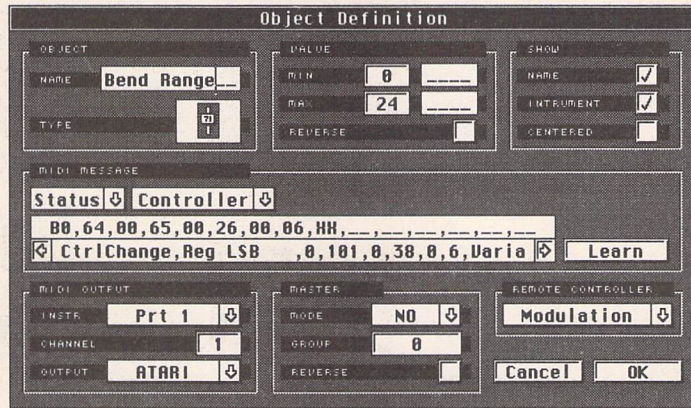
Table 2

Decimal to Hex Conversion

Decimal	Hexadecimal
00	00
01	01
02	02
03	03
04	04
05	05
06	06
07	07
08	08
09	09
10	0A
11	0B
12	0C
13	0D
14	0E
15	0F
16	10

Desktop Publishing

with the Atari ST

Part Four: Typography   *Günter Minnerup*

Typography is at the heart of desktop publishing because, a few specialised applications apart, printed text constitutes the bulk of its output. But there is much more to typography than meets the untrained eye, and most people graduating from wordprocessors to DTP packages to make their output "look more professional" actually achieve their aim, even with all those pretty fonts available. In fact, most of them produce copy which is easily recognisable as "amateur DTP" precisely because of all those "fonts" (I am putting the word in quotation marks because it should really be "typefaces". One side effect of the DTP revolution has been to corrupt the accuracy of traditional terminology, in which fonts refer to one size of a typeface in a particular style and weight).

Nothing is more confusing to the DTP novice than the huge variety of typefaces available from many commercial, shareware and public domain collections. This tends to arouse the collector's spirit in us, and having accumulated a library of type designs the natural inclination is to show them off in our work. This tendency should be resisted at almost all costs - in fact, the best advice that the beginner can be given is to use no more than a single typeface in each document, making appropriate use of the its different styles and weights (roman, italic, bold, heavy, light, etc.) for headings, folios, body text

emphasis and so on. Later, when you have developed a better "feel" for what is appropriate and what is not, you can gradually increase the number of faces used, especially for display and magazine work, but even then you will rarely need more than two or three per job. If you have to experiment, try out different faces in different documents, but never all in the same! Good typography is more about the white spaces between the letters rather than their particular shape and design and involves careful attention to matters such as letterspacing and linespacing, kerning, tracking, leading, hyphenation and justification - subjects which we will turn to next month.

For good-quality DTP work it is also not really necessary to know about the various classifications which are applied to type design, such as Roman, Gothic, Script, Modern, Egyptian and so on. This is really only of interest to those who wish to design their own typefaces. The only real distinction that needs to be made between them is functional; between faces suitable for ordinary text, both body text and headings, and those which are more suitable for display, posters, advertising and special purposes such as invitations, menus and business logos. For body text, conventional wisdom suggests that serif faces are more legible than sans serifs which are preferred for headings, but much depends on the character of the publication: sans serifs

appear more "modern" and "cleaner" and there is no reason at all why they should not be used even for magazine and book work if that is the effect you want and some typographical care is taken (most sans serifs used for body text benefit from close letterspacing and generous leading).

The best way to judge the suitability of a typeface for a particular purpose is not to look at individual letters, or even the entire character set, in isolation, but to compare a whole text column set in that face with another in a different face, perhaps even from some distance. What sort of "colour" and "mood" does the face create? On this basis, it is a good idea to acquire a basic collection of typefaces to start with, perhaps two or three each from the serif, sans serif and display categories, plus a set of Dingbats (graphic characters such as bullets, stars, telephones and arrows). A good starting point is to follow the selection included with every standard PostScript printer, but as Times and Helvetica have become such clichés through overuse by the DTP community it is a good idea to acquire a few alternatives to these workhorses, such as Bodoni and Optima, Universe and Futura. But where do you get these from?

The best quality and largest selections can be found in the catalogues of the established commercial type manufacturers. Public domain and shareware fonts, while cheap and widely available from bulletin boards and PD libraries,

should be treated with caution as they are often of poor design, sometimes dubious legality and almost invariably spoilt by incomplete character sets and kerning information.

Much depends on the font technology used by your DTP software. With the exception of Easy Text and Timeworks Publisher, all ST programs can now use vector fonts for both printed output and screen appearance, giving a high degree of WYSIWYG. But the precise vector file formats used differ, as does the degree of choice offered. Fleet Street Publisher, for example, uses a now redundant version of the UltraScript format and it is virtually impossible to legally acquire additional fonts in that format now that both Ultra-Script and FSP are no longer supported. The number of available Calamus fonts is also relatively limited, at least when compared to the vast range of PostScript fonts. PostScript is probably the best way to go when acquiring commercial fonts, as PostScript Type 1s can be easily converted (with a variety of font editors) to Calamus .CFN fonts and be used as printer fonts with every other Atari DTP package in their native format. To generate screen - or even laser printer - fonts for use with Fleet Street Publisher and Timeworks from PostScript, you need first to convert the fonts to Calamus and then import them into Fontkit Plus for conversion into the GEM/ GDOS bitmap format.

Another reason for going the

PostScript route is the output quality with laser printers. Vector fonts may be convenient because all kinds of sizes and resolutions are generated automatically from the font outline, but in the end what is sent to the printer is always a bitmap, just as with GDOS fonts. The bigger the font size and the higher the resolution, the larger the matrix of printer dots available and hence the better the quality. Smallish body text fonts, up to about 10 points, do not however always reproduce that well at 300dpi, and to counter this Adobe have built into their Type 1 fonts an algorithm known as "hinting" which greatly improves small

sizes at lower resolutions. Calamus fonts do not have this "hinting", nor, of course, do bitmap GDOS fonts. You could manually edit GDOS fonts at the smaller sizes to equal - or even better - PostScript quality with your hand-crafted printer fonts, but as this would have to be done for every point size used it is hardly a practical alternative and also very wasteful of hard disk space.

So which typefaces are we going to adopt for our projects? Because they are all for the same business, "corporate identity" demands that there is a degree of unity across all printed matter emanating from the ST Club. One

way of achieving this is obviously a logo (which we shall tackle later), but it also helps to stick with one or two main typefaces. I have actually chosen three for three different purposes: for the body text in the magazine as well as the letterhead and the other business stationery, a modern-looking sans serif (this is a computer-related business with high-tech connotations rather than a parish church newsletter, after all) other than the rather commonplace Helvetica, Futura or Universe was desired, and Avenir, with its choice of styles and weights, fits the bill well. For the book, which is to be set on a high-resolution im-

agesetter, I could not resist the subtlety, readability and elegant modernity of Optima. Finally, for the actual contents of the business stationery - the letters and invoices - something more traditional, vaguely resembling a typewriter and making a good contrast to the pre-printed heads and forms is needed, such as Century Schoolbook.

Next month: The space between the letters, words, lines and paragraphs.

Early in the computer revolution, the programme WordStar was the dominant word processing programme. WordStar began to show its age in 1986, and other competing products, richer in features, entered the market. Microsoft Word became available for the IBM PC and for the Macintosh. It would soon take over the Macintosh market, replacing MacWrite (published by Apple) - a position it continues to hold.

WordPerfect was just starting to make its move to gain user support. There were several other pro-

WordPerfect's success was having a major impact on the other software publishers who saw the numbers dwindling. Without change, it seems that WordPerfect would have continued to snowball until it would own all but the highly specialized DOS markets.

THE WINDOWS MARKET

But a change did happen. Microsoft Windows was being developed while WordPerfect was gaining marketshare. A quite respectable programme, Ami initially sold very little due to the low Windows installed user base. Ami was later bought out by Lotus and its ver-

While the widespread practice of using serif faces for bodytext and sans serifs for headings only is a good starting point for your own experiments, don't be afraid to break the rules and don't forget that the distinctions between the two can be blurred as is the case with the popular Optima shown here. Designed as a bodytext face, it is essentially sans serif although the subtly curved stems hint at serifs. Optima works well at typesetter resolutions, but much of its subtlety is lost on 300dpi lasers.

This appalling example of poor typography comes from a "professionally" produced, glossy computer magazine. Among the sins committed here are: ugly, irregular letterspacing, hyphens instead of dashes, misaligned columns, subheadings closer to preceding than following paragraphs. This is what can happen when DTP technology is not guided by typographical skills!

Like the drawing programs they resemble, font editors generally fall into two categories: vector and bitmap. The Didot font editor is part of the Didot LineArt package, and can be used to convert PostScript Type 1 fonts to Calamus format. Designing your own fonts looks deceptively easy with the powerful tools provided by such editors, but is better left to the professionals.

The marvellous Fontkit Plus by Jeremy Hughes works with GDOS and other bitmap fonts, but can also import and convert Calamus vector fonts, including those which started life as PostScript Type 1s. Some care needs to be taken when converting between different formats as the character sets are likely to be different, but Fontkit Plus and other font editors provide the tools to re-assign characters to different ASCII values.

Beginners' Forum

Mark Baines

Disk Copying

Programs crash whilst writing to the disk, we press the wrong key, click on the wrong button, select the wrong menu item, we place the wrong disk in the drive, we spill coffee on the disk, we turn the computer on/off with a disk in the drive or take one out with the drive motor still running, the baby finds a new thing to chew! These are some of the "thousand natural shocks" that disks are subject to, even from the best of us. When you find that your disk doesn't work any more or the program file is corrupted, what do you do next? After the anguished cry, that is!

Backups

Of course you turn to your backup disk or master disk. Yes? Well done! No? It can't be emphasized enough, the importance of backing up all the disks you buy, whether commercial or PD. Most, if not all, commercial software distributors allow this (indeed, any legal basis for preventing it is questionable - but that's another story) and you should ALWAYS work from a copy of the master disk and not from the master disk itself. Of course, some disks cannot be copied so easily because of some 'protection' technique employed by the publisher to prevent copies being made for illegal distribution. Only games really fall into this category any more, because the increase in popularity of hard disks has required that all other software be 'copyable', in order to be placed on them. In fact, it is quite clear from the IBM PC and Mac markets that users will refuse to buy software that is copy protected. Atari have made it clear to games developers that games for the Falcon should be capable of running from a hard disk.

Anyway, most beginners soon learn that making and using backup copies of disks is of vital importance. Almost every manual, including Atari's, tell you so. There are two ways to copy a disk, the easiest being to use the Desktop's DiskCopy function.

Disk Copy

This is achieved by dragging the disk icon A to disk icon B or using the appropriate item in the menu. Under TOS 1.4 DiskCopy is in the Format... dialog. I'm sure you know how to do this so I won't waste your time describing it except to say that make sure your master or source disk is always write-protected by opening the little hole in the bottom left corner. If you only have one drive and a TOS which asks for repeated changes of disk it will prevent you writing to the wrong disk if you get muddled (easily done) and have the wrong disk in the drive. Also, don't be too eager to take the disk out, wait for the drive light to go out first. Taking a disk out when it is being accessed by the drive will damage the disk surface and possibly the drive's heads.

However, many people do have problems with using this technique on some disks and understandably wonder why TOS is so awkward. GEM demands that the type of both disks be the same. They should both be single- or doubled-sided and formatted to the same standard. GEM has only ever allowed disks to be formatted from the Desktop with 80 tracks and 9 sectors. When GEM copies a disk it is reading each sector into memory and from here, copies them one at a time onto the destination disk. If that destination disk has, say 80 tracks and 10 sectors (a common format) then you have more sectors per track than

GEM has data for and the source disk boot sector's details (see last month) don't match the destination disk's structure. You get the "The destination disk is not the same type as the source disk. Please insert another disk" error. If you know that your destination disk has an irregular format then the solution may be easy. You abort, format the disk from the Desktop and start again.

But many source disks are not formatted to the Desktop norm. Increasingly, distributors of software use greater capacity formats to get their large programs and data files onto them. Some use very unusual formats in an attempt to prevent you copying them. Unwittingly, we format our destination disks to the normal standard only to find that they are rejected again. It never ceases to amaze me that the programmer of this bit of TOS couldn't have simply allowed the destination disk to be formatted during the copying procedure using the details contained in the source disk's boot sector. Very little extra code would be needed and the result would be a tremendous improvement of versatility. But TOS isn't like that and so we have to resort to third party programs.

If you haven't got FastCopy 2 or 3 by Martin Backschat which are PD and available from all PD libraries, or FastCopy PRO which is sold by The ST Club for £24.95, then get one of them! Try Fast-Copy v3 on ST Club DMG.18. There are many disk copiers available, some of which will even cope with copying a commercial game disk for your personal use.

FastCopy appears at first sight to be complicated, with lots of buttons and boxes, and this can put

new users off (Figure 1). For the simple purpose of making disk copies it is no harder than using the GEM Desktop with the added bonus that FastCopy is intelligent. It reads the BPB data from the source disk and formats the destination disk to match whilst copying. Not only that, but it is faster than the Desktop. Make sure you select "Fast Format Dest." (highlight the box) and "Read Disk Config.". There is no need to alter the configuration in the "Disk configuration" box. Also select "Get Sectors - all". If you have two drives select the "Source" and "Dest." accordingly, otherwise make both "A:". I normally select "Verify Destination" as well. This causes the program to check that what it has just written to disk is the same as that in memory. Very rarely does a disk copy or file copy function copy data incorrectly, especially so on hard disks and normally this can be switched off here and in all other programs that use it. This will speed up the process no end. But if making a backup of very valuable data where no chances can be taken, set this. If you know the format of your source disk and have already formatted disks to match, then Fast-Copy is even faster and certainly worthwhile if you have more than the odd few disks to backup.

File Copy

The other way of copying disks is to copy each individual file across onto the destination disk. With GEM it is a simple matter of selecting all the files on the source disk and dragging them to the new one. There are several problems with this and some interesting benefits. One of the problems is that the GEM directory windows aren't
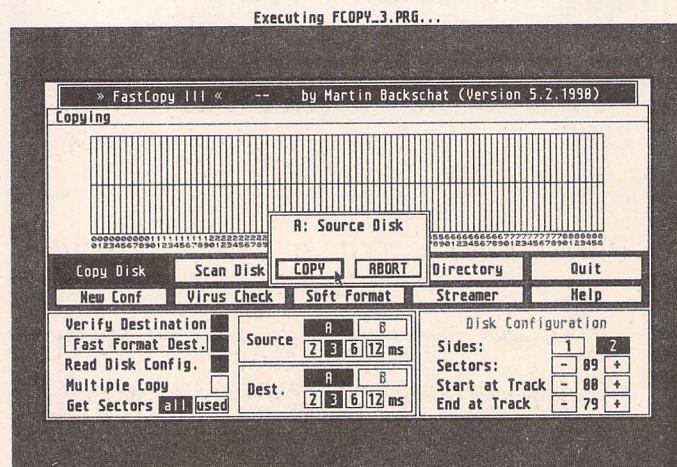
△ Figure 1: FastCopy III program showing the 'intelligent' disk copy settings and just about to copy a disk in drive A.

very clever and selecting a whole disk of many files can take several operations, scrolling the window between each one. Certainly, Neo-Desk with its 'Select All' button, the 'Select All Items' menu item in TOS 2, 3 and 4 or a command line interface utility are more useful and quicker. Another problem is that if your destination disk has a smaller capacity than the source disk, you might end up with a few files incapable of being copied across because of lack of space. You can check disk capacities beforehand, of course, but who thinks of that? Anyway, doing a 'Show Info' on a disk gives very misleading results. The 'Bytes Used' figure is obtained by adding up the length of each file on the disk and bears no resemblance to the amount of disk space that they have taken up. See last issue for an explanation of this. So, the 'Bytes Available' figure is only the maximum number of bytes that can be stored if every sector on every track is full to the brim. As detailed last issue, this is never the case and can with lots of small data files, be grossly misleading. Space you thought you had available

will be not be there once you start copying these files over.

One of the major benefits of copying individual files is that you can copy them in any order you want. Why, you may ask? If working from floppy disks and you are wanting a quick boot up or load up of your application program, then copying that program file and its resource and configuration files, etc., onto an empty disk will place them on the first tracks of the disk, just after the directory sectors. If this is also a boot up disk, copy the AUTO folder programs first, then the accessories and lastly, the application program files. This greatly decreases the amount of time a drive has to look for the program. Also, those files will occupy contiguous sectors and tracks which means that the drive's heads do very little moving around from one part of the disk to another. This is also possible on hard disks, especially on larger capacity ones where there can be a significant improvement in the load up time of a large application. After you have done this, then you can copy the data files and other stuff that

will only be accessed infrequently.

When a disk gets used a lot, files get deleted leaving empty sectors scattered about the disk. New files will occupy the first empty sectors designated as being free in the FAT. This may mean that a large file will get split up into non-contiguous sectors all over the disk. You know this has happened when you hear the disk drive motor moving the head backwards and forwards across the disk surface when loading a single file. That file is said to be fragmented. Because the heads have to travel more, the file takes significantly longer to load up. You can make all the files on the disk contiguous again and optimise their load up times by copying all of them to another disk or, better still, a RAM disk. Delete all the files or reformat the original disk and copy them back again, remembering to do the program files first. If you don't delete the files before copying them back, they are copied into the same sectors again, making no difference at all.

Another benefit is that any single-sided disks can be copied twice

onto a double-sided backup disk by placing the second copy into a directory called BACKUP.NO2, for instance. If the first part of the disk becomes corrupted, you can always access the second copy which will be stored on later tracks. If this doesn't appeal, then store two single-sided disks on a double-sided one, again using two directories, say DISK.1 and DISK.2 and save on disks.

If you can think of anything that I ought to cover in this column then send me a letter, but please remember that I cannot deal with specific program and hardware problems unless it appears to be of common interest. Thank you for the letters received so far. Although I can't promise to respond to all personal queries, I'll do my best. An SAE certainly helps!

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Grafix Arts

Paul Keller

In this month's column we examine the creation of facial expressions and deal with some of the problems the computer artist is faced with in this type of work, looking at some of the solutions and different methods of approach he/she may use when drawing or painting faces.

TECHNIQUE – Expression

Methods of Approach

Most people when drawing faces use some reference to copy from - this includes both the amateur and professional artist alike. You will find generally that any subject reference you are using will also determine your colour palette choice. It is important to choose whether to use the extra screen colours such as are found in 'Spectrum 512' or 'Canvas' art packages before starting your work. If using an STE you may find that Canvas is the best as it supports your 4,096 colour palette, unlike Spectrum.

If you are lucky enough to have the STE then you will find that the extra colours on offer do make a BIG difference as opposed to the smaller 512 colour palette available on the STFM. The larger choice of colours means that you can get your skin colour much nearer the reference you are copying from. This in turn means that a smoother and more detailed look can be gained, as the pixel definition is increased when using colours of such a similar contrast.

Expression

In one of Georges Seurat's detailed studies on faces, his drawings show a very interesting significance in the use of lines.

This knowledge could come under the heading of perspective as this was also certainly an aspect of his study. Seurat learned that the directions of line could be used to express different emotions in a face: lines slanting upwards represented happiness, lines placed horizontally gave calmness, while lines slanting downwards gave the impression of sadness.
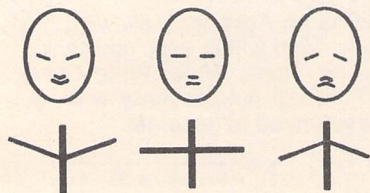
Drawing aids

If drawing on the computer I will often use the grid method, but other methods are used by different artists.

One method consists of building up the face using shapes as a reference for the positioning of the features. For example, eyes would be represented by an ellipse for each, and a triangle might be used for the nose. It is a faster preparation method than creating a grid and is more suited to the artist who's in a hurry. When using any such guide lines it is best to use the same colour for the outline as the one you are using for the copy, as in some cases it avoids having to rub it out; instead, you can simply draw over it. If using these methods you could plunge in and concentrate on a particular face feature such as the eyes. But before doing this make sure the proportions are correct and that you have worked out quite thoroughly what colour palette you will be using.

The mirror function can sometimes be used to save on a great amount of time and work done by the artist. It could even cut your work time by as much as half!

Features

For drawing purposes the face can be broken down into the following major categories: skin colour, hair, ears (if not hidden by hair), eyes, nose and mouth.

Each of these requires a separate method of approach owing to the differences in their physical make-up.

The skin colour, while primarily connected with your reference, is also dependent on the size of the face you are drawing on the computer. The skin covers a very large part of the face and converting it effectively to the computer will mean taking note of certain considerations.

For instance, if you are drawing a large face covering the whole of the computer screen you will need more skin colours in your colour palette than a much smaller face covering a proportionately smaller area on the screen. Highlights and shadows are very important to place on the skin and it should be noted that at least three colours are needed for the skin: one colour for the main area, one colour lighter in shade for highlighting and a darker shade to that of the main colour for any shadow work.

The hair is easiest to draw if a brown colour is used and with careful planning some of the darker shades of skin colour can then be used as a part of the brown hair palette. These type of colour palette techniques should only be used when you are restricted to 16 colours; if you are using Spectrum 512 you should be able to ignore this to a large extent as it can cope quite easily with about fourty colours to a line.

When drawing hair it might be found that the best method is to fill the main area with its corresponding colour (e.g. dark brown) and then work on top of this. You will find that very good results can be gained with the use of the K-line command: use this to follow the main group strands of hair. This itself is drawn over with a lighter colour and in this way you can build up very good highlights. It is however a difficult method for the beginner and a little time consuming. Another method therefore is to use the smear tool, this being done with cutting strokes and by following the shape of the hair contours. Start with the largest colour and brush, and reduce the size of the brush increasing the highlight intensity to form an even flow of work.

Eyes are perhaps most people's favourite feature of the face and they hold so much allure and variation to work with. The colour of the eye is important as are reflections to make it more 3D-like. Eyelashes and eyebrows are best kept as a dark brown and not so much black in colour as the ST's low resolution will make the picture seem a bit blocky. Anti-aliasing on such small detail is best done by hand, and in a high zoom mode. Keep such detailed eye parts as the eyelashes as dots only, don't join them as lines but keep them separate for maximum detail and effect (this helps avoid jaggies).

The nose is pretty straight forward following the rules we discussed on skin.

The mouth is difficult, at least I always find this so, although with the computer mistakes can be easily corrected. Zoom mode is best for helping you to get the detail in the lips and also the expression you are trying to portray, whether happy, calm, or sad.

Next Month: Flora

TOOLS – Outline

This type of tool is often used as a high-lighter for objects of a similar colour or brightness to that of their background. An obvious example is that of sprites in games which sometimes use such an outline around them to make them more distinct from their backdrop scenery. A black line is usually used for this type of purpose.

Text

Outline text can be called up from within most art packages and simply provides the user with another variation on the font being used. Because it's an outline it doesn't stand out as much as a full bodied text, unless you are using very contrasting colours such as white text on a black background. One of the best outline text effects is to use it in conjunction with a shadow and fill: the inside of the outline is filled with another colour and a shadow applied to the outside of this font. This will give you a more interesting effect than a simple outline font on its own, as it will stand out from your picture more dynami-

cally (depending on your choice of colours). Sometimes an outline is applied around a text body for the same reason as stated with objects, this being when the text is a similar colour to that of its background. In such cases you will find that a white or black colour outline around your text is the most commonly used. Apart from being easy on the eye, the two colours also offer the best contrast levels and so generally stand out better than any other outline colours.

Other functions

As a special effect we mentioned last month that it is a very useful tool, providing several other functions for the artist to utilize.

One such use of the outline tool is in that of thickening an object edge or boundary line. This is done by outlining the outline as many times as is required to thicken the edges you are working on. Some art packages such as 'Degas Elite' offer a choice of outline edging, the two types being square or

round edge outlines. A square edge outline means each time you make an outline it follows the edge you are outlining exactly. Such an outline can sometimes become very blocky, especially if the same edge is outlined more than once. A round edge outline provides a better finish if you are making several outlines of the same edge as it smooths the corner edges of any object being outlined and so stops the blocky look you might otherwise get.

Next Month: Stipple

LAST WORDS

"We painters take the same liberties as poets and madmen take."

Paolo Veronese

DRAWING OUTLINE FONTS

1. Design Considerations

Graham McMaster

There are thousands of typefaces currently in circulation and although not all will be available for a particular word processor or DTP package, there is usually a reasonable selection. Why then should we consider designing new typefaces?

The Challenge

Although the title specifically refers to outline (or vector) fonts and I will be using Fonty to illustrate features of Calamus fonts, almost everything I have to say is quite general, applies equally to bit-mapped fonts and is independent of any particular editor. What is extremely satisfying about designing outline fonts is that when the face has been drawn, it is theoretically available at all point sizes and all resolutions and there is no need to draw a separate version for the screen. In addition, I find working with an outline font editor easier and faster than most bit-mapped font editors.

Most existing fonts are straight copies or interpretations of traditional designs which have been refined over the 500 years or so of printing to meet the changing requirements of technology. Current designs were created to meet the specific requirements of hot metal casting for Linotype and Monotype letterpress printing. Imagine the difficulty of obtaining a justified right margin if the widths of letters, spaces and punctuation were not all integer multiples of some not too small quantity. Only if that requirement is met can standard slivers be inserted to create the additional space between words needed to justify a line.

Software (or digital) fonts and DTP typesetting, with kerning typically possible to one hundredth of a point, have liberated designers from some of the constraints imposed by metal type, while at the same time bringing new requirements and challenges. All symbols, whether they be drawn in a bit-mapped font editor or an outline font editor, are presented to the output device as a bit map - a discrete array of points that define the size and shape of characters. These bit maps can never depict curved shapes - particularly those associated with small details such as serifs - with complete accuracy. At the resolutions of photosetters (around 2000 dpi) the disparity is negligible but most of us are working at 300 dpi where the problem is particularly noticeable at small point sizes. Hinting (the provision of additional information that the raster generator can use when rendering characters at low resolution) undoubtedly helps but very few of the applications running on STs support

it. The problem needs to be tackled at the design stage by the creation of letterforms that look good at 300 dpi.

Limited resolution is not the only problem that the relatively new technologies of dot matrix, ink jet and laser printers present to font designers. For example, I have found that laser characters need to be about 60% thicker than dot matrix characters in order to print with the same weight. That's about the difference between a normal face and a bold face. Apart from drawing two versions of a font, there is not a lot the designer can do to overcome that
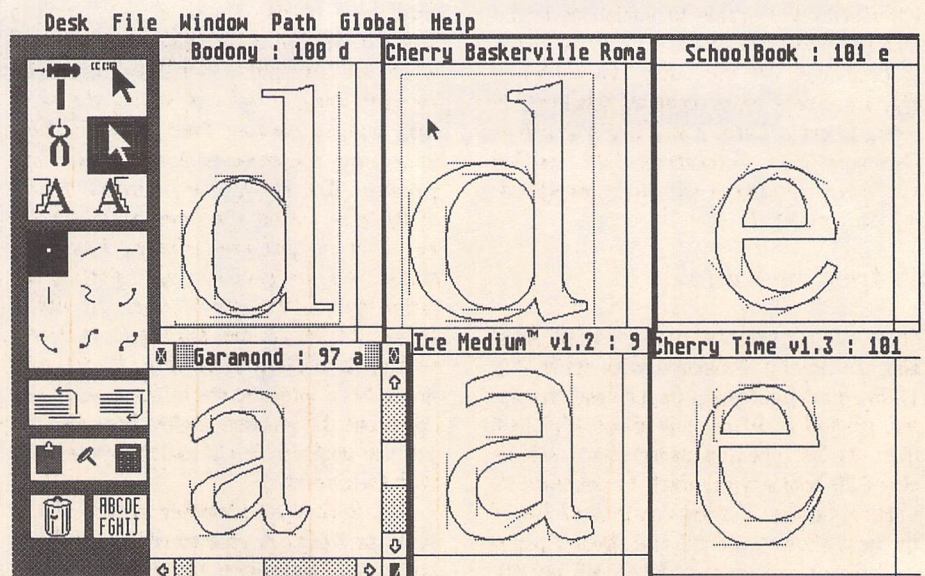
△ Fig. 1: It is very useful to be able to open a number of windows in which characters from different typefaces can be compared and contrasted. I have scaled these characters so that they are comparable.

problem. What is required is that the routines within applications which use outline fonts should scale both for resolution and technology of the output device.

Even within a particular technology there are variations in the physical and chemical processes that transfer 'blackness' to the page. The age of a light sensitive drum, the number of times a ribbon passes the print head and the amount of ink in a cartridge all influence the appearance of characters and are additional to mechanical variations in positioning. Fortunately it is possible to design letterforms that will at least be resistant to such fluctuations and preserve legibility.

Overriding all these factors is the primary function of a text typeface (as opposed to a display face) which always has been, and still remains, to convey information efficiently and unobtrusively to the reader. It is a lot to ask of a designer that s/he produce something that no one will notice! I know of only one original, new typeface (Lucinda) that specifically addresses all these issues. It was designed by Kris Holmes, a free-lance typeface designer, and Charles Bigelow, professor of digital typography at Stanford University.

Design Guide-Lines

The general design criteria used by Holmes and Bigelow are simply stated but Lucinda was the outcome of several years of work.

1. Avoid extremes of contrast

Two of the main features of the Bodoni typeface (Fig 1) are its extreme contrast (almost 5:1) and thin line serifs. These very fine strokes which are necessary to obtain high contrast at normal weights, render its letterforms vulnerable to variations in the transfer processes and are likely to result in breakage. All the other characters in Fig. 1 are of a lower contrast (Baskerville 3.6:1, Cherry Time 2.3:1, Compugraphics Garamond 2.4:1, Schoolbook 1.9:1 and Ice 1.2:1), but compare it with the corresponding Baskerville 'd'.

2. Avoid small detail

Short curves are one type of small detail and are usually associated with serifs (Fig 1). In round figures, an upper case character, printed at 10 point is about 1/10 inch high. At 300 dpi that means there will be about 30 points with which to delineate its vertical outline. If a serif is around 10% of the height, there will only be about 3 points to depict it and curved detail will be lost. In this respect the thin line serifs of Bodoni, which suit the raster geometry, are a step in the right direction but they probably need to be thickened. [Lucinda's serifs are
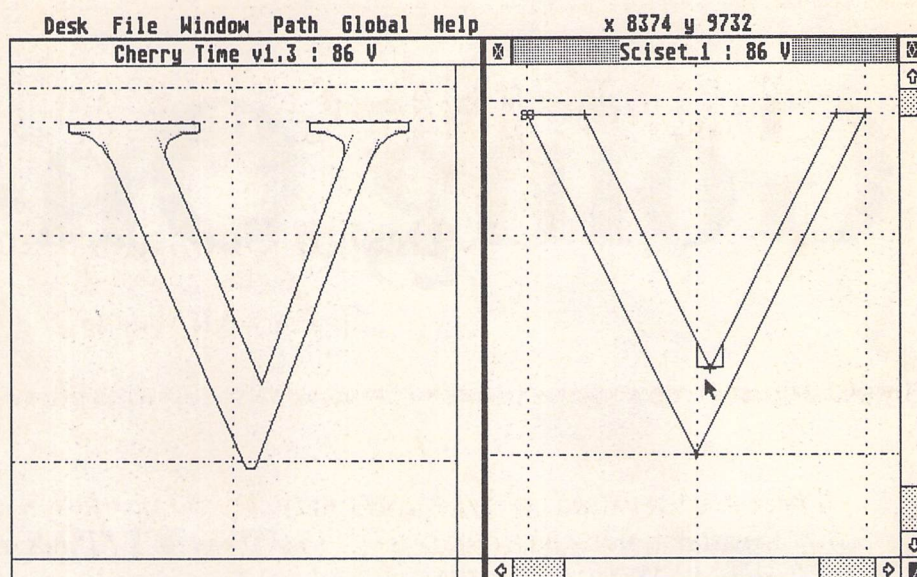
△ Fig. 2: Cherry Fonts use the strategy of extending sharp points above or below guidelines in order to avoid 'floating' characters. Cutting notches at acute junctions is also effective.

half the thickness of stems.] Unfortunately there is a trade-off and it applies to all outline fonts: delicate serifs at 10-12 point can become massive structures at 36 point. Another type of small detail - sharp points - is best considered under the next heading.

3. Go for an 'open' typeface

I interpret openness as meaning lots of white space within enclosed areas. Thus the small 'eye' of the Times 'e' and the little 'belly' of the Garamond 'a' (Fig. 1) - both of which are susceptible to infilling - are to be avoided. Another way of saying the same thing and, at the same time pointing to how to achieve openness, is: avoid acute angle junctions. The higher the horizontal stroke of the 'e' is placed, the more acute are the angles at its junctions. (Cherry have circumvented the problem by distorting the geometry of the inner ellipse to obtain larger angles at the junctions.) A lower stroke, as in Schoolbook (Fig. 1), not only gives more white space in the eye, it also opens out the junction angles. Note also the junction angles in Ice 'a' and compare them with Garamond.

Fig. 2 illustrates another aspect of the same problem. A characteristic of Times and many Times-like faces, is the very sharp points at which 'V' and 'W' meet the baseline. If the character I have drawn on the right were printed, it would most likely appear to float above the level of the other

letters on the line. Cherry solve this problem by 'blunting' the points. The fact that the character projects below the baseline is not an accident: they use this strategy with characters which theoretically meet the baseline (and/or ascender) at a point i.e. O, C, G, S. All other characters are precisely positioned between the guidelines. At low resolutions these overshoots will not be seen but I would have thought that at imagesetter resolutions, an uneven line would result. At the inner junctions of 'V' and 'W' the inverse problem may appear i.e. that of infilling. In my character I am in the process of cutting notches in the arms to ensure integrity of the junction. This is a general solution that can be applied in most cases where it is undesirable to increase the junction angle. It looks awful in the editor window but when printed at moderate resolutions and point sizes, the notches pass unnoticed. As always in these situations there is a trade-off. Achieving openness by increasing junction angles can widen characters and increase printing costs.

While drawing outline fonts it would be helpful to have the facility to view the output of an application's raster generator. If you have a copy of Fontkit which can import Calamus fonts and convert them to GEM fonts at a specified point size, then the display of characters in the editor grid fulfils that function and allows a check on the effectiveness of letterforms.

Going On-Line

Mark Baines

The ELSPA/FAST Threat Update

In issue 25 I reported on the threat from ELSPA (European Leisure Software Publishers Association) and FAST to "take on the pirates" by the licensing of bulletin boards. They said in October 1992:

"One of the first areas to be targeted is an attempt to reduce the enormous damage done to the industry by probably the majority of bulletin boards [my emphasis]. Various options are being investigated, some of which are not for publication. However, it is intended to aim for legislation requiring each Bulletin Board to be licensed. This will require a strong lobby both in UK and the EEC. Steps are already in hand to set-up the lobby in conjunction with FAST. This may entail sponsoring a specific MP who in fact is a FAST Board Member."

Meeting

Since the publication of the original ELSPA article there has been much discussion in some networks, in particular CIX and FidoNet and in other magazines. Some users and sysops asked to meet with representatives from ELSPA and FAST to present their case in what was, up to that point, a very uninformed and misguided view of bulletin board systems.

In February a meeting took place between Roger Bennett of ELSPA, John Loader of FAST, Paul Wilson and Nigel Hardy, both comms users and sysops.

ELSPA and FAST had arranged a meeting with Emma Nicholson MP to discuss their perceived problem of BBS piracy. John Loader had already sent Emma Nicholson a briefing pack to prepare her, consisting of lists of pirated software, sections from *"The Anarchist's Cookbook"* and *"The Terrorist's Cookbook"* and details of pornographic GIF graphic files. Paul Wilson and Nigel Hardy would attend this meeting as observers and comms users.

Beforehand, all four met in a café for preliminary discussions. Immediately, Roger Bennett and John Loader made it clear that they had no intention of pushing for BBS registration or licensing. The response from comms users to ELSPA's original comments had shown them that their plan was ill-considered and couldn't work. Since last year, they had found out more about BBSs and regretted the "probably the majority" statement which so many people had objected to.

It was agreed by all that pirate BBSs do exist. John Loader produced a list of about forty pirate BBSs which ELSPA and FAST were particularly targeting. Attempted prosecutions of software pirates by FAST had previously failed for several reasons. One major problem was that pirated software isn't always sold and proving distribution of copyright material is more difficult than proving sale. Sometimes, the Crown Prosecution Service rejects prosecutions because of this difficulty. Private prosecutions were also difficult as FAST and ELSPA did not have sufficient funds to make them and nor did many software houses. Public prosecutions via the Crown Prosection Service was the only option available.

Emma Nicholson MP

John Loader and Roger Bennett drew up a list of points they were to make in the meeting with Emma Nicholson, with the tightening up of the copyright law being a priority.

The meeting with Emma Nicholson took place in the Commons. She immediately said that the pornography issue should be dropped as getting any legislation on that would be very difficult. John Loader and Roger Bennett agreed that this was not really a concern of theirs as it had only been included in the briefing pack as an example of what could be obtained from Bulletin Boards.

Emma Nicholson pointed out that she had tried to get BBSs covered in the Computer Misuse Act with respect to the distribution of viruses but had been unable to convince her colleagues as to what BBSs were or that they wouldn't be covered by the rest of the Act. She suggested to John Loader and Roger Bennett that they draft a letter stating the problems they were having with the existing Copyright Act and she would then forward it to the Department of Trade and Industry. Nigel Hardy made a point of asking to be kept informed of the progress of that letter in case it did aim to specifically target BBS distribution of software.

After this meeting all four again got together to discuss related matters. John and Roger made it clear that PD and shareware software distribution had never been a target and there was no desire to restrict the distribution of this software in any way. Both admitted to seeing the positive side of BBSs. They thought that the idea of CommUnity (see below) was a good idea and wished them luck. John Loader mentioned that he used a modem in his work and Roger Bennett thought that ELSPA could use modem communications for keeping in touch with their members. The meeting ended amicably.

It would now appear that FAST and ELSPA do not pose any threat to legitimate BBS operators any more. As mentioned in my previous article, all ELSPA needed to do in order to see the importance and positive side of bulletin boards was to talk to sysops and users, and log on to see for themselves rather than taking the word of uninformed and irresponsible gutter press journalists (some March Daily Mirror 'stories'). This they have done and it is gratifying to see that ELSPA and FAST are not too proud to admit their mistakes and correct their initial misconceptions.

One very constructive result of all this is the formation of CommUnity which has recently held its first official meeting. This body will represent all comms users, working to promote the benefits and positive uses of computer-based communications media, encourage the free and open flow of information and communication, increase the popular understanding of this new technology and protect the rights of the people who use it. I'll tell you more about this important development in a later article.

UPDATE

Applications

UTI.313: COMP - Compact Office Management Program: simple but capable accounting programme for small businesses or sole traders. Includes invoicing and VAT reports.

Clip Art

SSM.100: Grin Clip Art Disk 1 of 2: Collection of good quality scanned cartoon style clip art. Files are 001.IMG to 080.IMG

SSM.101: Grin Clip Art Disk 2 of 2: 081.IMG to 158.IMG

SSM.102: Cooper Clip Art Disk 1 of 3: Large collection of cartoon style clip art. Files on this disk are: 04CAR01.IMG to 04CAR25.IMG; 07CA01.IMG to 07CA14.IMG; 08CCA01.IMG to 08CCA15.IMG; 09CA01.IMG to 09CA14.IMG; 10CA01.IMG to 10CA14.IMG; 11CA01.IMG to 11CA14.IMG; 12CA01.IMG to 12CA14.IMG.

SSM.103: Cooper Clip Art Disk 2 of 3: Files are: 13CA01.IMG to 13CA14.IMG; 14CA01.IMG to 14CA14.IMG; 15CA01.IMG to 15CA14.IMG; 16CA01.IMG to 16CA16.IMG; 17CA01.IMG to 17CA14.IMG; 18CA01.IMG to 18CA14.IMG; 19CA01.IMG to 19CA14.IMG.

SSM.104: Cooper Clip Art Disk 3 of 3: 20CA01.IMG to 20CA16.IMG; BUGS1.IMG to BUGS5.IMG; CA05-01.IMG to CA05-14.IMG; CA06-01.IMG to CA06-14.IMG; DAFFY1.IMG to DAFFY5.IMG; ELMER1.IMG to ELMER5.IMG; PET1.IMG to PET5.IMG; PIC01.IMG to PIC25.IMG; PORKY1.IMG to PORKY5.IMG; SAM1.IMG to SAM5.IMG; SPEEDY1.IMG to SPEEDY5.IMG; SYLV1.IMG to SYLV5.IMG; TWEETY1.IMG to TWEETY5.IMG; WILEY1.IMG to WILEY5.IMG.

SSM.105: GEM Clip Art: over 90 GEM format files covering: Atari, Backgrounds, Biology, Buildings, Calendars, Computers, Disks, Film, Household, Office items, Keys, and Post.

Comms

COM.54: ULTIMATE MORSE TUTORIAL - well thought out and structured package designed to teach anyone morse code starting from scratch.

Compendium Disks

CMP.17: ST Informer Disk of the Month (March 1993): FAMILY ACCOUNTANT v4 - an easy-to-use but effective program for maintaining home finance records and establishing a budget. Handles up to 11 money accounts and 14 budget categories (M:1Meg).

CDPLAY - Multi-TOS compatible Audio CD Player program will play audio CDs on your CD-Rom drive. Tested on both an ST and TT in all resolutions except TT-High with Chinon drives. **CYBERNETIX** - Excellent Defender/Blasteroids/Sinistar hybrid! Awesome graphics and amazing sound. MIDI Master Drummer v2.1 demo from Zobozian Software. An upgrade of a program originally released by STart magazine. Load/Save commands are disabled. **FRG** - (F)(R)actal Landscape (G)enerator produces fractal renditions of input data and outputs CADD3D2 files. Now handles screen clipping **GRAPHER** - the graphing module from B-STAT, a commercial statistics and charting program from France that is Shareware in the rest of the world (!). You can do almost any kind of graph, from pie charts to bar charts to histograms, there are more types of graphs in here than most people want to know about! **HIT_IC** - Icons for your desktop. These icons look best in medium rez and they are supplied in both Neodesk and Newdesk format. **SERFX20** - version 2.0 of the RTS/CTS fix utility Serial Fix. **SOLUTION** - much anticipated demo version of Solutions, a powerful mathematical software for the Atari ST/TT. The software is a fully integrated system which works with complex numbers, arrays, binary numbers, algebraic equations, statistical derivations and more. The system has its own programming language and can also plot any expression.
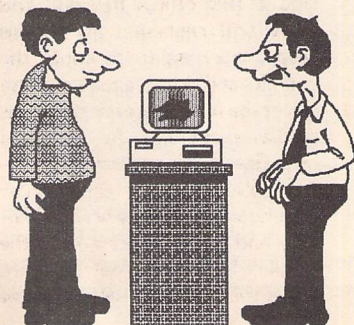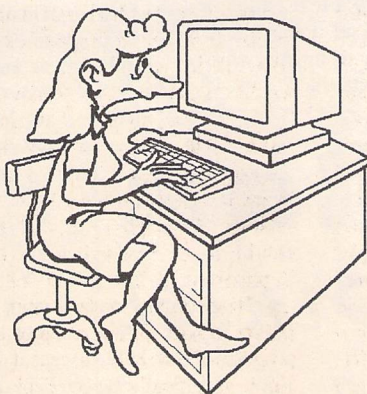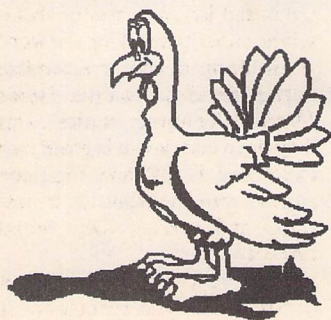
SSM.100-101

SSM.100-101
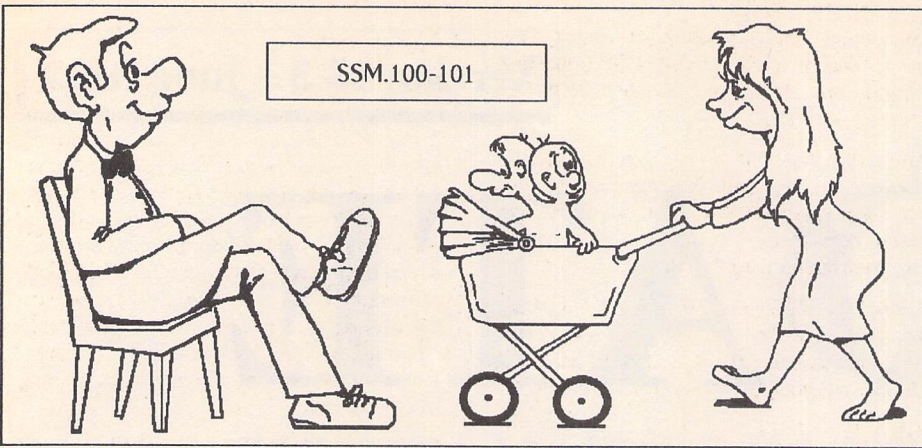
ST Club Disk Mags

DMG.34: ST Club Disk Mag (March 1993): AB FORMATTER - disk formatter for 1 or 2 floppy disk drives. As a multitasking program, both drives are formatted independently of each other. AMC GDOS - latest version of this German freeware alternative to GDOS. APPLIER - increases the power and flexibility of the installed application feature of Atari computers. This feature allows you to configure your system so that you can start an application by selecting a document, which will in turn be loaded by the application. BOOT-UP ST - Set system time at bootup. BOOZ GEM - GEM shell and BOOZ.TTP for unpacking ZOO files. CAREY: Three utilities from Matthew Carey: DRIVES - auto program that reports the drives available for use; METAFIX - fixes GFA Draft Metafiles so that Easydraw and Calamus can use them; PASS - auto program that prevents a hard drive booting up if the wrong password is entered 5 times. DMG33 ICN - NIC file contains icons for the programmes on DMG.33. DSP - Digital Signal Processing program. DUMP - displays a file's binary data in various number base formats. GEM BENCH - comprehensive and independant benchmarking program for assessing the performance of different ST configurations. GEM KERMIT - Accessory version of the Kermit file transfer protocol. HD OPT - Hard Disk Optimiser for reorganising hard disk partitions by unfragmenting files and moving free space areas to the end of the par-

tition. JC-CFN-View v0.2 - viewer for Calamus CFN fonts (M). LISTINGS - listings from Programmers' Forum in ST Applications issues 28 and 29. MAXIDISK v2.2 - much improved version of this powerful and efficient RAM disk that compresses its contents. MCF - Miki Change Folder V1.0 - accessory to rapidly change the folder displayed in desktop windows. MIDI FILES - to accompany the review of Arrangers by Britt Johnston in ST Applications issue 28. MINESWEEPER Version 2.131 - another clone of the Windows freebie. MOZZIE REPELLER II - software designed to ward off mosquitos by causing your ST to emit soundwaves of around 22KHz. NO BOOT - Auto folder utility which allows you to abort the AUTO folder boot up after a reset. PUMP UP (The Volume) - Disk formatter that supports standard and extended formats with both DD and HD drives. SCRIBE - fast and easy-to-use text editor. S DUMP - Bob's Screen Dump Utility V1.5 - designed for use with a Epson LQ or compatible printer that creates a 16 shade dump of your screen when Alt-Help is pressed. SERIAL FIX - upgrade to the old TurboCTS program. ST BRIDGE - Bridge for the ST from Sweden. Uses GDOS, supplied in this archive. STDCAT V5.2b - disk cataloguer. TURBO807 - Turbo RAMdisk and Printer spooler version 8.07. TYPE.TTP v1.1 - reads a file of text without needing to load up a text editor first. UPUNPACK - Universal Program UNPACKer v1.08β - will try to unpack any recognized packed file formats that it can. UUCODER -

converts binary files to/from ASCII files. XTRAKEY - desk accessory that allows access to the full Atari character set.

Fonts

FON.141: PageStream fonts converted from PD Calamus fonts by imageArt. Disk 1 of 2. The vector *.DMF printer fonts are perfect copies of the Calamus fonts, but the bit map screen fonts are mostly minimal 36H mono fonts and the Font Metric files are there for Alphabetic and Numeric characters only. Both the screen fonts and the Font Metrics can be modified using the SoftLogik shareware font editor also included on this disk. Fonts on this disk are: Advertise, Alogo, Arc10, Arc25, Arc75, Arc90, Barnum, Benefit, Bison_C, Bodoni, Burlington, Carolina, Chrome, Dandy, Data, Denver, Dingbats, Fantasy1, Flash, Frakture, and Gaudy.

FON.142: PageStream fonts converted from PD Calamus fonts by imageArt. Disk 2 of 2. Fonts on this disk are: Gillia, Ledger, Mouse, Oakville, Palatin, Pinsel, Reflex, Rome Urw, Savings, Script, Segb, Snuf, Souvenir Med, Study, Sw25brt, Sw50brt, Time, Time50, Triline, TRoman, Univers Roman, and Windy.

Graphics

DRG.43: PAD v2.0: full featured mono drawing and painting package has now been upgraded to v2.0. PAD now supports GEM and Signum fonts and all menus and dialogs have been translated into English. (M:1Meg). The most recent release, still in German, is on disk GRA.175.

GRA.152: GEM VIEW on this disk has been upgraded to version 1.1m. GEM View is now Falcon and MultiTOS compatible and runs in true colour. New features include: Support for MacPaint, PBM-Pictures, ImageLab and JPEG-Images, Colour-Dithering Algorithmus for 4, 8, 16, 64 and 256 colours or grey scales, supports True Colour BMP images, processes True Colour images, and converts GEM meta-files into bit-image files.

GRA.165: PULSER: by Frightful Software: low resolution program that cycles the colours as you draw - creates stunning graphics with movement. Every circle, line square, ray, etc. can pulse in any direction at the same time. Was a £7.50 Authorware package.(C)

GRA.166: POLYSTAR by Frightful Software: Drawing program which excels in generating stars, petals, polygons, circles, spirals, and rays.

GRA.167: TRUE PAINT v1.01 demonstration version. Works like the full version except that: there are no facilities to Save files, no animation facilities, you can only load JPEG (JPG) and TPI (True Paint Image) files, and you are reminded that you are using the demo version every so often.

GRA.168: INVISION Elite demonstration version. Features: Gradient fills and Gradient ellipses, Image distorting, Image bending, Custom patterns, Instant access panning (scrolling), Bézier curves, Block masking, Outlining,

FON.142: PageStream Fonts

KEY

All disks should run on an Atari ST, STM, STF, STFM, STE, Mega ST, Mega STE, TT, Stacy or ST Book with at least half a megabyte of RAM, a double-sided disk drive and a mono or colour display - unless the disk description advises otherwise. We no longer support single-sided disk formats. Disks have not yet been tested for Falcon030 compatibility - details on this will be reported in future Updates.

(M) - Runs in High Resolution Mono.

(C) - Runs in Medium or Low Resolution Colour.

(1Meg) - Needs one megabyte of RAM.

(Not TOS1.6) - Will not run under TOS 1.6 (STe) or TOS 1.4.

($) - source code included.

($C) - C language.

($ASM) Assembler.

Copyright: To the best of our knowledge everything on the disks in this catalogue may be freely distributed. If you know otherwise please let us know and the offending software will be immediately withdrawn.

This catalogue is originated and copyright the ST Club.

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Ordering Details

Please note that we do not accept orders by credit card. Orders accompanied with a cheque or postal order are dispatched by 1st Class post on the day we receive them.

All PD disks are copied onto high quality disks from known manufacturers. The price you pay us for PD disks covers only the costs of acquisition, duplication, cataloguing and distribution.

PD and Shareware Disk Prices

up to 6	£1.45 each
7 to 9	£1.25 each
10 to 24	£1.00 each
25 plus	£0.85 each

Licenceware disks cost £2.95 or £3.95.

All prices include VAT, packing and 1st Class post.

The Order Form for these disks is on Page 57

Smoothing, Rotation, Skewing, Scaling, Flipping, Unlimited size color .GIF importing, Built-in font editing and styling, GDOS font support. (M:1Meg)

GRA.169: PAINTPOT: Innovative and useful commercial paint package now available in a shareware version (£10 shareware fee for latest version and manual payable after the program has been used 10 times).

GRA.170: ECOLOGY I v.1.1 by Neil G. Donnan. Two animation sequences: STREAM - Wild life on a river bank, and GREENING - A derelict site coming back to life. (C)

GRA.171: FUTURETIME VII: ALIEN ARCHITECTURE v1.0 by Neil G. Donnan. The latest cyclic films in the FUTUREWORLDS series these seven films depict a range of different alien types. As in previous cases, they have been created using CYBERSCULPT, CAD 3D2, CYBERCONTROL and CYBERPAINT. (C)

GRA.172: DEGASART Demo - demonstration version of this tutorial package cum slideshow for users of Degas. This demo covers anti-aliasing, dithering and cutting and pasting. (C)

GRA.173 and GRA.174: AIM 3.0 - the latest version of Atari Image Manager from Delft University of Technology. See review in issue 29 of ST Applications. These disks supersede GRA.22 to 24. If you have the older version skip disk GRA.174 as the macros and images mostly duplicate the original release.

GRA.175: PAD v2.4: excellent German mono drawing package. See DRG.43 text at the beginning of this section for details of the latest English version.

Languages

LAN.119: FLTPAK V1.1 - a very high precision floating point library written in Modula-2. As well as the normal arithmetic, comparison and read/write functions, it contains trancendental (log and trig) functions. The precision is determined by setting a constant at compile time, and is otherwise quite arbitrary within the limits of your machine. NUM REC - Numerical Recipes in Pascal - Pascal procedures originally published as the Pascal Appendix to the Fortran book Numerical Recipes: The Art of Scientific Computing. Updated Disk.

LAD*43: ANA MODULA 2 v1.01: Updated disk - now includes full GEM libraries along with a number of bug fixes.

LAN.140: ORCS - Otto's Resource Construction Set. Excellent Shareware RCS package. English program with German documentation.

WP and DTP

WPR.101: Ghostscript v2.52 and GEM Ghostscript v1.3. Updated disk - now includes a shell that makes GhostScript a whole lot simpler to use. Additional fonts for GhostScript are on disks FON.135 and FON.136.

BUDGIE UK Licenceware

£2.95 each

GBU.98: States and Counties: Geography tuition package. Now updated to v1.3 and covers Ireland and Africa.

Graphics Programs:
Left: GEM View (GRA.152)
Centre: True Paint (GRA.167)
Bottom left: Paintpot (GRA.159)
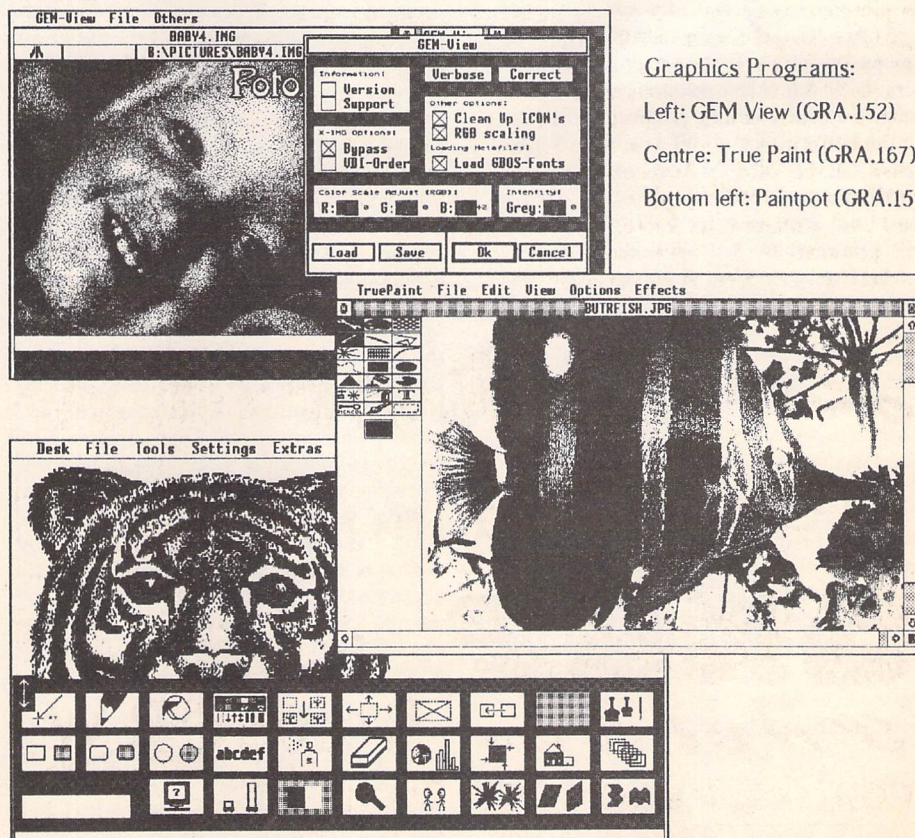
STicks and STones

Rumour (and advertising hype) has it that the Falcon has landed,
but will it take off before more Atari magazines are grounded?
Günter Minnerup peers (or rather, peels)
into what could have been the final issue of ST Review.

Forbidden fruit always tastes sweetest. Being a naturally inquisitive sort of person I just cannot resist poking my face into whatever it is people do not want me to see. A tall fence around a building site is guaranteed to make me jump to peer over it and whenever I find a locked door the keyhole becomes irresistible. So when, browsing through the computer magazines on the shelves of W.H. Smith, I found a sticker covering the editorial in the latest issue of ST Review, I just had to buy a copy for the sole purpose of carefully detaching the sticker to see what it was supposed to prevent me from seeing.

I have not been a regular reader of ST Review during the first year of its existence. Not that it is a bad magazine, certainly a lot better than the ever more ridiculous ST Format, but too similar to ST User in coverage and style to make me part with my cash every month. There was little to catch my eye in this issue apart from a brief review of Arabesque which I could easily have got through while standing in the shop, but that sticker was simply irresistible. For a start, it announced that ST Review had been taken over by Europress, publishers of ST User. This, of course, only confirmed my opinion that the two were far too similar to each other to survive for long in the same market and I could only smirk indulgently at the next sentence which claimed that ST Review would continue alongside ST User as if nothing had happened - well, we'll see about that... But what was underneath that sticker?

After some careful scratching and scraping - the glue was certainly first class, yet another indicator of something unusually interesting to be found - the editorial was restored to almost its full black-on-blue splendour. Signed by Vic Lennard, the Associate Editor, it announced that this was the last issue of ST Review but then went on to put the blame for the demise of the magazine not on the recession or the weather but Atari

themselves, who had contributed to "the collapse of the ST market" by mishandling the launch of the Falcon. Above all, the few machines available had gone on direct sale to the public while developers were still waiting for theirs and ST Review had been unable to obtain a Falcon on loan for review. A fax to Sam Tramiel at Atari's Sunnyvale headquarters had gone unanswered. In short, Atari themselves had made it impossible for Atari-dedicated journals to do their job properly or profitably.

None of this comes as a revelation to seasoned observers of the Atari scene, indeed these and similar criticisms can be found on any bulletin board and wherever Atari users gather. The novelty consists of the fact of such an open editorial criticism of Atari in the pages of one of the glossy, machine-specific publications - albeit in what was, at the time of writing, expected to be ST Review's final issue. For normally these journals are not known for a critical attitude to "their" computer manufacturers and the hardware vendors and software houses of "their" market. This is hardly surprising when you consider whose side their bread is buttered on: the bulk of their revenue comes from advertisers who could easily switch their accounts to the competition if antagonised, and another healthy chunk from readers who need to be kept enthusiastic enough to invest more into their chosen system rather than abandon it for something else in disillusionment. You don't gain much on either front by talking of a "collapsed market" - witness the latest issue of Amstrad Action, which I had thought long dead and noticed on the same day at W.H. Smith, its cover screaming about a "bright future" for the Amstrad CPCs!

So what prompted this rather surprising piece of outspokenness on the part of ST Review? To be honest, I was rather surprised last year to find EMAP joining the fray in a shrinking ST market and, at the time, took it

as a good sign: clearly, they had not set up ST Review to compete with ST Format and ST User for their share of a smallish advertising pool and falling sales totals but gambled on the imminent release of the revolutionary new Falcon computer and a quickly expanding user base. The tone of the farewell editorial suggests that, one year later with few signs of the promised Falcon boom, EMAP have finally decided to cut their losses. This despite the fact that ST Review had recently overtaken ST User in circulation, probably as a result of the latter virtually disappearing from the shelves following the changeover to a "firm sales" policy whereby newsagents have to pay for unsold magazines. ST User, of course, as the longest-established of the surviving ST magazines, has a larger subscription base and is thus better able to "hibernate" until the Falcon eventually revives the Atari market.

What will happen next is anybody's guess. For the time being, both ST Review and ST User appear in the Europress stable, but the immediate affect of the takeover appears to be that it is now difficult to find either of them in newsagents. As I have already indicated, I cannot really see much of a future for both of them alongside each other in their present form and would have thought that an eventual merger is inevitable. With ST Format's dominant position at the imbecile end of the market seemingly unassailable, Europress must still be hoping that the Falcon saves the more respectable section of the Atari scene. They have shown more staying power than anybody else, and have absorbed - first ST World, now ST Review - the best of the competition. It is well placed to take advantage of any such revival if and when it comes.

The guests are ready and waiting for the party to begin. They have waited a long time and some are already giving up and going home. Now where is the host?

FORUM
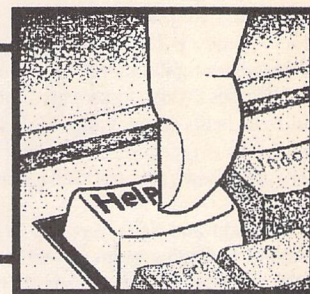
Amoeba Slander

S J Pitts - Forum STA 29

I I agree almost entirely with the observations by S J Pitts, but don't think that ST Applications is ever likely to end up chasing brownie points in the 'Yoof' market. Do remember that the magazines complained of know their market well, and tailor their product to suit. They do as much, if not more, than anybody else to keep a fading ST alive. It's a dirty job, but someone has to do it.

My own pet hate is the use of the word 'punter', meaning anyone who is still trusting enough to believe they'll get a fair deal. For anyone who has done their growing up over the last 10 years it's now almost taken for granted that things will never turn out quite as

The Forum pages are a regular feature of ST Applications, enabling readers to exchange ideas and help each other out with problems. Whilst we attempt to briefly answer questions here, if you have additional information or ideas please do submit them for publication. What you consider to be trivial information can often be of conciderable use to other readers!

Please send your letters on disk if possible. Disks will be returned with a PD of the writer's choice. Longer submissions may appear as articles, in which case you will receive payment at our standard page-rate.

Key:

The following codes are used for each Forum entry:

J Pringle - Forum STA 20: Author who first raised the subject, and in which issue.

Q Question

A Answer

I General information or 'Input', advice, discussion, hints and tips, etc., with or without reference to previous Forum pieces.

● Editorial reply

they were led to believe. And herein lies the difficulty: do you try and keep up an appearance of street credibility with a readership who find such things important, or do you try and keep up an appearance of responsibility with your advertisers, by attacking the very people (the dodgey market trader and software pirate) whose colourful language you were happy to impress with a few pages earlier?

I could go on, but I have to get my entry for 'Guardian Reader of the Year' finished. Man.

John Phillips

I Come off it, S J Pitts - You write in a tone serious enough to lead me to believe that you should subscribe to the Shakespearean sentiment about names... something about Rose having an alias. I have used most, and own many, of the machines to which you refer, and honestly, they perform exactly the same whatever I call them.

It is to be agreed that puerile profanity pervades many a 'demo disk' but don't you think that if you loosened up and, for instance, referred to 'the mainstream newsstand magazines' as "The Comics" (the term by which John Weller, joint author of STEN disk mag refers to them), you might relax and enjoy things a bit more?

That mag read at the same time as ST Applications provides a very nice balance between beautifully 'Techie' pieces such as that by Dave Ansell (same issue as your complaint) and some of the lighter notes to be found in STEN. I find that BOTH these magazines contribute to my enjoyment of computing and the computing scene. This is not a plug for STEN but a plea for you to be more liberal in attitude. Computing is of today, if you distance yourself from those whose style is different from yours you will not benefit from the experiences of others with a common basic interest. I sometimes struggle to understand the words used by people forty or so years younger than me, but I know that when I do understand what they mean, I've learned something.

David J Fright

I It was me! I did it!

I've been using the term "IBM contemptibles" for some time (with no complaints), and

recently started in with the Amoeba. This is nothing to do with ego-stroking, nor with getting at the opposition, it's merely to make it more interesting to write. If there was an amusing way of writing ST, I'd probably use that, but what do you use apart from Saint Atari? Once the IBM was awful compared to the ST. Nowadays, I'm tempted to move to that market. The Amiga? Well, it's different. Having been a musician, I was, and still am, more taken with the ST, but can recognise the definite superiority of the Amiga in some areas. Particularly marketing.

Please don't confuse the magazine being serious with the magazine having to be dull. Ben Elton deals with some very serious issues. Most people go along to see him for a laugh. If articles are written in a "straight" way, I have trouble getting through them. I try (and sometimes fail) to avoid this in what I write.

I apologize for any offence I may have caused, but am in no position to say I won't offend someone else in the future through my own demented view of what is and isn't funny.

Piper

Pirated Software

I A lot of people get very upset over pirate software but is it really our fault? Who can afford £25-£30 for a game - not many of you I bet. Why should we have to pay these rediculous prices for software when we can get them on pirate for £2 a disk? We all know that pirate software is wrong but maybe if the software houses dropped the prices to something reasonable like £9-10 well I am sure that a lot of people would stop buying pirate software. The companies wouldn't really be losing anything either because a lot more people will be buying their games.

I know of one pirate in the North West and I was thinking about getting him stopped but then I thought why should I? If he gets stopped then I would be paying 15 times as much if I got a game brand new from the shops. Why should games companies such as Virgin and Micro Prose be making so much money that they can't even count it?

My message to all of you ST owners is: Pirate software will stop only if the prices on the originals drop.

Simon Green

● Granted, there are undoubtedly excesses within the games publishing industry (along with banks, solicitors, landlords, accountants, estate agents, telecommunications, TV and media, etc., etc.). Added to which, the rate at which games publishers devalue their products with compilation packs, cover disks and the like does little to inspire confidence in them and their belief in the value of their products. But if you get nicked for handling counterfeit software these are not mitigating circumstances.

Nintendo and Sega seem to be having no problem in finding punters (eeek! sorry John Phillips) who are prepared to pay £25 plus for a game; and the relativeley pirate-free cartridge format has probably helped to persuade many publishers to desert the ST and Amiga.

PC vs Atari

Wendy Durham - Forum STA 24
Alan Kennedy - Forum STA 24
Stephen Murgan - Forum STA 24
Gordon Carruthers - Forum STA 26

I Further to my letter in last month's Forum, perhaps I should dispel some of the misinformation in many magazines about PC compatibles.

Consider speed in MIPS. Some instructions take longer to execute than others so the average number of MIPS depends on the program being run. Here are the average speeds for some of the 68K series processors:

68000 0.8 MIPS at 8MHz 1980 16-bit data bus.
68020 2.5 MIPS at 16MHz 1984
68030 8 MIPS at 20MHz 1987
68040 20 MIPS at 25MHz 1990
68040 26 MIPS at 33MHz 1991
68060 70 MIPS at 50MHz 1993
68060 92 MIPS at 66MHz 1994

Here are the average speeds for some of the 86 series processors:

386DX 12 MIPS at 33MHz
386SX 8.6 MIPS at 40MHz 16 bit data bus.
486SX 8.9 MIPS at 25MHz
486DX 28 MIPS at 50MHz

The figures given are those claimed by the manufacturers in each case and I don't give them for the 8086, 186 and 286 because I haven't got them to hand. I could give estimates but it is fairer to give the figures which they claim. Other clock frequency versions are available.

These figures are for systems which have got memory access times which allow the processors to run at full speed. Obviously, the faster the memories used, the more expensive the system is. However, on-chip cache memories do help to partly compensate for slow memories.

As far as the ST is concerned, the speed of the memories and the fact that the video chips share the same memories (so that the processor has to wait its turn for access) means that

the ST probably runs at an average speed of less than 0.4 MIPS. Note: I haven't measured this, so it is only an estimate.

Be aware, that MIPS between processors are not directly comparable. For example, a 10 MIPS 68K series processor should be considered faster than a 10 MIPS 86 series processor because of the differences in the two computer architectures and the instruction sets. It is probably possible to contrive a special program where it would come out the other way if the code and the data were confined to a range of 64K but the majority of real programs would be faster on the 68K series when the MIPS were equal.

The 86 series has got a very messy architecture which is not surprising considering that it was developed from the old 8080 which was an 8 bit processor both internally and externally. They have been papering over the cracks of this architecture with each upgrade ever since they started.

The 86 series has various special purpose registers which means that data has to be moved between registers more often because many instructions only work on specific registers. Worst of all is the nonlinear address space which is cast in stone in MSDOS. This means that any data structures over 64K bytes have to be split up and special registers have to be set up to access them. All this takes extra time and has resulted in MSDOS being a very large, cumbersome and complicated operating system. Software development on an 86 series processor is more expensive because it is unnecessarily complicated which means it takes longer to find bugs. This applies to high level languages as well as assembler. It also usually takes more instructions to do the same job on an 86 series processor than it does on a 68K series processor.

From the very beginning, the 68K series started out with 32-bit registers. It was not an upgrade of an 8 bit processor. It has also got a large linear address space of 4 Gigabytes, there are no boundaries every 64K.

Apart from the CCR, there are only 2 types of user mode registers on a 68K and this distinction is only kept with good reason. The advantage is that any changes made to an address register do not affect the CCR, whereas any changes made to a single data register always affect the CCR. Also, any changes made to an address register are sign extended to 32 bits.

On the 68020 upwards, data registers can be used as pointers to memory if the user runs out of address registers. Therefore the distinction between address and data registers is not very great. Within their groups of 8, the registers are general purpose (except A7 performs the extra function of stack pointer) and any operation which can be done on 1 register, within a group of 8, can be done on any other register within the group and most can be done on both groups.

With the enhancements made to the 68020 upwards, the instruction set and addressing modes are so convenient that more efficient algorithms become practical, further increasing speed.

The 86 series instruction set is very inconvenient compared to the 68K series but the

starkest contrast is with the addressing modes.

If the 68K series is so much better than the 86 series then you may wonder why IBM used the 86 series. The answer is quite simple. At first the gigantic IBM didn't take desktop computers (such as the Apple II and the Commodore Pet) very seriously, but then it found that they were eating into its mainframe business. So even though it didn't want to, it had to get involved. When it did get involved, it wanted a machine quickly and cheaply with some control of component supply.

Intel had the 8088, which is an 8 bit bus version of the 8086. Intel gave them a very good price and not only that, the fact that they had an 8 bit bus version made the rest of the system cheaper as well. Intel was a relatively young small company which did a good selling job to IBM. On top of all that, they offered them some shares as well. This gave IBM the influence that they wanted. Short of licking their boots, Intel couldn't have been more accommodating.

Motorola however, are another gigantic company and large companies tend to be slow and inflexible so there was no chance of a share deal or any other special effort to get the business. Another factor against them is that they didn't bring out the 8 bit bus version (the 68008) until after the PC came out and IBM didn't want a 16 bit data bus at the time.

There was a general consensus amongst my colleagues at the time that this was 'THE BIG ONE' and that Motorola should have given its 68K chips to IBM for free. This would generate so many other sales that the cost of giving them to IBM would be dwarfed by the profits. It would also have wiped Intel off the map.

So the die was cast. With IBM's marketing muscle, software developers had confidence that there would be a wide market for their software and that the machine would be around in six months' time. This meant that more people bought IBM machines so that even more software was developed, etc. Then they rapidly reached the situation where people didn't want anything else even if it was better because to protect their investment they needed compatibility. Then the clone makers moved in and took most of the market away from IBM and the rest is history.

PC compatibles still give less value for money but the hardware and software support available far outweighs this.

Each of these reasons on its own is enough to make companies buy PCs but put them all together and any other machine stands very little chance except in specialised applications. (Until the IBM/Apple/Motorola Power PC chip comes along, but that's another story.)

It just shows how good the 68K architecture is because it has managed to survive in such adverse conditions. In fact Motorola now claims that more 68K series processors are sold than 86 series processors. I don't know if this is true but they do sell a lot.

They sell a lot because the 68K series is used in embedded control systems (silly buzzwords). Eg. Telephone exchanges, electronic instruments, laser printers etc. The 68K series is number one in laser printers and the 29K series is number two; but as far as I know, the

86 series is never used in laser printers. Embedded systems free the design engineers from the constraints of compatibility so that they can use whichever processor they want.

Then of course there is the Apple Mac. This is the best widely available range of desktop computers there is and so it damn well should be considering the high price of Mac hardware and software. Even at such high prices Apple don't do too badly. They are one of the largest manufacturers of desktop computers in the world and they may in fact be the largest. The reason for this is that there are no Mac clones.

The Falcon hardware is very good value for money at £500. With all the add on hardware you would have to buy to match the capabilities of a Falcon (especially the DSP), the cost of a PC compatible would be well over £2000.

Dave Ansell

● And compared to the lure of the latest Apple Performa range now available in stores like Comet?

Falcon Feedback

Piper - ECTS Report STA 23
John Watkins - Forum STA 24
Britt Johnstone - Forum STA 24
Alistair Bodin - Forum STA 25
John Watkins - Forum STA 25

There are several programs that do not work or only partially work. Timeworks DTP 2 freezes if the mouse moves onto the menu bar, but appears to work using keyboard combinations. Silhouette will not trace around shapes. The PD disk cache, Cold Hard Cache 4.0, appears to work, but I had several ruined FATs on my hard drive before I took it out of the AUTO folder, and have had no problems since. Easydraw 2 works in any resolution, but Easy Tools does not. Neodesk 3 does not work (but who needs it with the new desktop?). GDOS does not appear to work, FontGDOS does though it can cause problems copying to drive A, i.e. the desktop bombs immediately (2 bombs meaning an address error, I think).

Many programs do work. Calligrapher 3 works in mono resolution, UIS III, Hyperpaint, ST Zip 2.0, ScrolFix.Acc (because the single click on a scroll bar still produces two page movements in some applications!), most Fractal drawing programs, Lattice C, Hisoft C, Hisoft Basic, Knife and Easydraw 2. PageStream 2.1 works, but there appears to be a problem with Compugraphic fonts in that letters are placed on the screen with no spacing between them.

The Falcon is fast, but in many ways it is only as fast as a 16MHz Mega STE (using the Ness Benchmark program). This is, I hope, partially due to:
i) the programs I am using being compiled for a 68000 in the ST rather than for the 68030 which has more commands with different and faster ways of carrying out certain operations, and
ii) the Falcon and Mega STE having the same clock speed, which means that data is shifted

around the memory at the same speed and most programs do a lot of this, e.g. word processors.

When it comes to number crunching the Falcon is very much faster. PageStream uses vector fonts (Compugraphic, PostScript and its own brand). On an ST these are very slow (esp. PostScript) making redrawing a page a very tedious business, but on a Falcon they are much faster and PageStream is now usable with files of several complex pages rather than of a single page. Easydraw is another number crunching program, e.g. Shuttle.Gem (a large file) loads and displays very quickly compared with an STE and blitter, and dragging objects around the screen is very smooth and fast.

The hard drive is extremely fast when loading programs, e.g. Timeworks 2 loads in about 10s, Easydraw with all the fonts from Timeworks 2 in about the same time, but it appears to be slowed by FontGDOS! Deleting, copying or moving a large number of files (e.g. 100-200) between drives is slow, a cache would or should really speed them up.

I am using a cheap SVGA monitor which gives a rock steady picture with no flicker. Initially I had used a cheap TV - I had no choice as Atari did not ship the video adaptors until a week after the Falcon. The video connector has 2 pins, M0 and M1, that are used to indicate to the Falcon the monitor type connected (possibly by grounding one or both of them) and since Atari don't explain their function you have to buy a £10 adaptor.

Switching screen resolutions is easy. Instead of a list of all nineteen possible screen resolutions on a VGA monitor, you can alter four main options under 'Set Video', different combinations of which will give all the possible resolutions, and 'Colors' (US spelling!) from which you can select 2,4, 16, 256 colours and True color. 'Double line' gives a choice between On or Off and allows you to choose the vertical resolution of 240 (does this by displaying each line twice so there are still 480 actual screen lines on a VGA) or 480 lines and 'Columns' gives a choice of 40 or 80 columns allowing you to set the horizontal resolution at 320 or 640 pixels. The final option is for ST compatibility: three choices are given; ST low, ST medium and ST high; these set the same resolutions as on an ST. On my SVGA black bands appear at the top and bottom of the screen to reduce the practical vertical resolution to 200 or 400 lines. 'True color' can only be selected when in 40 column mode and 2 colours (mono) can only be selected in 80 column mode!

The various resolutions also change how fast a program will run.

The desktop is very nice; the 3D buttons, the range of desk icons, the keys that can be used to replace menu selections, all make life a little easier. The biggest improvement for me (other than the speed improvements) is the ability to change resolution between mono and colour without having to change monitors I now usually work in 640x480 and 16 colours!

All in all, I am very happy with my Falcon and will probably be ecstatic when the first Falcon-only DTP programs are released.

Phil Hodgkins

● Late news just in. GDOS is compatible with the Falcon if you edit the Assign.Sys file so that it refers to all of the screen drivers (01p through to 10p) and you do not include any comments (remarks) in your Assign.Sys file. I've not checked, but the FontGDOS Assign.Sys file probably follows these rules.

My Backpack cartridge does not work properly when installed as an accessory on the Falcon, which is bad news as Calappt is not as useful as Backpack - it lacks the ability to send text via the keyboard buffer to other applications. The cartridge port has its uses as I can run Videomaster which can make the most of the Falcon's 4Mb RAM and 65Mb hard disk storage space.

Many applications run quite happily - FWP, FSP3, Calligrapher, Touchup, Personal Finance Manager. The increased speed makes using FSP3 on the Falcon a joy. Calligrapher co-exists in the Multitos environment but FWP does not. With Calligrapher when you move the window horizontally to either left or right screen margins the window exhibits a 'wrap around' effect which is most disconcerting. Falcon output to printer does not seem to be any faster than an ST. MultiTos is a curiosity and I suspect that one requires more than the 4Mb RAM on my Falcon to run several large applications properly. Despite improved desktop/keyboard facilities a boot manager is still indispensable for those who use applications with various screen and file setups and I have Xboot3 installed on the Falcon.

S J Pitts may like to know that many ST adventure games do work on the Falcon, such as The Pawn, Dungeon Master, Chaos. Other games such as Plutos, Skulldiggery will also run. Holding the Alternate key down when the Atari logo appears at boot-up (do this BEFORE the memory test bar appears) will bring you the ST desktop in low res. This will allow you to run many ST games. Autobooting games like Starglider 2 (brilliant on the Falcon) can be run by holding the Alternate key down and booting. Unfortunately, with many games the increased speed makes play impossible and/or the sound/music playing through the Falcon's speaker is so deafening that it makes you afraid of damaging the sound output circuitry not to mention your ears (eg Bubble Bobble). Speaker volume is adjusted via the relevant CPX which is not accessible with such games.

Alan Chin

Falcon Compatibility

As a person who attempts to use ST-family computers in an institutional setting, I am frustrated by the lack of advice on Falcon compatibility in the most complete sense - that is the ability to transfer usage between the two machine types in either direction. Thus, although we have been notified that various software producers are tailoring their ST products for the Falcon, and also (obliquely - have I got this right?) that the Falcon is expected to be able to read DSDD diskettes written on STs, we are not told of the production of ver-

sions of software intended to work on both machine types, and I have not yet seen any account of whether and how the Falcon might be usable to format or write DSDD or HD media intended to be read on any of the drives available for the ST.

A related issue is that of the compatibility of serious ST software which is no longer supported or in which manufacturers have lost interest. I am thinking principally of the former Metacomco's excellent BCPL and LISP language systems (I for one use Metacomco's BCPL almost daily), but I am also worried about Prospero Pascal (a superbly engineered item of software for the ST), EdScheme, Superbase, Fast Basic and even Degas Elite. These are high-quality products for the ST. As the lack of such products is such a frequent point of criticism of the potential use of Atari computers, I suggest that a serious forum for ST users should explicitly concern itself with the ongoing usability of these products.

So - please could we have the beginnings of a list of products which will be fully (i.e. both-ways) compatible between the machine types, and could the list be allowed to include useful products even if these are no longer supported by their producers? I regret that I cannot contribute the beginnings of a list, as I do not possess a Falcon - indeed I am unlikely to decide to acquire one until I know that it will allow me readily to share serious applications with existing STs.

Norman Marsh
University of Liverpool

● You will have no problems reading and writing DSDD disks on the Falcon. There will be a preliminary list of Falcon tested applications software in issue 31 of ST Applications. Testing for compatibility with software that is no longer on the market will take longer. Given the versatility of the Falcon it should be only a matter of time before patch programs (and new versions of TOS?) are around to eliminate many compatibility problems with ST software.

Falcon - Predator or Prey?

Michael Baxter - Forum STA 25
Tony Brown - Forum STA 28

A I read with amusement Tony Brown's comments on the Falcon article which appeared in *ST Applications 25*. I'm sure that most of his comments will be taken for what they were by the majority of ST Applications readers, but I feel that I need to put him straight on one or two of his more sarcastic comments.

Firstly, this terrible "mudslinging" that he finds so offensive. Admittedly, the wording of the sentence in question could be construed by some as implying that CBM themselves were the originators of the rumours, when in fairness, the target was the Commodore market in general. If he needs proof, then I suggest he should pick anti-Atari tripe that fills their

pages. If he finds my comment so offensive, then he will have a nervous breakdown bashing out self-righteous correctives to the publishers concerned.

And while we're on the subject of mudslinging, if Mr. Brown knows the PC market as well as his self-opinionated jibes suggest, he will know that the Pentium *was* initially called the P5, and at the time that article was compiled, the handle was indeed correct. He'll not need to be told that the generic 80X86 handle - and subsequently "P5" - was abandoned by Intel in the last quarter of '92 in an effort to stop rival companies such as AMD and Cyrix cloning their chips and giving them the same names, since serial numbers cannot be subject to copyright restrictions under US Law. And if he really feels the need to be so pedantic and demonstrate his apparent knowledge of the computing world, why doesn't he boot up his WP and put together some informative articles for ST Applications instead of trying to blow holes through other people's work?

Also, if you are going to compare machines, Tony, please give specific details of the machines you are using. What exactly was the "3 year old 386" you compared with the Mega STE? Was it a 16mhz 386SX, 33mhz 386DX or a 40mhz 386DX with a co-pro? So many factors influence the performance of apparently similar 80X86 machines, that it is laughable to generalise and simply say that a 386 is faster than an STE.

Finally, Mr Brown, the sooner you understand the fundamental differences between a 56001DSP chip and a maths co-pro, the better for all concerned. After all, "some of the statements that have been made in this area have been so laughable, it's untrue". Your words, not mine.

Michael Baxter

Rating PD

Ron Newman - Forum STA 28

I Surely the blame for 'rubbish PD' should lie with the authors of such programs. It is their responsibility to test the program and document its limitations. Any complaint therefore should be directed at the author and not the distributors of the program.

However it must be useful for PD libraries to receive feedback on the programs they supply as they have no way of fully testing all programs themselves. Perhaps if enough people complain about a particular piece of software it could be removed from the catalogue.

I see that the ST Club is now providing single topic discs, e.g. a disc full of RAM discs. This is a good idea as a disc containing say 15 RAM discs must contain at least one good one. Another thing you could think about is relegating poorly selling discs to a separate section at the back of the catalogue, particularly the older discs.

Many PD distributors seem to advertise the quantity, not the quality of the discs they stock. I am sure there must be a lot of PD that is either old and has been superseded or that is

no longer supported by its author. Such software should be considered for deletion from the catalogue of the distributor.

In short, the idea of 'survival of the fittest' that applies to full price software does not seem to apply to PD.

David Flack

● We'll always listen to complaints and comments about PD and shareware disks and regularly sift through recent feedback in order to get guidance on disks that should be sorted out or dropped. We hesitate to fully apply the commercial pressures you refer to as one of the great things about PD and Shareware is that products are not dropped the instant that demand starts to wilt. Keep the feedback coming: especially welcome is details of shareware that is no longer supported by the author - there is a strong case for us starting to add text files to this effect on affected disks and mark them out as such in the catalogue, or delete the disk in the case of crippled software.

Transfile ST

Brian Turnard - Forum STA 26
E Y M Cheng - Forum STA 28

I I too use my Psion Organiser II with my ST using Uniterm. How about the ST club starting a disc containing readers' OPL routines which could then be sent from the ST to the Psion Organiser via the Comms Link?

David Flack

A View of Atari

We have a problem!

I am sure that all readers of ST Applications will know of Atari's lacklustre performance over the past few years. I don't wish to be just another doom and gloom merchant by pointing out Atari's failings, however I do seriously believe that Atari has some deep problems and that it is in all our interests to solve them. I also believe that the best way to solve a problem is to 1) admit that you have a problem, 2) examine the situation truthfully - do not use rose tinted glasses - and 3) form a plan to resolve the problem.

Examining the Situation

Personal Computer World (PCW) recently celebrated their 15th birthday. To mark the occasion they invited writers and editors past and present to give their account of the last 15 years of computing. Of course, being an Atariphile I immediately sought out every mention of our often maligned company and was not overly surprised at what I read.

In the decade 1979 to 1989 Atari got a substantial number of references, almost as many as IBM and Apple and far more than Commodore. Everything from Pacman to the 400/800 computers and the glorious year of 1985 when the ST was released. "Atari's ST went from strength to strength ... [in 1987]".

Mac and PC emulators, 1040s and Mega STs, blitters, Atari Transputer Workstation (ATW, originally called the Abaq), DTP and laser printers were all remembered. Not bad when you consider that only 2 pages were devoted to each year for the whole industry. The Atari Portfolio was also mentioned, as was the ill-fated STacy, but only because it was considered a disappointment.

Since 1989, however, not a Dickey Bird. The STE, MegaSTE and TT have not been remembered. The Falcon failed to be mentioned as well, but I can understand this since how many people have actually seen a Falcon?

So, who cares what a PC orientated magazine thinks? Well, I do because they can be used as a barometer to measure the computing industry's attitude towards Atari over the years. If you wish further proof of the computing recent industry's selective amnesia I can give more: Atari's shares have plummeted in value, ST sales are dwindling and large numbers of developers are abandoning the ST.

The business market no longer cares about Atari. Pop into any business and ask "Who's heard of Atari?" The computing industry isn't much better: I've heard reports of an Atari TT dealer saying, "Are they PC compatibles, then?"

The home market is also slipping away. Pop along to any high school and you will find that a child will boast about his computer like he will about his latest Nike trainers. I used to boast about my ST, as did my eight-year old nephew. Now all he talks about is his Sega Game Gear and his Nintendo - and this is a kid whom I've been brainwashing for the last five years! When all a child hears from his peers is "Sega this" and "Nintendo that" and Mommy and Daddy ask what Junior wants for Christmas, do you honestly think he will say "an Atari"? Why do you think that my nephew has a Game Gear, and not an Atari Lynx?

Many people are pinning hopes on Atari's recovery on the Falcon. It is superior to its main competitors whilst being in the same price bracket. However I would like to point out that the Atari Lynx is in a similar position with respect to its competitors and was available before them, yet Atari has failed to make the product a market leader. They may grumble about Christmas sales being comparable, but check out the number of game releases on the Game Gear and Gameboy compared to the Lynx. You could also try the entertaining game of "Let's try spotting a Lynx game in a high street store", such as W H Smith's.

Yet is it all so bad? The Atari Lynx and Falcon are good products. Atari's software department have been doing cartwheels over the last few years: CPXs, Newdesk and now MultiTOS have done wonders for the machine's credibility.

Atari also seemed to have learnt from past mistakes: the Falcon's ports are nearly all industry standard. Bug fixes to later TOSes have been released promptly and new machines have had the bugs fixed. I can only hope that this situation continues when Multi-TOS is released - I have no doubt that this will experience the occasional problem.

Yet old habits die hard. The non-standard memory upgrade on the Falcon and launching the Falcon in the old ST case with the awful ST keyboard and mouse. (If I pay £600 for a machine I want a nice keyboard, nice mouse and on/off and reset switches in accessible places, just like every PC on the market has.) The previews of the Falcon have been handled badly in the UK: it wouldn't take 30 seconds to wire up a Falcon to a 25" stereo TV using a SCART lead, yet Atari insisted on showing the Falcon off on a 14" ST monitor with tinny speakers.

We Need a Plan!

OK I've had my grumbles, now it's time for some constructive help. Please note that what I am about to say is entirely my own view and I freely admit that I may be wrong. If you think I am then please let's start a discussion going so that a few good ideas may come forward. I would also like Atari to get involved in this: it is for their benefit. I will only comment on Atari's products and marketing because that is all that I see.

I fully agree with William Hern's view in STA 28 that Atari's product line should be pruned. STs, TTs, MegaSTEs, Falcons, Lynxes, Portfolios, PC compatibles and the (still rumoured) Jaguar console are too much for a small company such as Atari to produce and promote effectively.

Marketing several different machines causes problems in itself. Selling the Lynx handheld and a computer is acceptable since the two obviously do not conflict. However, how can you claim that the Falcon is so good and then try to sell PC compatibles? Similar arguments apply to consoles and the Falcon since the Falcon's sound and graphics capability could provide good games.

In making a machine as versatile as the Falcon, Atari are really shooting themselves in the foot by trying to sell other products which obviously conflict. Every time somebody chooses another product, even an Atari one, over the Falcon, then the support for the Falcon will suffer.

A few years ago Atari shifted large numbers of STs by including £400 of games for an extra £100 and a double-sided disk drive to boot (sic). More recently, they have sold large numbers of the Family Curriculum pack. It was the same machine but aimed at different people. Since this was obviously a success why not continue this with the Falcon - different packages for different people.

Imagine it now, pop along into Dixon's to buy a Falcon and choose from the following; a games/home entertainment pack, a family curriculum pack and a small business/home productivity pack. One free, £50 per extra pack. Further promote the machine's versatility by distributing free information leaflets to major high street stores for the customers to take home, advertising the versatility and including the statement, preferably in bold type, "Can run PC and MAC software (upgrade available separately)".

Free leaflets are a relatively cheap form of advertising and have the advantage that the high street store's staff will read the leaflets and will, if suitably impressed, pass on the information to potential customers. Large numbers of computers are sold on the staff's recommendations, especially approaching Christmas. "What computer do you think I should buy for Junior?". "Oh well, the Atari Falcon, Ma'am."

Summing up, the Falcon can do everything from games to desktop publishing. I feel that Atari should make great efforts to let everybody know this. Do not hamper sales by pushing the Falcon in only a few selected areas, as Acorn have done with the Archimedes.

I see only one problem here: the price of the Falcon. I have heard today that Atari are having to hike up the price of the wonder machine to £599. With the recent effective 20% devaluation in the pound I can't say that I blame them. Yet there is a recession on and I feel that a lot of customers are going to be put off such a high asking price. For this reason, I would continue with STEs for a while since at £250 they are currently less than half the price of the Falcon. However I should stress that continuing to sell STEs will damage the Falcon's sales and will dissuade developers from utilising the Falcon's new hardware. Therefore the development of a cheaper Falcon, i.e. sub £400, should be high on Atari's agenda. However I feel that this is unlikely to happen for a few years.

On the higher side of the market, Atari won't convince people that they are serious until they finally make serious machines. PCW called the TT a "damp squid" when it was finally shipped - underpowered, overpriced with only one expansion slot which wasn't implemented correctly and far too small for any powerful card. A 68040 processor with a 24-bit graphics system, still with Motorola's DSP and including a number of expansion slots in a tower case for a reasonable price, would attract attention simply because it exists. You may not sell very many machines but it would encourage developers to take Atari seriously, and some high quality software may start appearing for the Falcon.

As always, it's up to you, Atari. I wish you luck.

Jon Marshall

Basic Problems

Adrian Bridgett - Forum STA 29

I A few pointers for Adrian Bridgett and a plea to anyone who uses GFA.

Firstly, letting the OS know about a new program. This can be divided into several different cases. If you are running source code in the interpreter then it will take care of any initialising that needs to be done for you. Similarly if you have compiled your code and ended up with a .PRG file then the compiler will have taken care of things again. Where you will need to take some action is if you intend to write an .ACC program. Since you can't run an accessory in the interpreter you will probable need to check most of it out as a normal program first and then turn it into an accessory and compile it later.

The main steps in initialising an accessory are

1) ap_id&=APPL_INIT(). If ap_id& returns non zero then your program was started as an .ACC file, if ap_id& returns as zero then it started as a normal program. This is how you can write the sort of application which will run as either, just by changing the extender from .PRG to .ACC.

2) Having checked you've got the accessory version you will need to register its title in the Desk menu. This is done with mn_id&=MENU_REGISTER(ap_id&,title$). If mn_id& returns as 0 to 5 everything's fine, if you get -1 there are already six D.A.s set up and no room for yours.

3) Set up a loop that keeps looking for a value of 40 in MENU(1). This tells you your D.A. has been called and you can do whatever is required. You will then need to compile the .ACC (more later) and place it in the root directory to test.

Second, PRINT AT() is very likely to cause mouse drawing problems if you use it in a window - much better is to use TEXT. If you are worried about writing in the wrong place you can either use the CLIP commands or do your own range checking. The window's writing area can be obtained with ~WIND_GET and ~WIND_CALC.

Third, MALLOC. This brings us back to the first point again and GFA doing the initialising for you. If you don't take steps to the contrary, GFA will grab every last byte it can get its hands on and give the OS back about 32K. When you come to use MALLOC of course, that's all there is on offer - 32K. Proceed as follows:

1) Work out how much memory your program actually needs. This is most easily done by noting FRE(0), dimensioning all arrays, and initialising all strings to their probable maximum length, (number variables, but not arrays, take care of themselves). Get FRE(0) again and subtract from the first value, add 10% for luck, and this gives a suitable size. (Only testing will tell.) Note that FRE(0) gives the free memory GFA has, not the free memory the OS has. Once you have this value you can get rid of the code that works it out and use it as follows:

2) Use RESERVE nnnn, where nnnn is the value you obtained above. This will force GFA to give up the memory it doesn't need and so make it available to the OS. Make this one of the first lines in your code. You can use this command at any time, just reserving a few K after initialising the arrays for example, but the first method is more in line with the compiler. See later.

3) Use MALLOC. This routine is said to be a bit shaky on the ST if it's called too often, so try and get all the extra memory you need in one hit.

4) Just before your program is ended use RESERVE again, this time with no value after it. This will re-establish things as they were and give a clean exit when you quit.

This brings me to my last point and a plea to all GFA programmers. Over the years GFA has picked up a terrible reputation as a memory hog. If I've managed to explain the situation well enough you should be able to see why. If you just use the interpreter this is no big deal, but if you compile your programs then you should be aware that exactly the same conditions apply. Fortunately there is a much easier way to deal with the problem, the compiler directive $m nnnn where nnnn is a suitable value as above. Put this line in your code at the beginning of a program and the compiler does the rest for you, no need for anything else. Use this simple directive to limit memory and the whole of the ST world will thank you from the heart of their bottoms.

All of this is in the manual and compiler booklet, but with hindsight GFA could have done themselves a great service by devoting a bit more explanation to these areas. After all, BASIC programmers are the last people you would expect to understand about compilers and memory management. That was the whole idea of the language in the first place.

John Phillips

PC Keyboards

Q Do you know of an interface which enables a PC keyboard to be used on the ST? Last November, as a result of a good review, I answered an ad in ST Review for such an interface called - think - DEKA. It was on sale by HCS in London and it included mouse and joystick ports. It's a very long story and I eventually got my money back but what they sent me didn't work and so far I have not had any replacement from America. I'm stuck with a clapped out ST keyboard which has an unreliable mouseport resulting in a dyslexic, blind mouse with a mind of its own. I bought a very nice PC keyboard at the same time, which is now sitting patiently in a cupboard waiting for an interface. On the DEKA kit it said 'Proudly made in America'. Does anyone know how I can get one to 'Proudly work in Bishops Stortford'?

David J Fright

● No. The main problem is that the ST has an intelligent keyboard and PCs do not. The best solution, though far from cheap, is to connect a Mega ST (Mega STE or TT) keyboard. Silica Shop or Atari Workshops should be able to supply the keyboard and pin-out information that you will need.

A quick fix for your mouse port could be to use the serial driver that now comes with Mouse Tricks 2: this allows you to use a PC serial mouse in place of (or as well as!) the standard ST mouse.

My Little Phoney BBS

I Your readers may be interested to know that "My Little Phoney BBS" will be reincarnated during June of this year on a new number. The delay is because it will use phone lines provided through a cable TV service, which will be both more reliable and cheaper than British Telecom, but the cable will not be operational until the middle of May. The BBS when back on-line will continue as a specialist Atari BBS, with International connections to all the major networks with Atari interest such as NeST and FidOnet. I will also be restarting development and support for Binkley TermST, the network mailer used by the majority of networked Atari ST Bulletin Boards.

Steven Green

Atari Laser

Q Last week I purchased an Atari SLM804 laser printer, something I have wanted for over two years. Already, several problems have arisen which I am unable to overcome. Are you able to help?

I have the following items: Atari 1040STF, Frontier Xtra ram deluxe with 2MB of ram (2.5MB total), Atari SM125 mono monitor, and C-Lab Notator with Unitor-N SMPTE/ EBU synchronizer.

I have successfully used the laser with C-Lab's Notator, and version 2 of Timeworks Publisher. Both these packages provide full printer drivers, and the results are perfect. However, I am extremely disappointed that a full driver is not available for my word processor, Protext. I have spoke in depth with their technical department, and they are adamant that Atari will not supply the necessary information and equipment they need. The two drivers offered by Protext support both the Diablo 630 and Epson FX emulators, which I have.

Despite my attempts, I am only able to achieve basic printing in a default font of 10 cpi. Once I attempt to use a proportional font, or a font of 12 cpi, the page layout on Protext is not adjusted to compensate for the additional characters. I have tried to adjust the driver, using Protext commands, but I have not succeeded in achieving a result which automatically adjusts the WYSIWYG display.

It seems to me a great pity to have to make a 300dpi laser emulate a 24-pin dot matrix printer. Is there a driver or utility which will run with Protext, and allow automatic WYSIWYG display of all fonts, proportional, condensed, superscript, subscript, etc.?

Also, I am amazed to discover that the Laser must be turned on at all times when attached to the Atari. Is there a means of correcting this, perhaps a switch assembly between the controller and DMA socket?

Laurie Heath

● The simplest way of silencing the Atari laser when it is not in use is to prop open the back flap. This cuts off the heater and fan whilst keeping the electronics live so that the ST and other DMA devices continue to recognise the laser. You could improve on this by either moving the switch which detects the flap being open so that it is more accessible, or build yourself a DMA interface as detailed in issue 3 of ST Applications.

Monochrome Monitors

I With Atari demonstrating their usual

flair for distribution, anyone in desperate need of a mono monitor may like to be reminded that they can just as easily use a colour one, and I'm not talking emulators here. In the same way that you can watch a black and white film on a colour telly, so you can use a mono signal on a colour monitor. This does NOT mean you can use any colour monitor you like, it must be capable of 32KHz horizontal sync and 70Hz vertical sync, with suitable levels and logic. I'm not suggesting you rush out and buy a multisync, but it will give you a greater chance of finding or borrowing something to keep you going until the real thing is available again. I used to use a very old 19" Mitsubishi from a scrapped graphics station, a monstrous great thing that weighed half a ton, but it gave superb results.

Connect it up as if it were a normal mono machine, except that you will need to spread the mono output (pin 11) across all three colour inputs (not vital, you could just use the green) and you MUST ground out the mono detect line (pin 4). No guarantees, so make sure the monitor is suitable and make sure you know what you're doing. If you're lucky there may already be a 'monochrome' setting, if not adjust the colour for best effect.

Don't even think of trying this with a standard ST colour monitor, the sync signals are way out of range.

John Phillips

OPUS and GDOS

PD Spreadsheets STA 25
Craig Oldfield Forum STA 28

I I installed OPUS using a GDOS set up from the demonstration version of EZ Print: for a long time I could not print graphs because ASSIGN.SYS listed fonts not in the fonts folder; I edited these out of ASSIGN.SYS but still got the message "unexpected state 4". This seemed to be because ASSIGNER.PRG insisted on listing an 18pt screen font with a 20pt printer font. Once I had removed the 20pt printer font (it's still listed in the screen fonts) and edited the eccentric set of default paths with which OPUS arrives I was in business. I am still looking for an 18pt printer font to match the screen font or a 20pt screen font to match the printer font.

Contrary to what Bob Osola said in his review you can draw spline curves from random data.

On the subject of spreadsheets, Microdeal has been selling 3D CALC at a knockdown price. It is an attractive package: unique in providing 3D spreadsheets, it also allows more than one spreadsheet in memory at a time, unlike any of the PD programmes or any others except the higher versions of K-Spread.

Alan Kennedy

PD Rules

I When writing a word processor or text editor never modify the keyboard buffer

after a delete. This gives the user the opportunity to watch several yards of text being taken out on the keyboard auto repeat, wonderful stuff.

John Phillips

Q Does anyone have a program called Ceefax ST? It is a program that shows how to build a simple electronic Ceefax receiver. The disk also contains the necessary software to use the Ceefax ST program.

J Furness

Q I notice that each word processor programme has its own spelling dictionary (1st Word, Calligrapher). I also have Thunder as a separate programme. I would like to have a single large dictionary to use as a spelling checker but this does not seem possible as you cannot load the dictionaries as documents, then spell check them! Any ideas?

Dr. D E Monks

Automatic BAK Files

Q Is there a PD Utility which will automatically produce a Backup of a file on saving?

I use PageStream V2.1 which does not do this - and so it is possible to overwrite an existing file when working on it. Will Warp 9 produce a significant improvement on screen redraws of PageStream V2.1?

A Leach

● Sorry, we do not know of anything that will automatically produce a backup of a file.

The only thing that will speed up PageStream's redraws is a faster machine. Something like AdSpeed helps, a Falcon makes it bearable, but a TT is the optimum platform for PageStream. PageStream by-passes the GEM routines that Warp 9 (and other screen accelerators) speed up.

File Formats

Q I have written a fractal generator which can work in most screen resolutions but lacks the ability to save the generated screens in a standard format. The file formats .NEO, .PI etc. are of little use to me as they can only save a small number of image sizes and cannot cope with True Colour screens. What I need is a format which can cope with any (reasonable) image size, a variable colour palette size and a varying number of bits-per-pixel in true colour modes.

The closest that I know of to the above is the Amiga .IFF format, but can .IMG do the job? And what are Atari going to be promoting for the numerous screen modes available on the Falcon? It is, after all, vital that a Multimedia machine has a standard format that all of its software can use.

If you know of a file format which could be of use to me and you have the file format information available on a PD disk then I

would be grateful.

Jon Marshall

● Atari currently recommend that true colour images should use the Targa file format, palette images should use IMG or extended IMG, and sound samples should be in AVR format. We should have details on these and the latest set of programmers' guidlines for the Falcon in the next issue of ST Applications. You could also consider supporting GIF and TIFF file formats.

Fujitsu DL Ribbons

Q About a year ago I purchased two Fujitsu DL1100 printers. These are 24-pin Epson-LQ-compatible printers offering attractive paper-handling characteristics and wide-carriage at a low price. These machines were advertised in ST Applications with the advertising angled somewhat at ST users, but I have never seen them advertised elsewhere. Perhaps other readers also purchased these printers.

Although I have found the mechanisms and logic of these printers satisfactory and faithful to the advertiser's claims, I have suffered considerably from the small amount of inking provided by a ribbon cartridge. The ribbons are very short, and the amount of ink in the cartridge reservoir is also apparently small. On inserting a new cartridge, printing very rapidly fades from an initially adequate density to a condition of faintness which, even with the print-head position lever advanced to its fullest extent, gives a poor impression (!) to readers of documents produced on these printers. In printing a sizable graphic document one can almost see the decline in density through the course of the document. The problem is exacerbated by the high cost of replacement cartridges from the distributor appointed by Fujitsu UK. The ribbons are robust and can be re-inked using a transport-type re-inker, but this is a messy and time-consuming business and the re-inked ribbons suffer as short an ink lifetime as new ones.

Has any reader of the Forum pages possibly experienced this problem and found a way to improve the situation (e.g. compatible cartridges from other manufacturers, change of ribbon or ink materials)? If you have then I would be glad to hear from you.

Norman Marsh

FDD Compatibility

Q As an ex Atari 800 user, is there any way I can connect the old Percom DD 5.25" floppy drive to the ST to use as a second (B) drive?

Dr. D E Monks

Q Is the disc-drive from the Spectrum +D suitable for use as a second drive for the ST, and if so where is the most likely place to get a cable from?

K A Schimmel

DESKTOP DISCUSSIONS

Return of the FM

William Hern analyses the reasons behind the resurrection of the STFM and its chances of success second time around.

If the car industry had advanced at the rate of the computing business we would all be driving multi-purpose personal transporters that had top speeds of several thousand miles an hour and that did a million miles to the gallon. As a computer user, it's easy to take the blistering rate of progress for granted but for a computer manufacturer it means never being able to rest on one's laurels, always having to strive to produce faster and cheaper machines. Compared to other products, computer models have a very short lifespan - once superseded by a newer version, the older model rapidly vanishes, banished to the annuals of computer history.

Which is one of the reasons why Atari's reintroduction of the STFM has taken everyone by surprise. It's highly unusual for a computer to reappear after being discontinued but with a new low price which puts the FM in direct competition with the Sega and Nintendo games consoles, Atari are making bold statements about an additional 150,000 ST owners by the end of the year. But just how valid are Atari's claims that they have rejuvenated the ST market and provided fresh incentive for software development?

Several questions immediately spring to mind concerning the relaunch, the most important being where did the machines come from? Frankly, I am very dubious about Atari's claims that these are newly manufactured machines. If Atari really has found a way to cut production costs that permits it to sell the FM at such a low price, wouldn't it make more sense for them to use it on the STE model? Is there such a difference in production costs between an FM and an STE? Was the demand for FMs from distributors really so great that it merited restarting the production lines for a seven year old computer that was discontinued over a year ago? And why release them now, in the quietest part of the year for computer sales? Why not just before Christmas when computer sales are at their peak?

Furthermore, why are they apparently available only in the UK? If Atari really were producing FMs again, wouldn't they be trying to sell them in other markets as well? While the chances of success in the US are slim, a low cost FM could sell in appreciable numbers in continental Europe, especially Germany.

Here's what I suspect is the real story. Having closed down a number of European subsidiaries, Atari UK finds itself with the parts for 150,000 FMs. As any accountant will tell you, having this level of excess inventory is bad news, especially when the parts are for a discontinued computer.

The usual solution that a computer company in this situation adopts is to throw the parts away. Atari itself has done this in the past - there's a landfill in the Texas desert containing several tens of thousands of brand new VCS cartridges which the company was unable to sell. However, given Atari's current financial state, this is not an attractive option. The only alternative is to sell the computers at a knockdown price, say ... oh ... £159, in the hope that they are cleared quickly.

If I'm right with this scenario then the FM revival will last only as long as there are stocks left in the warehouse. Hence if you want a cheap second ST and are thinking seriously about taking advantage of the FM offer, I'd advise you to buy one quickly.

Regardless of where these machines came from and for how long their supply might last, there's no denying that having a computer in the sub two hundred pound market is useful. Well below the cost of an Amiga 600, the FM is clearly being targeted at potential buyers of the Megadrive and SNES video games consoles. With the increasing price of the Falcon, and the Jaguar console unlikely to appear before Christmas, the FM is a useful stopgap in this important market.

At first glance, the FM has little chance against the giants of the console world. While the FM has vastly cheaper games available for it, they are difficult to find owing to most high street retailers cutting their support for the ST. The Nintendo and Sega on the other hand have plenty of shelf space dedicated to them and, thanks to large advertising budgets, high consumer awareness of what is available.

However there are signs of a growing backlash against consoles. Following scare stories in the popular press and several TV programmes accusing console games of causing epileptic fits and promoting violent behaviour, many parents are questioning the presence of a console in their home and looking for something that is a little more educational. Should this trend gain momentum, then the FM is well placed to profit.

Will existing ST owners be affected by the FM's return? I think they will - and unfortunately for the worse. We were just beginning to see games software appear that made use of the STE's additional capabilities and I fear that this trend will now immediately end. No software house is likely to undertake software development that rules out a large proportion of new owners and so I don't think we'll see any more STE only games. Ditto for games which demand more than half a megabyte of memory because of the apparent difficulty in expanding the memory of these FMs.

In general I'm fairly ambivalent towards the FM's return. Naturally I welcome any move to increase the number of ST owners but I wonder how many of the new FM owners would have opted for the more expensive STE if the FM hadn't been reintroduced. I think that Atari's claim of rejuvenating the ST market is a little optimistic but there should be renewed software development, although almost all of it is likely to be games.

Will people buy the lower priced STFM? I really don't know as it all hangs on whether the FM can tempt buyers away from the video consoles. Parents may well want to opt for the STFM's better all-round capabilities and cheaper games but children will take some persuading before they are prepared to forgo their friends Sonic and Mario. In other words, the success of the FM depends on whether it is children or their parents who decide what to buy. Watch out for some heated arguments in Dixons over the next few months.

Programmers' Forum

In this month's edition of ST Applications' regular programming column, we revisit the picture-tiling package from the column in issue 27, and look at some useful GFA BASIC subroutines.

Picture shrinking

Our first letter comes from **John Durst**, who writes from central Italy. In the STA 27 edition of the column, we discussed an earlier letter from John, concerning palette switching. The demonstration program used to illustrate points arising from his letter (Listings 2 and 3; STA 27) loads four low resolution pictures, shrinks them to one-quarter size and then tiles all four onto a single screen display. It is the picture-shrinking subroutine that is the subject of John's most recent letter.

He has come up with a modified version of the shrink_picture() function which compresses the picture using a different algorithm. John's version of the function is presented in Listing 1. The original function deleted alternate scan-lines and alternate pixels on the scan-lines that were retained. This is equivalent to taking only the top left pixel from a two-by-two square of pixels.

The modified routine takes into account the status of all four pixels in each block. The values of each pixel in the block are ORed together to create the final output pixel value. This operation can produce an improved appearance, but this is rather dependent on the palette settings.

To see why this is, consider the situation illustrated in Figure 1. All four pixels in our two-by-two unit block appear on the screen as similar colours (shades of orange), but the output from Listing 1 would be a blue pixel. This counter-intuitive result arises because the pixel values that the routine is processing are not themselves colours, but merely indices into the palette array.

Those requiring proof of this assertion should compile and run Listing 2 from this column to generate a test display based on Figure

1; a low resolution DEGAS .PI1 file imaginatively entitled ORANGE.PI1. Next, the picture-tiling code from STA 27 must be modified to incorporate John's picture-shrinking routine. Two changes need to be made to the C portion of the program. First, replace the load_degas() function with Listing 3 from this month's column. This fixes a rather embarrassing bug which prevents DEGAS files being read properly (sheepish grin). Second, the picture filenames in the C portion of the tiling program should all be set to refer to ORANGE.PI1. Finally, replace the shrink_picture subroutine in the assembly language file with the contents of Listing 1 from this column; assemble, compile and link.

When the program is run, the screen should appear solid blue. However, if ORANGE.PI1 is viewed normally, there is not a blue pixel in sight. Obviously, this is a somewhat artificial situation, with the palette specially chosen to expose the shortcomings of the algorithm. Can we find a better algorithm?

An improved algorithm

Long-time readers of the column will have realised that such questions are never posed unless there is a good answer to follow. This occasion is no exception to the tradition. A better shrink_picture() routine can be produced by considering the colours that each pixel produces. To do this, we examine each pixel in the two-by-two block and look up its colour in the palette array. The four RGB values are then averaged producing a proposed colour for the single output pixel.

However, there is a snag with this approach: our average value may not be a colour in the current palette of 16. To 'plot' this pixel in the output file, we must associate it with an entry in the palette. All we can do is to check through the palette, and assign the output pixel to the palette colour that most closely matches the desired colour.

Implementing the advanced algorithm

The rather compact description above may make more sense if read in conjunction with Listing 4 which implements the algorithm. For clarity, all the code is in C, though this does have the effect of making the operation rather slow. If the code were to be used in a 'real-life' program, many of the simple functions should be rewritten in assembly language, with a substantial gain in performance.

Starting with the top-level function, new_shrink_picture(), the operation of the algorithm should be fairly clear. The nested loops step through the input picture in steps of two pixels on each axis. This divides the picture into the two-by-two blocks needed for processing. Each of the four pixels in the block is examined to determine its colour index (the memory_state() function), which is then converted to a RGB value by the index_to_RGB() function. These values are added and divided by the number of pixels in the block (4) to arrive at the 'average' RGB value. The commented-out line alters the calculation to round up any remainder after the division. It seems to make little difference to the final picture.

Having arrived at an average RGB value, it has to be converted into a colour index, so a pixel can be plotted in the output buffer. The conversion is done by the RGB_to_index() function. This operates by calculating a difference between each colour in the palette and the input RGB value. It returns the index of the best-matching colour, as determined by looking for the smallest difference. It should be noted that this is a very simple-minded function, in that it totals up the differences for each of the three RGB components, and processes this number, rather than trying to match each component separately. Having said this, it seems to pick a reasonable colour most of the time. The processing of the block is completed by plotting a single pixel of the appropriate colour index into the output area (memory_plot()).

One final word on the implementation of the algorithm. To make the program readable, the RGB colour values are represented as members of a structure, the 'RGB' variable type. Short functions are defined to enable simple arithmetic on these types. This type of program is an excellent candidate for coding in an object-oriented language such as C++. The RGB type would form a new class, the functions like add_RGB_RGB() would define how the arithmetic operators apply to the type, and so on. The top level function would then be even simpler, as one could replace the explicit arithmetic function calls with natural calculation lines. For further details on C++, see the articles by David Harvey, published in issues 19 and 20 of ST Applications.

If the idea of playing with pictures has captured your imagination, you may like to think about modifying the program further. The new_shrink_picture() function simply averages the RGB values of the four pixels. This is a mathematical operation which takes

no account of the psychophysics of the human visual system. Other methods of combining the four pixels in each block could be tried, in an attempt to make a more 'natural' result. Another part of the program which might be altered is the conversion of the output RGB value to a colour index. More extensive experimentation with image processing can be done using the excellent AIM package from Delft University in Holland. This is in the public domain, and may be obtained from the ST Club on disks GRA.173 and 174.

Compiling the improved program

Obtaining a working version of the improved picture tiler is straightforward, given the listings from the STA 27 column (as modified above). To start with, change the line that invokes shrink_picture() to that shown below:

```
new_shrink_picture(image,screen+
(image_offset/sizeof(word)),
ptr->pc_palette);
```

Next, add a suitable function prototype for the new function, such as the following:

```
extern void new_shrink_picture(word *,word
*,word *);
```

The change in the function argument list is to accommodate a pointer to the palette table, which the new function requires to convert colour indices to RGB values.

Finally, compile Listing 4, and link it with the two files from STA 27, TILER.C and SHRINK.ASM. Note that TILER.C must be modified as described earlier to fix the load_degas() bug. When the resulting executable is run on ORANGE.PI3, the display should be uniformly orange, as one might expect.

GFA BASIC subroutines

From the finer points of screen bit-twiddling, to something of more general interest. The second item this month is a rare treat for BASIC programmers. **Ian Glover** from Eltham writes with a couple of useful GFA BASIC 3 subroutines that he has produced

while working on a database program:

LIST_INP.LST [Listing 5] contains a routine to create a pop-up window with a list of items, which can be selected via the mouse. OUTPUT.LST [Listing 6] contains two routines to replace STORE and RECALL for saving and reading string arrays. I have tried to document the routines as clearly as I can, and so I hope that the routines are fairly self-explanatory.

I wrote OUTPUT.LST because STORE and RECALL can corrupt string arrays that contain CHR$(13). Because each string is immediately preceded by its own length, it can contain any combination of characters. The speed is quite respectable as well.

In a test involving saving a string array of 500 elements, each one containing 52 characters (a-z and A-Z) the timings were as shown in Table 1. Although the given routines have to be passed how many elements to load, it would be a simple matter to OUT& the number of elements at the start of the file, and then INP& when loading.

LIST_INP.LST was written because I wanted to include enumerated field types in my database, and selection by the mouse seemed the easiest way (for the user).

Many thanks indeed to Ian for sharing his code with us. Submissions to *Programmers' Forum* are usually in C or assembler, so Ian's contribution is especially welcome. This seems an appropriate point to repeat the standing invitation to all readers of the column to send in any snippets of useful code that they might have written. *All* ST programming languages are welcome, although my printer will probably choke on APL (and I won't have the faintest idea what the program does!).

```
Results of Speed tests
Performed on Ian Glover's
INPUT and OUTPUT
Subroutines.
```

Hard drive

| STORE: 11.975s | OUTPUT: 7.965s |
| RECALL: 0.665s | INPUT: 0.67s |

Floppy disk

| STORE: 22.57s | OUTPUT: 16.075s |
| RECALL: 3.585s | INPUT: 3.465s |

Next Month

Next month, *Programmers' Forum* will print more questions and tips from readers' letters. Keep the letters coming in - the more we receive, the better the column gets! Hints on any subjects, or questions about programming problems should be sent to the address below. All contributions, no matter how simple or advanced, are most welcome. Please include your address on the letter, so I can get back to you if anything in your contribution is unclear. Email addresses are useful too.

Please send a disk (or email) if there are large chunks of text or ASCII source code: I have no time to retype lots of material. Naturally, disks will be returned if an SAE is included.

Jon Ellis
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```
Listing 1
=========

**
** Listing 1.
** Programmers' Forum STA 30 (June 1993)
**
** Replacement for low resolution picture shrinking
** subroutine published in STA 27.  Instead of using
** just one pixel from every alternate line, this
** variation ORs together two consecutive pixels on
** two consecutive lies, so that each 'squeezed' pixel
** is the 'sum' of a block of four in the original.
**
** This can give a rather 'blobby' effect but means
** that a single line of pixels always shows up.
**
** Assembler system: Lattice asm v5.52
** Assemble options:
** Modifications by John Durst 22 February 1993
** Tweaked by Jon Ellis 30 March 1993 to maintain full
** functional compatibility with old shrink_picture.
**

_shrink_picture:

        movem.l   d2-d7,-(sp)
        move.l    28(sp),a0       Pointer to screen buffer.
        move.l    32(sp),a1       Pointer to output area.

; As we have to write the pixel bits by ORing,
; best to zero the output area first...

        bsr       do_clear
```

```
        tst.l    28(sp)           Was the input buffer NULL ?
        beq.s    5$               Exit now if so.
        moveq    #99,d7           The line counter (y count).
        clr.l    d2

; Clear a long, although only a word is used for
; output.  Bit 31 of d2 is flag for alternate lines.

1$      moveq    #9,d6            10 blocks of 32 pixels per line
2$      moveq    #3,d5            4 longs per 32 pixel block
        clr.w    d2               Low order word is used to offset into block
3$      clr.w    d1               d1 & d3 are used for output compressed word
        clr.w    d3
        moveq    #15,d4           16 bits per output word
        move.l   0(a0,d2.w),d0    Word 4/3/2/1 of 8 to upper word
        move.w   8(a0,d2.w),d0    Word 8/7/6/5 of 8 to lower word
4$      lsl.l    #1,d0            Copy first pixel to status register
        roxl.w   #1,d1            Rotate into output first accumulator
        lsl.l    #1,d0            Copy second pixel to status register
        roxl.w   #1,d3            Rotate into output second accumulator
        dbra     d4,4$

        or.w     d1,0(a1,d2.w)    Write first accumulator into buffer
        or.w     d3,0(a1,d2.w)    Superimpose second accumulator over first
        addq.w   #2,d2            Bump to second word
        dbra     d5,3$            Loop for rest of block

        lea      16(a0),a0        Move to start of next block
        addq.l   #8,a1            Next output area
        dbra     d6,2$            Loop for rest of input line

        lea      -80(a1),a1       Back to start of output line
        bchg     #31,d2           Test flag and change it
        beq      1$               If flag not set, go back to OR next line
```

```
                lea      160(a1),a1           Otherwise, skip to next output line plus
                dbra     d7,1$                half a line.  Loop for all lines.

       5$       movem.l  (sp)+,d2-d7          Recover preserved registers.
                rts/*

** Listing 2.
** Programmers' Forum STA 30 (June 1993)
**
** Program to generate DEGAS low resolution test
** screens for the picture tiling program from
** STA 27.  The program is designed for clarity
** of expression, and most definitely not for speed.
**
** Compiler system: Lattice C v5.52
** Compile options: -cargfku
**   Meaning: Enable ANSI mode, disable trigraphs, enable
**            non-ANSI keywords, assume unsigned chars
** Link with C.O and LC.LIB
** Written on 10th March 1993
*/

#include <dos.h>
#include <portab.h>
#include <stdio.h>
#include <stdlib.h>


/*
** Symbols for array bounds etc
*/

#define IMAGE_SIZE       32000
#define PALETTE_SIZE     32
#define COLUMNS          320
#define ROWS             200

#define PIXELS_PER_BLOCK 16
#define WORDS_PER_BLOCK  4
#define WORDS_PER_LINE   80

#define LOW              0
#define MEDIUM           1
#define HIGH             2


/*
** Prototype the functions and declare variable types.
*/

typedef unsigned short word;

int main(int,char **,char **);

int memory_state(word *,int,int);
int write_degas(char *,int,word *,word *);
void memory_plot(word *,int,int,int);

#define memory_unplot(a,b,c) memory_plot(a,b,c,0)

/*
** Declare and initialise the global variables.
*/

word palette[16] = {0x777,0x000,0x740,0x733,0x720,0x751,0x000,0x007,
                    0x000,0x000,0x000,0x000,0x000,0x000,0x000,0x000};

/*
** The program starts here...
*/

int main(argc,argv,envp)

int argc;
char **argv, **envp;

{
    int x, y;
    word *buffer;

    printf("\033E\nPicture tiler test file generator\n\n");
    if ((buffer = (word *)calloc(IMAGE_SIZE/2,sizeof(word))) == NULL)
        {
        printf("Failed to allocate screen buffer\n");
        printf("Press RETURN to continue:");
        getchar();
        return(0);
        }
    printf("Constructing memory image...\n");
    for (y=0; y<ROWS; y+=2)
        {
        for (x=0; x<COLUMNS; x+=2)
            {
            memory_plot(buffer,x,y,0x02);
            memory_plot(buffer,x+1,y,0x03);
            }
        for (x=0; x<COLUMNS; x+=2)
            {
            memory_plot(buffer,x,y+1,0x04);
            memory_plot(buffer,x+1,y+1,0x05);
            }
        }
    write_degas("ORANGE.PI1",LOW,palette,buffer);
    return(0);
}


/*
** Function to plot a low resolution pixel in an
** arbitrary memory buffer.  The arguments are
** a pointer to the buffer, x and y coordinates
** of the pixel to be plotted, and the colour index
** to be used.  There are no return values.
*/
```

```
**
** Usage:   memory_plot(buf,x,y,index);
**
**          void memory_plot(word *,int,int,int);
*/

void memory_plot(buffer,x,y,index)

word *buffer;
int x, y, index;

{
    int f;
    word block, offset, mask;
    word *addr;

    block = x / PIXELS_PER_BLOCK;
    offset = PIXELS_PER_BLOCK - (x % PIXELS_PER_BLOCK) - 1;
    mask = 0x01 << offset;
    addr = buffer + (y * WORDS_PER_LINE) + (block * WORDS_PER_BLOCK);
    for (f=0; f<4; f++)
        {
        *(addr+f) &= ~mask;
        *(addr+f) |= ((index & 0x01) << offset);
        index >>= 1;
        }
}


/*
** Function to make up a Degas file from picture
** composite data.  The arguments are a pointer
** to a filename to use, the resolution word
** value, and pointers to palette and image data
** The function returns TRUE if all went well,
** or FALSE if not, when an appropriate error
** message is written to stdout.
**
** Usage:   result = write_degas(name,res,pal,data);
**
**          int result, write_degas(char *,int,word *,word *);
*/

int write_degas(name,res,pal,data)

char *name;
int res;
word *pal, *data;

{
    FILE *fp;
    word resolution;
    int error;

    printf("Writing test output file: %s\n",name);
    resolution = (word)res;
    error = FALSE;
    if ((fp = fopen(name,"wb")) == NULL)
        {
        printf("File error: cannot open output file.\n");
        return(FALSE);
        }
    if (fwrite(&resolution,sizeof(word),1,fp) != 1)
        {
        printf("File error: cannot write resolution word.\n");
        error = TRUE;
        }
    if (error == FALSE && fwrite(pal,PALETTE_SIZE,1,fp) != 1)
        {
        printf("File error: cannot write palette data.\n");
        error = TRUE;
        }
    if (error == FALSE && fwrite(data,IMAGE_SIZE,1,fp) != 1)
        {
        printf("File error: cannot write bit image data.\n");
        error = TRUE;
        }
    fclose(fp);

    if (error == TRUE)
        {
        remove(name);
        return(FALSE);
        }
    return(TRUE);
}


/*
** Function to read the colour index of a low
** resolution pixel in an arbitrary memory buffer.
** The arguments are a pointer to the buffer, and
** x and y coordinates of the pixel.  The return value
** is the four bit colour index of the pixel.
**
** Usage:   index = memory_state(buf,x,y);
**
**          int index, memory_state(word *,int,int);
*/

int memory_state(buffer,x,y)

word *buffer;
int x, y;

{
    int f, index;
    word block, offset, mask;
    word *addr;

    block = x / PIXELS_PER_BLOCK;
    offset = PIXELS_PER_BLOCK - (x % PIXELS_PER_BLOCK) - 1;
    mask = 0x01 << offset;
    addr = buffer + y * WORDS_PER_LINE + block * WORDS_PER_BLOCK;
    index = 0;
    for (f=0; f<4; f++)
```

```
            {
            index |= ((*(addr+f) & mask) ? 1 : 0);
            index <<= 1;
            }
    return(index);
}
```

Listing 3
=========

```
/*
** Function to read in and process a DEGAS picture
** file.  This is the fixed version of the function
** that appeared in Listing 2 of the STA 27 edition
** of Programmers' Forum. Only the simple .PI?
** format is supported. The arguments are a pointer
** to the pathname of the file and a pointer to an
** adequately sized buffer to hold the data.  The
** return is a pointer to a PICTURE structure or
** NULL if there was any error.
**
** Usage:    spec = load_degas(name,buffer);
**
**           PICTURE *load_degas(char *,word *);
*/

PICTURE *load_degas(name,buffer)

char *name;
word *buffer;

{
    static PICTURE spec;

    if (load_file(name,buffer,DEGAS_SIZE) == FALSE)
        return(NULL);
    spec.pc_resolution = *buffer & 0x03;
    spec.pc_palette = buffer+1;
    spec.pc_image = buffer+17;
    return (&spec);
}
```

Listing 4
=========

```
/*
** Listing 4.
** Programmers' Forum STA 30 (June 1993)
**
** Replacement for picture shrinking function
** in the tiling program from STA 27. The new
** function uses the colour averaging algorithm
** described in the text.  See the text for details
** of how to use this listing. As with Listing 2,
** the code is designed for clarity of expression,
** and most definitely not for speed. However, some
** of the time-critical functions could be easily
** recoded in assembler to improve performance.
**
** Compiler system: Lattice C v5.52
** Compile options: -cargfku
**  Meaning: Enable ANSI mode, disable trigraphs, enable
**           non-ANSI keywords, assume unsigned chars
** Link with TILER.O, SHRINK.O, C.O and LC.LIB (see text)
** Written on 11th March 1993
*/

#include <stdlib.h>


/*
** Define useful symbols for the program,
** including the parameters of the ST low
** resolution screen.
*/

#define ROWS             200
#define COLUMNS          320
#define COLOURS          16

#define PIXELS_PER_BLOCK    16
#define WORDS_PER_BLOCK     4
#define WORDS_PER_LINE      80

#define HUGE_NUMBER      10000


/*
** Declare the type used to manipulate the
** colours as RGB values.
*/

typedef unsigned short word;

typedef struct {
                int red;
                int green;
                int blue;
                } RGB;

/*
** Declare the functions...
*/

int RGB_to_index(RGB *,RGB *);
void add_RGB_int(RGB *,int);
void add_RGB_RGB(RGB *,RGB *);
void decompose_palette(word *,RGB *);
void divide_RGB_int(RGB *,int);
void index_to_RGB(word *,int,RGB *);
void set_RGB_int(RGB *,int);

void new_shrink_picture(word *,word *,word *);
```

```
int memory_state(word *,int,int);
void memory_plot(word *,int,int,int);


/*
** Function to shrink a full screen low resolution
** picture to one-quarter size.  The original method
** involved omitting every other row and column of
** pixels.  This algorithm breaks the input image up
** into two-by-two pixel squares, calculates an
** average colour for the area using the RGB values,
** and then plots a single pixel in the output buffer
** using the palette colour that most closely matches
** the average RGB value.  There are no return values.
**
** Usage:   shrink_picture(in,out,pal)
**
**          void shrink_picture(word *,word *,word *);
*/

void new_shrink_picture(input_image,output_image,palette)

word *input_image, *output_image, *palette;

{
    int x, y, new_index, old_index;
    RGB total, current;
    RGB colours[COLOURS];

    if (input_image == NULL)
        {
        for (y=0; y<ROWS/2; y++)
            for (x=0; x<COLUMNS/2; x++)
                memory_plot(output_image,x,y,0);
        return;
        }

    decompose_palette(palette,colours);

    for (y=0; y<ROWS; y+=2)
        for (x=0; x<COLUMNS; x+=2)
            {
            set_RGB_int(&total,0);
            old_index = memory_state(input_image,x,y);
            index_to_RGB(palette,old_index,&current);
            add_RGB_RGB(&total,&current);
            old_index = memory_state(input_image,x+1,y);
            index_to_RGB(palette,old_index,&current);
            add_RGB_RGB(&total,&current);
            old_index = memory_state(input_image,x,y+1);
            index_to_RGB(palette,old_index,&current);
            add_RGB_RGB(&total,&current);
            old_index = memory_state(input_image,x+1,y+1);
            index_to_RGB(palette,old_index,&current);
            add_RGB_RGB(&total,&current);
/*          add_RGB_int(&total,2);*/
            divide_RGB_int(&total,4);
            new_index = RGB_to_index(colours,&total);
            memory_plot(output_image,x/2,y/2,new_index);
            }
}


/*
** Function to break up a 16 colour palette into the
** component RGB values to make the averaging code
** faster. A standard ST palette (three bits of data
** for each RGB electron gun) is assumed, but the function
** is readily altered for the extended STE format.  The
** arguments are a pointer to the 16 word palette to unpack,
** and a pointer to an array of 16 RGB structures to
** place the output in.  There are no return values.
**
** Usage:   decompose_palette(pal,output);
**
**          void decompose_palette(word *,RGB *);
*/

void decompose_palette(palette,output)

word *palette;
RGB *output;

{
    int f;

    for (f=0; f<16; f++)
        index_to_RGB(palette,f,output+f);
}


/*
** Function to convert an RGB value into a palette
** index.  This is done by determining which of the
** palette entries is least different to the input
** colour. The arguments are pointers to the current
** palette expressed as RGB values and to the RGB
** colour under consideration.  The return value
** is the index of the closest match.
**
** Usage:   match = RGB_to_index(palette,colour);
**
**          int match, RGB_to_index(RGB *,RGB *);
*/

int RGB_to_index(rgb_pal,test)

RGB rgb_pal[];
RGB *test;

{
    int diff, min_diff, min_idx, f;

    min_diff = HUGE_NUMBER;
    for (f=0; f<COLOURS; f++)
        {
```

```
        diff = abs(test->red - rgb_pal[f].red);
        diff += abs(test->green - rgb_pal[f].green);
        diff += abs(test->blue - rgb_pal[f].blue);
        if (diff < min_diff)
            {
            min_diff = diff;
            min_idx = f;
            if (diff == 0)
                break;
            }
        }
    return(min_idx);
}


/*
** Function to turn a colour index into an RGB
** structure using the supplied palette.  The
** arguments are a pointer to the palette, a
** colour index and a pointer to an RGB structure
** to fill in.  There are no return values.
**
** Usage:  index_to_RGB(palette,index,colour);
**
**            void index_to_RGB(word *,int,RGB *);
*/

void index_to_RGB(palette,index,colour)

word palette[];
int index;
RGB *colour;

{
    colour->red = (palette[index] & 0x700) >> 8;
    colour->green = (palette[index] & 0x070) >> 4;
    colour->blue = (palette[index] & 0x007);
}


/*
** Function to initialise a RGB colour structure.
** All elements are set to the supplied value.
** There are no return values.
**
** Usage:  set_RGB_int(colour,value);
**
**            void set_RGB_int(RGB *,int);
*/

void set_RGB_int(colour,value)

RGB *colour;
int value;

{
    colour->red = value;
    colour->green = value;
    colour->blue = value;
}


/*
** Function to add one RGB colour structure to
** another.  The second argument is added to
** the first.  There are no return values.
**
** Usage:  add_RGB_RGB(colour1,colour2);
**
**            void add_RGB_RGB(RGB *,RGB *);
*/

void add_RGB_RGB(colour1,colour2)

RGB *colour1, *colour2;

{
    colour1->red += colour2->red;
    colour1->green += colour2->green;
    colour1->blue += colour2->blue;
}


/*
** Function to add a constant to each
** element of a RGB colour structure.
** There are no return values.
**
** Usage:  add_RGB_int(colour,val);
**
**            void add_RGB_int(RGB *,int);
*/

void add_RGB_int(colour,value)

RGB *colour;
int value;

{
    colour->red += value;
    colour->green += value;
    colour->blue += value;
}


/*
** Function to divide a RGB colour by a
** constant. There are no return values.
**
** Usage:  divide_RGB_int(colour,value);
**
**            void divide_RGB_int(RGB *,int);
*/

void divide_RGB_int(colour,value)
```

```
RGB *colour;
int value;

{
    colour->red /= value;
    colour->green /= value;
    colour->blue /= value;
}


/*
** Function to plot a low resolution pixel in an
** arbitrary memory buffer.  The arguments are
** a pointer to the buffer, x and y coordinates
** of the pixel to be plotted, and the colour index
** to be used.  There are no return values.
**
** Usage:  memory_plot(buf,x,y,index);
**
**            void memory_plot(word *,int,int,int);
*/

void memory_plot(buffer,x,y,index)

word *buffer;
int x, y, index;

{
    int f;
    word block, offset, mask;
    word *addr;

    block = x / PIXELS_PER_BLOCK;
    offset = PIXELS_PER_BLOCK - (x % PIXELS_PER_BLOCK) - 1;
    mask = 0x01 << offset;
    addr = buffer + (y * WORDS_PER_LINE) + (block * WORDS_PER_BLOCK);
    for (f=0; f<4; f++)
        {
        *(addr+f) &= ~mask;
        *(addr+f) |= ((index & 0x01) << offset);
        index >>= 1;
        }
}


/*
** Function to read the colour index of a low
** resolution pixel in an arbitrary memory buffer.
** The arguments are a pointer to the buffer, and
** x and y coordinates of the pixel.  The return value
** is the four bit colour index of the pixel.
**
** Usage:  index = memory_state(buf,x,y);
**
**            int index, memory_state(word *,int,int);
*/

int memory_state(buffer,x,y)

word *buffer;
int x, y;

{
    int f, index;
    word block, offset, mask;
    word *addr;

    block = x / PIXELS_PER_BLOCK;
    offset = PIXELS_PER_BLOCK - (x % PIXELS_PER_BLOCK) - 1;
    mask = 0x01 << offset;
    addr = buffer + y * WORDS_PER_LINE + block * WORDS_PER_BLOCK;
    index = 0;
    for (f=3; f>=0; f--)
        {
        index |= ((*(addr+f) & mask) ? 1 : 0);
        index <<= 1;
        }
    index >>= 1;
    return(index);
}

Listing 5
=========

'
' Test for picking from a list
' using a window-based interface.
'
' Designed for medium res
'
' By Ian Glover
' 22/01/1993
'
OPTION BASE 1
DIM list$(255)
'
' Because the items picked are passed via CHR$(item), 255 is the
' maximum allowable
'
FOR a%=1 TO DIM?(list$())
    list$(a%)="Element "+STR$(a%)
NEXT a%

list$(1)="abcdefghijklmnopqrstuvwxyz" ! Just to show how the window changes size

max|=4
LET lines_down|=12
pick$=CHR$(12)
title$="Dummy Test"
@list_input(title$,max|,lines_down|,list$(),pick$)
CLS
IF pick$=""
  PRINT "Nothing picked"
ELSE
  FOR a%=1 TO LEN(pick$)
    b%=ASC(MID$(pick$,a%,1))
```

```
        PRINT b%;TAB(4);list$(b%)
    NEXT a%
  ENDIF
PRINT
PRINT "Press any key to end"
~INP(2)
END
> PROCEDURE list_input(title$,max_picked|,max_display%,VAR list$(),pick$)
  '
  ' title$ is the title of the window
  ' list$() contains the list items
  ' pick$ contains the selected items as pick$=CHR$(x)+CHR$(x1)+....
  ' max_picked| is the maximum items that can be selected
  ' max_display% is the number of items that are displayed at any 1 time
  ' max_list% is the number of items in list$()
  ' slide_size% is the size of the vertical slider
  ' max_len% is the maximum length of the items, ie 20 characters long
  ' path_box$ is used to save the screen overwritten by the window
  ' x%,y%,w%,h% deal with the work area of the window
  ' w_x%,w_y%,w_h%,w_w% deal with the whole area of the window
  ' w_attr% is the attributes of the window
  ' selected!() is an array with an element for each item in the list
  '     each element has two states TRUE (picked) and FALSE (not-picked)
  '
  LOCAL num_picked|,max_list%,slide_size%,a%,a|
  LOCAL x%,y%,w%,h%,w_x%,w_y%,w_h%,w_w%,w_attr|
  LOCAL max_len%,patch_box$
  '
  max_list%=DIM?(list$())
  DIM selected!(max_list%)
  num_picked|=LEN(pick$) ! Anything already picked?
  '                      If nothing was already picked, pick$=""
  '
  IF num_picked|<>0 ! Yes, items are already picked
    FOR a%=1 TO max_list%
      IF INSTR(pick$,CHR$(a%))
        LET selected!(a%)=TRUE ! Make them selected
      ENDIF
    NEXT a%
  ENDIF
  '
  ' ========================================================
  ' Adjust this section for resolutions other than medium
  ' ========================================================
  max_len%=LEN(title$)+2
  FOR a%=1 TO max_list%
    max_len%=MAX(max_len%,LEN(list$(a%))+5)! the +5 allows for the item number
  NEXT a%
  w%=MUL(max_len%,8)
  h%=MUL(max_display%,8)+8
  x%=(640-(w%))/2
  y%=(200-(h%))/2
  w_attr%=&X111010011
  '
  ~WIND_CALC(0,w_attr%,x%,y%,w%,h%,w_x%,w_y%,w_w%,w_h%)
  GET w_x%,w_y%,w_x%+w_w%+4,w_y%+w_h%+4,patch_box$
  '
  ' Calculates the whole window size from the size of the work area
  '
  TITLEW #1," "+title$+" "
  INFOW #1,STR$(num_picked|)+" of "+STR$(max_picked|)
  OPENW #1,w_x%,w_y%,w_w%,w_h%,w_attr%
  '
  ' This window contains:
  ' a vertical slider bar
  ' a down arrow
  ' an up arrow
  ' an info line
  ' a close box
  ' a window title
  '
  handle&=W_HAND(#1)
  '
  ' Get the size of the vertical slider
  '
  slide_size%=INT((max_display%/max_list%)*1000)
  ~WIND_SET(handle&,16,slide_size%,a|,a|,a|)
  offset%=0
  @display_list(max_display%,offset%,selected!(),list$())
  REPEAT
    ev%=EVNT_MULTI(&X110011,1,1,1,0,0,0,0,0,0,0,0,0,0,0,100,m_x%,m_y%,button%,k_state%,k
ey%,num_clicks%)
    IF BTST(ev%,4) ! New message received
      SELECT MENU(1)
      CASE 22 ! close box was clicked
        finish!=TRUE
      CASE 26 ! The vertical slider was moved
        position%=MENU(5)
        ~WIND_SET(handle&,9,position%,0,0,0)
        offset%=INT((max_list%*position%/1000)-max_display%)
        IF offset%<0
          offset%=0
        ELSE IF offset%>max_list%-max_display%
          offset%=max_list%-max_display%
        ENDIF
        @display_list(max_display%,offset%,selected!(),list$())
      CASE 24 ! Arrow or slider bar was clicked
        SELECT MENU(5) ! Which of the above
        CASE 0 ! Above vertical slider
          SUB offset%,max_display%
        CASE 1 ! Below the vertical slider
          ADD offset%,max_display%
        CASE 2 ! Up arrow
          DEC offset%
        CASE 3 ! Down arrow
          INC offset%
        ENDSELECT
        IF offset%<0
          offset%=0
        ELSE IF offset%>max_list%-max_display%
          offset%=max_list%-max_display%
        ENDIF
        IF max_list%<>max_display% ! Full slider that can't move
          position%=offset%/(max_list%-max_display%)*1000
        ENDIF
```

```
        IF position%<1
          position%=1
        ELSE IF position%>1000
          position%=1000
        ENDIF
        ~WIND_SET(handle&,9,position%,0,0,0)
        @display_list(max_display%,offset%,selected!(),list$())
      ENDSELECT
    ELSE IF BTST(ev%,0) ! A key was pressed
      SELECT BYTE(key%)
      CASE 27 ! ESC key
        finish!=TRUE
      ENDSELECT
    ELSE IF BTST(ev%,1) ! A mouse button was clicked
      ' Turn the mouse co-ordinates into
      ' the co-ordinates of a list item
      IF m_y%>(y%+h%-8) OR m_y%<y% OR m_x%<x% OR m_x%>x%+w%
        ' Outside the work area
        option|=0 ! Nothing picked
      ELSE ! Inside the area
        op_y%=m_y%-y% ! y%=the top left corner of the work area
        option|=(op_y%/8)+1
        IF selected!(option|+offset%)=FALSE ! An item is selected
          IF num_picked|<max_picked|
            PRINT AT(1,option|);USING "### ",option|+offset%;
            DEFTEXT 2,0
            GRAPHMODE 4
            PRINT list$(option|+offset%)
            GRAPHMODE 1
            DEFTEXT 1,0
            LET selected!(option|+offset%)=TRUE
            INC num_picked|
            INFOW #1,STR$(num_picked|)+" of "+STR$(max_picked|)
          ENDIF
        ELSE ! An item is unselected
          DEC num_picked|
          PRINT AT(1,option|);USING "###",option|+offset%;
          PRINT " ";list$(option|+offset%)
          LET selected!(option|+offset%)=FALSE
          INFOW #1,STR$(num_picked|)+" of "+STR$(max_picked|)
        ENDIF
      ENDIF
    ENDIF
  UNTIL finish!
  CLOSEW #1
  PUT w_x%,w_y%,patch_box$ ! Repair the screen to its original state
  pick$=""
  FOR a%=1 TO max_list%
    IF selected!(a%)=TRUE ! If any item was picked
      pick$=pick$+CHR$(a%)! add it to the picked string
    ENDIF
  NEXT a%
  ERASE selected!() ! Arrays cannot be LOCAL variables
  CLOSEW 0 ! Stop any problems printing to the screen afterwards
RETURN
> PROCEDURE display_list(max_display%,offset%,VAR selected!(),list$())
  '
  ' Note: You have to play with GRAPHMODE to get the coloured effect,
  ' because you can't use VT52 control characters within a window.
  '
  LOCAL a|
  TOPW #1
  CLEARW #1
  FOR a|=1 TO max_display%
    IF selected!(a|+offset%)=TRUE
      PRINT AT(1,a|);USING "### ",a|+offset%;
      PRINT list$(a|+offset%) ! Item
      PRINT AT(1,a|);USING "### ",a|+offset%;
      DEFTEXT 2,0
      GRAPHMODE 4
      PRINT list$(a|+offset%) ! Coloured background
      GRAPHMODE 1
      DEFTEXT 1,0
    ELSE
      PRINT AT(1,a|);USING "###",a|+offset%;
      PRINT " ";list$(a|+offset%)
    ENDIF
  NEXT a|
RETURN

Listing 6
=========

'
' Routines to replace STORE and RECALL
' By Ian Glover
' 22/01/1993
'
' file$ is the file being loaded or saved
' num% is the number of elements in the array
' array$() is the array in question
'
> PROCEDURE output(file$,num%,VAR array$())
  LOCAL count%
  OPEN "o",#1,file$
  FOR count%=1 TO num%
    OUT& #1,LEN(array$(count%))
    BPUT #1,V:array$(count%),LEN(array$(count%))
  NEXT count%
  CLOSE #1
RETURN
> PROCEDURE input(file$,num%,VAR array$())
  LOCAL count%,length&
  OPEN "i",#1,file$
  FOR count%=1 TO num%
    length&=INP&(#1)
    array$(count%)=INPUT$(length&,#1)
  NEXT count%
  CLOSE #1
RETURN
```

CAD Column

Even if you're not into CAD Joe Connor thinks you'll find the letter from Nepal interesting. Some bad news for CADja users but better news for DynaCADD and MiniDraft enthusiasts...

Auf Wiedersehen CADja?

Computer Technik Kieckbusch GmbH, the CADja worldwide distributer, has completely withdrawn from the Atari marketplace. Wolfgang Kieckbusch explained the reason for the withdrawal as partly due to the failure of Atari in the marketplace but largely due to the poor response to the V2.0 upgrade. From over 400 German CADja users recently sent a mailshot only 30 upgrade orders were placed.

The upgrade to V2.0 does cost 300DM (approx £125) which is not cheap and many users cited this as the reason for not upgrading. As a consequence an English V2.0 is unlikely to be produced. CADja will continue to be available directly from the programmer (who incidentally doesn't speak English). Contact Michael Rauch on:

Tel:010 49 8347 1094; Fax:010 49 8347 719

Anyone who desperately wants a Falcon-compatible or English version can get in touch with me at and I'll see what I can do!

65 Mill Road, Colchester, Essex CO4 5LJ
Email: jconnor@cix.compulink.co.uk

If you would prefer to switch from CADja to another program remember DascH is available to convert CADja SAC format drawings to AutoCAD release 10 compatible DXF format. DXF files can be loaded into tbxCAD, DynaCADD, Drafter and Draftplus.
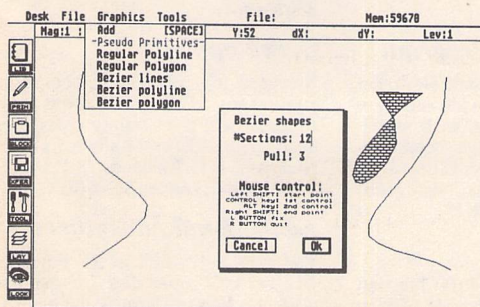
MiniDraft now sports a Bézier Line, Curve and Polygon command. The control points for the curves can be repositioned in real time using mouse and key combinations: Left Shift key for curve start, Right Shift for curve end, and the Control and Alternate keys for the intermediate points. Each curve may contain up to 99 sections but to conserve memory it is a good idea to restrict each curve to the minimum number of sections. Many other enhancements over the PD version (available from the ST Club, order DRG.55) have been added to the current version.

Existing users can obtain the latest version by sending a disk and SAE to the address below. If you haven't registered your PD copy of MiniDraft and would like to obtain the latest full version enclose a cheque for £12.00 as a one-off registration fee to: Jim Taylor, 12 West Drive, Cleadon, Sunderland, Tyne & Wear SR6 7SJ.

Atari CAD alive and well in Nepal!

In these troubled times for Atari it's encouraging to hear from David Potter again (See STA 11, 15) who for the foreseeable future is happy to keep faith with Atari.

David runs two offices, one in Dharan and one in Dhankuta, about 50km apart, and wanted to connect the two offices over the phone. We talked about the various comms packages available and I suggested that for purely exchanging data between two computers he should try Jekyll. Jekyll is a very fast Shareware bi-directional file transfer protocol with rudimentary built-in terminal emulation. Jekyll can be used as an alternative to the popular X, Y, Z modem or Kermit protocols and even called from within the popular Freeze Dried Terminal. David writes:

Setting up only took a few minutes and file transfer works perfectly, despite a lot of line noise at some times. Now, with telephone charges of only about 2p a minute, I can get the secretary in the Dharan office to type letters and send them up to me for printing and signing. And conceivably, when I move a computer to Kathmandu. where more and more of my building work is located, I can work in Dhankuta and send drawings to a plotter in Kathmandu. Ten quid is on its way to Vincent Partington.

I continue to use DynaCADD virtually every day and to be impressed with the speed and accuracy of the programme (except of course the rotate error). I was interested to read that there is now a 2-D only version. This would be quite enough for me. I never use 3-D; it may be accurate, but it is spectacularly slow and unwieldy compared to a freehand sketch.

I installed a floating point Coprocessor, which, as you say, gives a 40-50% speed increase. I used the method described in your article. except I cut an inch or so off the end of the Coprocessor board to stop it hitting the metal shielding at the front of the case. No problem as all I cut off was a large area of ground track. I also cut off the top part of the main plug to stop it hitting the top of the metal shielding.

I wonder if Ditek are doing anything to correct that glaring rotation error? It's become much more apparent to me now that I've also bought a second older V1.8 from Expressworks.

Mind you, V2.0 is a lot better than V1.8 in other areas. I don't know how they thought up the original method of Copy/Move selection from the menu. The icon in V2.0 is so much more obvious. The inheritance flag could do with the same treatment. I'd be quite happy to see an inheritance icon replace the history list one. I only ever use the Tab key. I'd also like to see a bit more control over what is inherited, ideally a choice between whether a figure inherits all current attributes, or just levels, or pens. or sticks entirely to its original ones. I'm forever having to load a figure with inheritance turned off to get it into a particular level and then put back all the pen thicknesses that lack of inheritance removed.

Getting a Draftplus V3 drawing into DynaCADD via a DXF file is a real pig. As

I'm sure you know all Draft symbols disappear in the process. I have to print each level to disk and then macro it back onto the drawing to remove all symbols. This works. but of course all the text comes back as lines. Luckily I've not much more to transfer. The problem is, I just can't bear to use Draft for anything now, I have to have the drawing in DynaCADD!

I use Multiprint from the ST Club all the time which means I can continue drawing while another drawing is being plotted, without suffering the slight mouse movement degradation that DynaCADD's background output causes. And I can exit from DynaCADD to the desktop without affecting plotting. It's also really great for output to my DeskJet, compressing print files to about 20% which means that I can store print files without clogging the hard disk.

My latest project here is to set up a wind generator. I've just got a 250W Aerogen shipped out from Britain. If and when I can extract it from the customs at Kathmandu airport I will set it up on top of the hill behind the house (only about 20m away) and use it to charge several large batteries. The computer will then run, as it does now, from a voltage invertor connected to the batteries (but they are charged from the mains at the moment). Could this be the world's first wind-powered ST?

Regards, David Potter.

Many thanks to David for a letter so packed with interesting detail that I had to include most of it! To answer David's query regarding the 'glaring rotation error' I've been in touch with Ditek, and here's what they have to say:

Here is the problem we are having and its current status. After receiving your message which included specific instructions on duplicating the math error (rotated line & ellipses) I asked a few customers to try it out.

They have been able to reproduce it whenever the machine in question was using the 68881 in per. mode. However, all the problems disappear on the TT using the 68881/2 as a true coprocessor and the version compiled with inline maths code. Our newly released DynaCADD 2D for the Atari also has some very real problems with the maths under the same conditions. Since the actual code is identical for both the compiled version that works flawlessly and the faulty version compiled with emulation and coprocessor detection, it would appear the compiler is generating some errors. I will be speaking to Alex (HiSoft) shortly and once again trying to work out a solution. Until I can find and send him a small snippet of code that fails it is very difficult to correct. While I fully understand users' frustration, nobody wants to have this problem cleaned up as badly as I do. I have invested many, many hours trying to determine if DynaCADD is at fault and have been unable to find any problems in the code. I will continue to work with Alex to get this resolved once and for all.

David Fletcher

Vice President, Ditek International

Classified Adverts

For Sale

Sequencer One Plus – £20 ono, Star 2400 Baud Modem, needs attention £15 ono, Unused Col/Mono Monitor Switchbox £6, Games: Nitghtbreed (Interactive Movie), Time Machine, Asterix (Operation Getafix), £4 each or £10 all 3. Imprint (24 pin-Mono) £5, Fontpac Plus Gem Sets, Castleton for 24 Pin 180 DPI and 360 DPI £3.50 each. Tel. Jon (0323) 500910. (30)

Cubase Atari (Latest) £200, Spectre 3.0 and Megaboard (Un-used) £350. Dr. T's Copyist Level 2, V1.51, £50. Stan – 081 954 3118. (31)

Set of 4 Memory Chips for STE. Removed on Upgrade 1 Meg in total – Offers. 0637 878070. (30)

Casio CT660 Keyboard – 61 Full Size Keys – 30 Voices – Midi in, out, thru £100 ono. Tel (0925) 814137 Joe after 6pm. (30)

Steinberg PRO 24 V3, Boxed with Security Key & Manual – £30. Phone Mark on 0274-670797. (31)

Silhouette, Autotracing Bit/Vector Graphics £35: Scan-Light, Hand Scanning ACC/PRG £12: Phone 0256 896879. (31)

Stereo-Tek Liquid Crystal Glasses for Atari ST(E) Stunning 3-D graphics in all Atari ST graphics modes. Works with Cad 3-D also comes with demos + GFA basic driver. £70.00.

Atari STM 1 Meg NO disk drive, works but fault on upgrade and mouse – so sold for spares, OFFERS around £45.00. Phone 081-767-4761 (London) almost anytime. (32)

19 inch Colour Multiscan Monitor believed to be VGA compatible, will work with Atari ST in Mono Resolution ONLY (NOT in Colour) Free to Callers ONLY, No guarantee. Very large and heavy needs two persons to lift! For info on above please phone 081-767-4761 (London) almost anytime. (32)

Publishing Partner £20 (No box); Digita Mailshot Plus £10; Digita System 3 (No box) £10; Digita Cashbook Controller and Final Accounts (No box) £15; Atari Pro-ductivity Software: ST Base £6; Hyperpaint £6; STOS £7; Games: Sim City, Turtles, Elite, Fighter Bomber – All 4 for £12. Postage Paid. 031-229-4566. (31)

Original Atari ST games for sale – Exile, Night Shift, Greg Normans Gold, Monkey Island, Lemmings, Space Ace, Falcon, Xenon 2, Corporation, E-Motion, Magnum 4, Gun Ship, Torvak, Chase HQ and Hard drivin'. The lot for £65, or will sell individually. Phone 0773 821776 for more details. (32)

AT-Speed PC emulator with connections for both STFM and STE – £70. Replacement internal floppy disk drive, double sided 720 KB – £25. Tel 081 422 9099. (30)

Mega ST 4MB Ram, TOS 1.4, ICD Adspeed 16 Mhz, Titan Ext Power Supply, Mono Monitor, Naksha Mouse, Joystick, Boxed & VGC Plus scores of Discs £325. ICD Fast 52 MB Hard Disk + ICD Software, Cleanup, Diamond Backup and Edge, XBoot 3, Perfect £275. Phillips CM8852 Colour Monitor + Switchbox £80, HP DJ500 Printer Plus Colour Carts and Booster £200. Didot Prof Colour DTP Software £225 plus more. Phone Gavia 0602 817198. (31)

Software – Megapaint II £45, Cyber Sculpt, Cyber Studio, Cyber Control – All Cyber Software for £ offers, Fish £4. All originals Boxed with Manuals. Tel Mark 0582 468664. P.S. Many thanks to all those who bought from me before. (30)

Notator SL – Complete and Un-registered £150 ono. Contact Paul 0709 813862 after 6.00 pm or will swap for Hard Disk in good condition. (31)

Easy Draw 2 (four disks) £25, GFA Draft with Manual £17, Degas Elite £10, The Sentinel (game) £5. 071 435 7664. (33)

Lattice C v5.51 Comprising 7 Disks and 5 Manuals £50, Highspeed Pascal £30, Deluxe Paint £10, Wercs £5, STOS Basic £5, All registered originals. Atari Books; Computes Atari ST TOS, Atari ST AES £5 each, ST Application Programming £5. Buyer Collects, 021 777 7302. Birmingham. (31)

Atari 520 STM, 2.5Mg Memory,

Authorware

If you would like to see your software featured in the ST Applications Authorware column please send us a review copy of the software and a rough outline of the advertising copy you would like to be printed.

Morse Master

The complete morse trainer and simulator, with realistic 'on-air' emulator and integral editor, with complete control of your listening equipment. In addition to sending, your Atari can also receive and decode morse from your own key using the supplied interface cable. Usable by novices and professional radio operators alike. Send Cheque/PO for £29.99 payable to Boscad Ltd at: 16 Aytoun Grove, Balbridgeburn, Dunfermline, Fife, KY12 9TA. Telephone (0383) 729584 evenings for technical information.

Pulser

A low-resolution programme which cycles the colours as you draw ... and keeps them moving. Create stunning graphics with movements. Every circle, line, square, ray, etc., can PULSE in any direction, all on the screen at the same time. £7.50 inclusive or £2.50 (refundable on upgrade) Demo 1 double sided or 2 single sided disks (state which). David J Fright, 113 Waytemore Road, Bishops Stortford, Herts.

STEN

ST ENthusiasts disk magazine - for your copy send a disk + SAE to: Dave Mooney, 14 School Road, Morningside, Newmains, Lanarkshire.

SynTax

The ST adventure magazine on disk! Reviews, solutions, hints, special features and much, much more. Runs in colour only. Produced bi-monthly. SynTax costs £3.50 an issue, £20 for a year's subscription. Cheques made payable to S. Medley should be sent to: 9 Warwick Road, Sidcup, DA14 6LJ.

Kitchen Design Program

Create kitchen plans, and elevation views to scale from a wide selection of units and appliances with worktops, pelmets, etc. High resolution mono only. Lawrence Elliott, 42 Gwaun Coed, Brackla, Bridgend, Mid Glamorgan CF31 2HS.

Clip Art

Clip Art specifically for Christian and Community Magazines. Seven disks of IMG images for DTP programs supplied with a printed picture catalogue of every image. Cost: £3 per disk plus P&P: total of £23 for the set. Cheques payable to: Peter Kempley, KemCom Designs, 21 Chart House Road, Ash Vale, Aldershot, GU12 5LS.

Calamus Manual

This self-tutorial guide incorporating sections on frame drawing, entering text, changing fonts and styles, importing text and images, drawing boxes and lines, loading, saving, printing, text rulers, headers and footers and page numbers. Available at £5 (including postage) from: David Waller, The Sandon School, Molram's lane, Great Baddow, Chelmsford, Essex, CM2 7AQ. Cheques should be made out to 'Sandon School'.

Genealogy

Newgen, my genealogy program, runs on any ST(E) or TT and is easy to use; it will print family trees, etc. Send large SAE for details or £17 for program. E G Richards, 2 Peckarmans Wood, London SE26 6RX.

Educational Adventures

For ages 5-13. 88% in ST Format. £12 each. 50p per disk for demo's. CVS, 18 Nelson Close, Teignmouth, TQ13 9NH. Tel:(0626) 779695.

RAE Morse Test

Selectable letter/number groups, thinking time, note pitch, morse generation from keyboard or CQ; plus save to disk, etc. Instruction manual and disk and SAE for more details. R. L. Tuft, 62 Admirals Court, Thirsk, North Yorks, YO7 1RR. Telephone: 0845-525082.

Sonix Sound Sampling

We will sample your sounds from tape to disk. Ideal for demos, games and your own programs. 3-day turnaround guaranteed. Write for free details to: The Lodge, Delly End, Hailey, Witney, Oxon, OX8 5XD.

IMg Internal Drive and TOS 1.4. £130: Phillips CM8833 Colour Monitor £75: Both excellent condition. Can provide some software if required. Phone Hodgson (0246) 418658 (Nr. Chesterfield). (31)

Spectre GCR, only six months old, hardly used – £225, That's Write V2 – £75, Datasound Sampler – £20 – Call 0275 375496 after 8pm or weekends. Also 1st Word Plus 3.20 with Manual, No Box – £25. (31)

3–Way Data Switch Box with Cable – £15, Quick ST 3 – £8, Atari Mouse – £5, 1/2 Mb Frontier Xtra-Ram Upgrade – £25, Trackmaster Monitor Stand – £10, Printer Stand – £5, Miracle 2000 Modem – £15, 300+ Sprocket fed white labels – £4, Lure of the Temptress (no bug), Microprose FI Grand Prix, Lemmings, Quartet – £10 each. Chess Champion 2175, Midwinter, TCB Tracker, Vvirus, Days of the Pharoe– £5 each. All boxed originals with manuals. – Address:– Alan Davies, 54 Bishops Road, Bury St.Edmunds, Suffolk IP33 1TQ. (31)

Mailshot, Superbase, Home Accounts 2, System 3, DG Calc, Hyperdraw, Knife ST – Used once. All registered and complete with manuals. Offers. Wanted:– Autoroute – France. Evenings 0670 – 511403. (30)

520 STFM – 4 MB SIMMs Upgrade, 2nd Drive, Superbase 2, Stunt Car Racer, Batman (All boxed), Citizen 110+, Laser Printer (Not working) £350. 0785 46783 (Stafford). (30)

4Mb STE, 2nd Drive, Datapulse Plus HD (52MB – 11mS), Phillips Colour Monitor, CM8833II, Forget Me Clock, Trackerball, Lattice C, That's Write, Diamond Back, Neodesk, Turbokit, PageStream, PageAssistant. Much more software + system manuals. All software latest versions. All items less than 1 year old. Totally Integrated System £850 ono. Some splits considered – Allen: Fareham (0329) 282988. (30)

Calligrapher & Font Disks £30; PageStream 2.01 £25; K-Spread £25; LDW Power Spreadsheet £25;

Pro-Data 1.02 £20; Hi-Soft Basic £25; Home Accounts 2 – £20; Timeworks DTP £20. All originals complete with manuals. Phone Kevin – 081-859-1614. (31)

STE 2.5MB, SM124 Monitor, Hyperpaint, Hyperdraw, Borodino, Personal Finance Manager Plus, Mortimer Plus, Various PD with Printed Manuals. £300. Golden Image Hand Scanner with Touch-Up and Deluxe Paint £65, ST User Jul 90 to Jul 92 with selection of cover disk software £25. Can deliver Stoke-on-Trent area. Graham 0782 325745. (31)

HiSoft FTL Modula 2 Developers' Version – mint condition, latest version with Wercs and Manuals £35, 2 x 256K Simms only £10, TOS 1.6 Roms (2 chips) £20. All prices include p + p. Contact – Kevin Cheung, Leicester (0533) 544491. (31)

Supra 85MB Hard Drive with clock – no bad sectors – £250, Star LC 24/200 24-pin printer £125, SM124 Mono Monitor £60, External 1MB Slimline Disk Drive with Internal PSU & Switch £30, NeoDesk 3 £15. Tel Jonathan 081-536 1828. (30)

Atari Mega ST 2 + SM124 Good Condition – Ripe for Upgrade Tos 1.2. Only £300 (or offers). GE-Soft SCSI Host Adaptor Driver Software, Gasteiner Case, Cable + Dead PSU! £75 or offers. Call Marcus on 081-852-6662 (eves). (30)

STE 512-with 4 Megabytes Ram and software, £220; Ladbrokes "Data Pulse" 52 mb hard disk drive (11 ms access time, no bad sectors) + Neodesk 3, £200; Golden Image Hand Scanner with Touch-Up software, £85; Rombo video digitiser, £50; Cumana 720K external 3.5 in drive, £30; Calligrapher Pro (Gold), £65: All boxed and with manuals. Call Dave 0705 698975 (Portsmouth). (31)

SC1224 Colour Monitor £130, Casio CZ1000 with stand £100, Cumana External Drive £40, LDW Power V2 £45, That's Write £45 (Cheap upgrade to V2!) and more. Call Steve on 081-539-1701 for details. (30)

Alfadata Memory board to upgrade ST/FM to 2/2.5 Mb Ram £85.00. Phone John Hutton on (081) 653 0621. Also available 16 RAM chips to upgrade 520 STFM to 1MB RAM for £25.(32)

Citizen Swift 24-pin LQ printer 192cps draft 64cps LQ. Four LQ fonts via Macro. 8K Buffer emulates IBM Epson & NEC single sheet & tractor with paper parking. Little used – unmarked original box & manual. £100. – Phone 0422-204199 any time. (30)

Supra FD-10, 10MB Floppy Drive, three disks included, clock, through DMA and SCSI. Capable of reading IBM 5.25" floppies, ideal for Hard Disk Backup or Primary Drive. £200 – (0684) 850481 after 6pm. (30)

Kempston Daatascan 105mm Hand Scanner (Mitsubishi) in original packaging with Daatascan Plus Software £40 including postage. Phone Mike on 0332-810785 (Derby). (30)

Mega ST with 4MB Ram, Adspeed 16 MHz, Mono Monitor, Ext Power supply plus 100's of discs / Boxed £350. ICD 52 MB Hard Drive plus Cleanup, ICD Software, Diamond Back and Edge Software, XBoot 3 boxed £350, Didot Pro Colour plus many fonts £350. Much more quality software for clearout. Phone Gavin on 0602 817195. (30)

Atari STFM with 2.5 meg memory (s/s internal drive). Boot switch already fitted. £150. Contact Duncan on 041-634-4510 (Glasgow). (30)

Boxed adverts are available for £3.50 per issue.

65MB SCSI Hard Disk with ICD Host Adaptor, Software, Cables & Internal Battery Backed Clock £250 ono. Ring David 519011. (32)

Casio FZ Sample Disks – Huge Library of quality sounds – also Sound Patches for most major Synths, with ST loaders. Sale or swap – Ring for details: 1/4 meg Simms (4 of). One Pair Upgrades A 520 STE to 1 Meg. Only £5.00 each. Ring Andy – 0532-430177. (30)

PageStream 2.2 £80, First Word Plus, Hisoft C, Superbase Personal £15 each, Introduction to

Word Processing, Basic Programming & Programming Utilities £10 each, P.C.Ditto, Flair Paint £10 each, ST/Amiga Format 2-13, ST Format 1-20,23,26,34-38,40. ST Club Newsletters 15-31, ST Applications 1-4, 9, 14-24, ST User 42 issues March 88 –Present + other ST Mags. 92 Cover Disks in Total. Offers. Phone 0626 654645, Alan. (30)

Wanted

Calamus Fonts & Clip Art: Sale or Swap – anything considered. Ring now: Andy 0532-430177. (34)

Colour monitor wanted for the Atari ST. Must be in good condition. Tel 0228 49853 evenings.

Has anyone got Manuals or copies for Epson GQ 3500 Lazer. i.e. Getting the most from..., Maintenance, Solving Problems and Ref Guide. Telephone: Hemel Hempstead (0442) 245705 Ask for Hadyn. (31)

Please contact me if you have any information about writing macros in K-Spread 4. I am trying to write macros that will assist a user completing invoice details. Chris McCarthy, 44 Collingwood Drive, Great Barr, Birmingham, West Midlands, B43 7NF. Phone: 021 360 9703. (31)

Autoroute – Tel Sheffield 0742 588383. (30)

1 Mb Simms for STE. Phone Jonathan on 0222 757022 after 4pm. (32)

DynaCadd. Long term unemployed seeks working copy - not demo. Tel: John on 031 226 7092 evenings. (31)

Hard Drive for STE. Anything considered. Phone Pat (0865) 774684 after six and at weekends. (31)

Hyperpaint – please ring 0909 770162 daytime or 0742 304545 evenings; ask for Rod Egglestone. (30)

Software: Funface, Monkey Island, Lure of the Temptress (debugged

version), Intro to word processing. Phone Steve on 0246 201263 (Chesterfield). (32)

Calamus Printer Driver for Cannon BJ-10E - B. Allen, 32 Saville Drive, Horbury, West Yorkshire, WF4 6JP. (30)

Yamaha CX5M/128 with Disk Drive and Software if poss. Keyboard not required. Please send details to:- M. Chapman, 24 Beamsley Drive, Wythenshawe, Manchester, M22 6UL. (30)

Cannon Bj10e Printer Driver for Calamus. Phone (0257) 252875 evenings – James. (30)

General

Membership of the Cheshunt Computer Club is the essential accessory for your Atari. If you live within reach of Herts then give me, Derryck Croker, a ring on 0923 673719 with your name and address and I will send you details. (R)

Crystal Tower BBS 01-886-2813 24hrs 300-2400 Baud (Towernet System) Atari ST, PC, Languages, Comms etc + much more. All welcome. (R)

Guide Dogs for the Blind Appeal – Please send used postage stamps to help this worthy cause to: 19 Dunloy Gardens, Newton Abbey, Co. Antrim, BT37 9HZ. (R)

STARGATE BBS: 0476-74616 V21 V22 V22BIS V23 Atari ST section; also PC, Amiga and Comms areas. Comms help and advice for ST and PC via ST Editor. Give it a call and leave a message. If you need comms software get Uniterm from the ST Club. (R)

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Contacts

Falcon contacts - have you got any Falcon demos or utilities, etc.? Andy, 0435 882121. (31)

Wanted: ST Contacts, swap PD etc. Write for a list. All letters answered. Dave Moss, 22 Beverley Close, Chessington, Surrey, KT9 2RL. (33)

Help

I have a Protar 100 DC Series II Hard Drive (System Software 4.1.2) and a 1040 STF. The drive Formats OK, but attempting to copy a large file from floppy to the drive results in 3, 4 or 11 bombs. Turbodos helps – I can copy files of up to around 50K. The conflict must be with TOS 1.2. Can any one help? Protar and Cambridge Business Software don't answer my letters. Contact me on Internet Emeli c/o Panther & Carla Dist.Unige.It, or write to Clyde Meli, 36 Ta'xbiex Terrace, Ta'Xbiex, Malta.

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ST Club Product News

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