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Page 6 Publishing's

**NEW**

# ATARI USER

*The Resource for the ATARI CLASSIC and the ATARI ST*

Issue 72 - June/July 1996

£2.50

## FOR THE ATARI CLASSIC

### DISKS AND DOS

*Find out what actually gets  
written onto your disks*

### BIG SCREEN

*Use the screen margins for  
your own displays*

### MULTI FORMAT

*Format and write DOS how you want it*



## FOR THE ATARI ST

### ATARI WORLD

*A review of the new ST mag*

**PUBLIC DOMAIN** *a continuing look at the Budget range*



PLUG ... THE TIPSTER ... COUNTING SYSTEMS ... SMOOBY HARDWARE ... NEW SOFTWARE ... AND MORE

# This issue's ...

## Thanks

Les Ellingham puts it all together and fills in the gaps but the real thanks go to the following who make this issue possible

Sandy Ellingham who takes care of all the other work, advertising and mail order

For their regular contributions:

John & Dawn Paul Moon Ian Fitzgibbon	Alan J. Palmer Graham Murray Mark Wilson
--	--

For their contributions this issue:

David Brewster Ann O'Garra David Inyang Leslie Brown	Jeffrey Chan John Fookitt Paul Holins R. Thomas
---	--

Thanks to all who continue to support the magazine and the PD library. Your last issue was to support the Anniversary Shop. Go to it!

Some of these folks have supported us from above the horizon and without them we would not be here. There are having articles published for the first time. All are to be thanked for sharing their contributions with all who read New Atari User

## HOW IT'S DONE

NEW Atari User put what you see is not only your Atari NOW Atari USER has always been created entirely with Atari equipment, usually on the XL, but more lately with a Mega II\* and other such things. We write PCs on MacIntosh machines (which a Mega II\* can handle) to do the 100,000 character, Super II\* and Link, a 100 character 10,000 1280 graphics (PDP-11) machine. DTP is a couple of 1280 x 1024 dots, 300 lines, 300 DPI printer. Principal software used is Front and Free Pascal (Pascal) on the XL. Other software includes Bit-m, TextEdit, Turbo Pascal and various custom service programs on the XL/50. Articles submitted on 5.25 or 5.0 disks are transferred onto to the II\* via TRSDOS. Programs are coded on the II\* and printed out directly for printing to allow the typesetting to completed. All major editing is done with Front and pages are laid out with Free Pascal Publisher. Each page is output directly from Front (lines to a 100 character) in which printers finished pages (except by us) are done. All text is left to stay in the format and photos.

Note: We are quite as easy as that but you get the idea

## Inspiration

New words also have! The opportunity monthly came up to get a couple of new CD's but what to get. Having let you see how great it was I'd love to get up to three issues! Then the South West Show did a feature on female singing singers which included Mary Chapin Carpenter so to be different, I'm writing songs to be added next month. Sure there were many singers, like Mary Chapin Carpenter, I had considered many songs you will know she sang by Martina McBride. The lead one I've had ready for The Storm, a compilation by Holly Throsby and the Way That I Am by Martina McBride. The format is recorded with some well known songs (I have my female artists but also some regular top songs. I'd want the instrumental and the demo of songs while I can. The Martina McBride is such a beautiful and after the first two weeks I think I'll be ready to make her there is all changes and changes in good (I have with ideas of Jane Birn, Michael Johnson and when you're a singer of amazing tracks. From the January we have been in the beginning and it's a real thing. You can't see anything you'll enjoy, even if it's a thing. I'm going to see in July. Some more!

## CONTRIBUTIONS

Without contributions from its readers, NEW Atari USER would not be possible. Please send names and addresses to the readers in advance, articles, programs and reviews for publication, programs need to be submitted on 5.25 or 5.0 disks or for the extended software possible on 5.25 or 5.0 disks (200 or 2000). We wish to encourage your participation and we need your input for submissions. If submitting information, we will program or article and submit to:

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PAGE 6 PUBLISHING'S

NEW

# ATARI

USER

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## SUBSCRIPTIONS

### MAGAZINE ONLY

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### DISK SUBSCRIPTION

A disk containing all of the disk programs from each issue of NEW Atari USER is available either separately, or as an subscription. Single price £14.95 per disk, or disk subscription rates per annum £15 a year. Subscription rate (3 issues)

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## ACCESSORY SHOP CLOSEOUT

**T**he time has come for a reorganization of our Accessory Shop. It seems unlikely now that we will find any more software for the Atari as I have decided to leave what the Americans call a closeout sale on the remaining items of software. We will in future concentrate our "wider" sales on the Public Domain library and the items of software that we have developed ourselves and I am sure that you will continue to support us in this.

Right now there are some super bargains to be had on a variety of software. This is the time to buy everything that is not already in your collection, you may never get the chance again. You will find top quality ROM cartridges at just 42 cents, disks from 50p each and cassette tapes at an amazing 25p each! Maybe this is the time to give Transmolek a go. Each year we'll do cassettes for a couple of quid and transfer them to disk to give your system a new lease of life. You have always supported us magnificently with various sales, so I ask you to give us that support once more. Let's see if we can clear all this software to one go and not leave it hanging around.

One extra advantage of closing down the software sales is that we will no longer have to advertise the software in the magazine and so can live up several pages of the magazine giving us additional options for future issues.

## A GOODBYE

For almost as long as I have been producing Page 6 I have been reading the American magazine *Current Notes* which I have always considered to be excellent. Its editor, Joe Wain, seems to have had the same path as myself over the last 11 years and I know how much goes into producing such issues. Sadly, Joe has now decided to call it a day following a recent illness which he seems to find might have been exacerbated by the pressures of producing a magazine for so long (he lives on, Joe, it takes its toll). *Current Notes* will continue but from the way many subscribers say goodbye in the current issue it looks like it may spread its wings and move away from Atari.

In his last editorial Joe makes the comment: 'The columnist have been a significant contribution to the ongoing success of the magazine. For the past 11 years, articles have just shown up when it was time to put an issue together. With a solid group of strong, regular contributors, I could always count on an interesting and readable magazine even though I never knew from month to month what would appear.'

I could have written those words myself about Page 6. Take a bow everyone who is reading this who has made a contribution to the magazine over the years. Those who support us by subscribing and ordering software now know just who are the most important elements of this wonderful enterprise.

One thing gleaned from *Current Notes* is that a correspondent recently called Atari to enquire about technical support, for the RT to be told that Atari are no longer a computer company. Now haven't we really suggested that for some time?

*Les Ellingham*

# NEWS

## GET PLUGGED IN

The Atari Classic Programmer's Club are to shortly introduce a new item of hardware for the Atari. Scheduled to be available in June or July is the **ROM BANK**, a hardware device that allows several ROM cartridges to be connected to your Atari at one time.

The ROM BANK is modelled on the ROM cassettes that were once available for the Atari 2600 game console. Several cartridges can be connected, most conveniently to your Atari and the desired cartridge selected at the push of a button. A single ROM BANK has room up to 8 cartridges but units can be daisy-chained together to enable more cartridges to be connected up. The ROM BANK fits into your cartridge slot and requires just a small hardware modification to be performed in order to fit a slight wedge inside the computer.

Two versions of the ROM BANK will be available. The Master unit contains the hardware

modification and an on/off switch that allows you to use disk and cassette software with the unit without having to change the cartridge slot. The Slave unit is an extra 8 slot unit that can be connected to the master unit and set up in a tree-like structure to accommodate additional cartridges.

The ROM BANK Master unit will retail at £90 (£85) and the Slave unit will be £35 (£30). A discount is available for members of ACPC. Prices include postage and packing. If you want to place an advance order a substantial discount is being offered for orders received before 30th June 1989. The Master unit will be available at £45 (£40) and the Slave unit at £20 (£15). ACPC promise that cheques will not be cashed until the units are ready for despatch.

Orders, or further details, should be addressed to David Whit Justice at The Atari Classic Programmer's Club, Fox-Tyldes, Chapel Cook, Loughton, Angmerley, Graywold LL71 7UR.

## SOFTWARE COPYING

A few years ago we would have frowned upon any disk drive software that made it possible to copy protected software but times have changed and nowadays it is important to be able to back up all of your software. In many cases there is now no possible way of obtaining replacements for the majority of software.

Chase Computers, run by a long time supporter of Page 6 magazine, has recently announced the **HYPHER DRIVE** enhancement which can be added to your disk drive to allow you to copy most protected software. The package comes with its own software and a 28 page manual and will work with most drives, including those with 135 Double Discettes. Retail price is £28. We have not yet had the chance to test the device but similar devices have appeared over the years and we have no reason to doubt its efficiency.

For more information contact our old friend Chase Computers at P.O. Box 30, Newbester RD19 8DX. Telephone 0452 737 0948.

PLEASE NOTE  
THE NEW  
TELEPHONE  
NUMBER  
FOR PAGE 6

01785 41153

effective now!

# Mailbag



**Looks like that postman is carrying a full sack of mail!**

*Write a few letters this time, so without further ado and before the Dreaded Deadline Dave catches up with me, on with this month's Mailbag ...*

**Allan J. Palmer**

## SOME THANKS

F I'd answer from Plymouth in Devon writes to say he "... appreciates and likes the new format of the magazine." He is "... now 70 years old and can remember when Page 6 was sold on a tape cassette mounted on a card" - this surprised me. Mr Jones, as I don't recall, PAGE 6 WAS never sold on cassette due to the costs/problems in tape duplication and posting; perhaps he's got copies of things like? F I conclude

with "... keep up the good work (as long as you can because) to me your magazine is an old friend!"

F (You seem to be getting confused Mr Jones, understood only so, with a tape cassette magazine put out many years ago by another publisher. The magazine consisted of a tape with articles and programs mounted on an A4 sheet of card. We had a full color advertisement on the back of the card, which cost us £250 and which was a disaster as we didn't have one single reprint! Apparently, because it was not clear that our was an advertisement most people thought that we were the publishers and as they had already bought the product they was so used to it, as my more! The tape was supposed to have had about 15,000 distributors and we had not one enquiry as that was £250 wasted. It turned out not to be quite so bad as the ad at the company returned the cheque but it still cost us around £100 or so for the file for the advert. Incidentally, a few issues later the tape may be appeared. Ed.)

F From Warwick in Devon, Tom Allen writes a short note mentioning that his "... first experience of the computer world was a 48. Tandy with Mini BASIC ..." before he acquired an Atari 400 and later an 800XL. He has had "... much fun with Music Composer (ROM) all the way from Hayes's Empire Grant set to Ed's Drinky songs ..."

and "... has more than for this kind of involvement, just cause I am retired".

## PRINT SHOP

Jack Vincent in another Devonian - from Newquay - he requests about Shredhead's Print Shop? "I have designed several posters lately, and have been asked to reprint them. It's not too hard to do provided one has kept a copy, but it would be easier to do if it was on a file. Is there any way to Print Shop to save to disk a layout once one has designed a card or poster? Also, how can one unlock the main disk to add things to it?" Unfortunately Jack, the original version of Print Shop for the Atari, Apple, Commodore (and even IBM) didn't include this facility - presumably because they couldn't work out a file format to cater for all the possible designs and their additional flexibility to re-load previously saved designs ... who knows? I am unsure what you mean about unlocking the main disk to add items to it. It's not technically to add other programs to the master disk in case you re-use the original files - the only recommended addition was to use the Print Shop Companion disk to upgrade the original with the additional Companion features. Perhaps you could write again to explain what you mean.

## DISKS

Dave Bennett from Coventry send a letter about a number of observations. He says looking at a recent issue he said "... a mail had some old, small IBM disks so I now have plenty of 5 1/4" disks that I can reformat for my needs. Some of the disks were High Density (model 3841) and others Small Density (M-2112). Both originally self formatted to 512K according to the labels. I also have a box of HD 5 1/4" disks that I get in error for my 386 some time ago. I have used the 5 1/4" disks as backup disks with no problems for some time, but seem to remember being told that HD disks could cause problems, even when formatted as normal Double Density disks. Do you have any advice or comments please?"

F As regards, 5 1/4" disks for your Classic Atari, you should be fine any problems. As I've never used an HD, I can't comment on the 5 1/4" disks - can comment on under recording that the HD disks only supports 10 format? I'm sure if you were knowledgeable HD users will be able to comment.

F There also reports that another car had side by side disks for 'body' and 'brake' - he's unsure to know if these names are still available and what they are about - can anyone supply information? Following the questions to

another column about the availability of disk storage issues, Dave says he was looking for storage issues for 5 1/4" disks and got mixed response - seems no longer stocked. Issues for 100 disks sold recently for 2-3 pounds on CD (kickstart) and some out of stock, but finally found a shop that kept all of them on hold price for £2. Dave advises be persistent and check your local computer and office equipment shops.

## OLD PROGRAMS

Dave Bennett also comments that he collected the original Atari User magazine from issue 1, but only started getting the issue disks when AU and PAGE 6 merged. Dave mentions "... there were many good program listings that I never used in the original Atari User, and it seems likely that others may not have seen them, or not bothered to type them in. Does Page 6 now hold the copyright to these programs, and if so could some of the programs be put on floppy disks, possibly with a short update text to the magazine?"

F This is a question for our retirement publisher to answer, so I'd have to hand this over to him. In the meantime, I trust you're satisfied that Page 6 has extended it's list of back issue disks back to issue 6 and now available

with, hopefully, the others to follow next time.

[The question of copyright on programs published before we bought Atari User may never really be established but I cannot foresee any problems in our reprinting any of these listings. The problem is that we do not have any back issues of the old Atari User and therefore have no access to either the program or the articles. If any of the authors of these programs would like to see their job listed again, and they will have copies of their original submissions, then we would be delighted to consider them. Ed.]

## MONITORS

Responding to an enquiry in a previous issue, I write from Paul, North Hants who writes to enquire that with his 1300E and STX "... I have a Philips FM 8050 monitor with the 1300E connected into the magazine video input. This comes from the monitor output on the SE in the video in and results in phosor workers. The STX monitor output connects into the SCART socket on the monitor. Both computers can be on at the same time and the picture switched from one to the other with the input switch on the front of the monitor."

From Brighton, regular contributor David Stewart asks how this can be done on the subject: "The most common monitor





In my experience in the Philips CM9330-II colour monitor, they are sold regularly secondhand in Micro Mart for £109 - £148 and can be converted by a 3-pin clip splitting to two phone sockets (see article, see computer video). This monitor gives a great resolution. Ideal for 68 colour programs like SAM Desktop, and has a green screen mode that is excellent when using a small processor.

↑ Thanks for the info, Mr Wright and David.

## MAXIMISING MEMORY

David Dawbrook observes that he's "... a great believer in maintaining the Atari, so I am curious as to why most, to no games or utilities (FD or non-removable) use 128K or upgraded computers. There are just as many, if not more, 128K+ Classic Aetas as there are 64K ones, so it would still be profitable in program for the extra memory. Yet they are totally neglected! What is the point in people upgrading their machines if the extra isn't utilised?"

↑ Well David, I think we're touched on this subject before (where and you have to be a veteran user) - whether or when/when you can't afford to upgrade their machines because there aren't software to use the extra mem-

ory; software companies didn't produce programs that used the extra memory because they could only be dealing with a small percentage of the market because most people hadn't upgraded, and so on ... Are there really more upgraded Aetas than standard ones?

↑ David has also "... been experimenting with DLI horizontal colouring in pictures, this is made possible by loading 62 sector MicroMaster or Koda files into an old NASU (page 6) issue program called Colour Enhancer and adding up to 128 different colours to them. Some of the resulting files have really got me thinking why, apart from being a standard, all pictures files created on art programs are limited to 4 colours. What a waste of colour! I would be quite happy to see an upgrade with this DLI support as standard, with mouse controlled tools, pull down menus, and many additional features like those already appearing in menu-art programs like SAM Designer. This would be quite possible on 64K machines combined with 64K, if not on 128K Aetas. Although SAM Printer has made some headway in this direction with DLI colouring and mouse control, it's still has a long way to go before it's seriously user-friendly. Its mouse control is very jerky, tools are awkward, DLI colouring is confusing, and of poor resolution."

↑ Correct me if I'm wrong, somebody, but aren't there a graphics program from Real Soft in the U.K. that used DLI to provide a greater range of colour? It's name escapes me at the moment, but I'm sure some of our occasionally-mentioned readers will be able to respond ... (It was Nicholson Drive, Ed.)

## VIRUSES

Following M Threlk's query about Atari viruses, David Dawbrook writes that "... there are a few viruses around for the Atari. I managed to find out about these particularly nasty ones, one called 'Three Blood' and another that acts like a Trojan horse, allowing it to pass the various detectors. This information was found in issue 8 of MegaMagazine and Computer's Computer Viruses book (although only two pages are dedicated to Atari.)"

↑ Can anyone add any further info? Are we talking about 67 viruses only here?

## BACKING UP DISKS

Bikie Jones of Gillingham, Kent enquires about making disk copies of two programs: "Has anyone come up with an answer to making a working copy of ATARI WRITER, or have I missed it? How can I

transfer HOME FINANCIAL MANAGER, the old TRS80 EMU program to disk?"

↑ I'm not aware of anything other than the commercial program 'ChipMark' which allows you to make a back-up copy of the disk version of AtariSoft; but a reader may be able to supply better information. (There's an article in this issue for a new drive modification called HyperDrive which may work, but it has not been tested by us.) Ed.] With regard to Home Financial Manager, this cassette-based program was one of the first released by a UK firm when the Atari 800 and 800X first appeared in this country in 1981/82. It was a notable program but even if you transferred it to disk, I believe that without re-writing sections of the program, you'd find that it will not go to write to disk files to create. Has anyone experimented in this area?

## PORTUGUESE POWER PROBLEM

Bikie Jones also gets us to say that "Pedro Alexandre Rodrigues of Portugal has had some bad luck. His 1300E gave up a blank screen, no response of any kind. He purchased a 1300E through me, complete with PSU, manuals etc., it had been certified as per Micro Disc Mart's Data Sheet No 1. He tested it, all OK. Then he

connected everything up, disk drive, monitor, printer - everything OK. Then later he was loading Jump Jet and everything went blank, the same as his first 1300E. The only clue to a possible cause is, he used his original PSU! Trying the PSU I sent, of course made no difference - the damage had been done. Has anyone had these experiences? This fault and how to fix it, having spent money and getting nowhere, so he needs an answer to solve his problem. There is, I am certain an 'egg head' out there who can tell him what to do. He does not know I have sent this letter to MEGAMAG. Many thanks in anticipation. We cannot afford to lose members."

↑ I'm so 'egghead', but the first thought that strikes me is that there may be a difference between the Portuguese mains supply and that in the UK, resulting in an unexplained/damaging current hitting Pedro's XE - or am I backing up the wrong theory? Don't be more cheerfully misled of you ...

## AUSTRALIAN COMMENTS

John Strong from the Lord Howe Under has a number of observations:

"In issue 70, you asked what we would like to see in future issues. I wish to see MEGAMAG expanded at least another 1-2 pages. The most important part of any hobbyist magazine is the letter column. In the absence of any real news, MEGAMAG brings a sense that the magazine is current."

↑ Thanks for the rearrangement ideas, but one factor that determines the length of MEGAMAG is the amount of correspondence received - if I don't receive letters then you don't get a MEGAMAG column. I'm sure my magazine editor will confirm that the volume of mail received affects only a small proportion of the magazine's circulation. I try to include at least something from every letter received at the Page 6 P.O. Box, and when I complete this issue's column, my file will be empty and I receive a further packet from Les and Sandy. You also have to remember that the gap between the appearance of one issue and the next deadline for the next is small, so by the time people have read issue 72 and written to and the mail is then passed down to me, I often only have few evenings in which to compile the column and get it sent off, and unfortunately I rarely have few free evenings consecutively so some columns have been close to the wire and a bit ragged at the edges. What's the answer? Maybe send plenty of letters that ask interesting questions or pro-





side add'l information - letters that make a point of trying to avoid including the computer layout type letters. I'm sure you're not interested in seeing these in print, although of course I appreciate the sentiment. As for commentarial letters - well, if they are insightful and constructive, let's have them. (Word of warning)

➔ John also suggests having material from earlier issues reprinted - this I suspect is another question that Les should answer; I note that back issues are available from issue 32 on downwards, and we now have issue disks going back to issue 10.

➔ John further enquires about User Groups: "I'd like to see an article on the remaining User Groups for Asia & Oceania around the world. User Groups could be invited to submit their details (name, contact address, machines supported, IBS, etc.) and perhaps a short overview of their club. If this information was submitted on disk then it would alleviate the effort required to transcribe the information."

➔ In the past, I believe there has traditionally been limited response from User Groups, but I'm willing to give it a go. So here's a challenge for us: since Asian User Groups - send us your details, including a short overview and preferably on a 5<sup>1/4"</sup> disk with a printed hard copy and I'll see if I can produce some MAILING Sp-

cial about User Groups.

➔ Finally, John has a question about XPS81 disk drives: "My Australian XPS81 works just great with a U.S. Atari computer, but my U.S. XPS81 will not work with my Australian PAL computer - does anyone know why? Don't get, then, anyone know how to modify a U.S. XPS81 for use with a PAL Atari?"

➔ One more matter? (My first question is how do you tell the difference between an Australian XPS81 and a U.S. one?) - and that's not the food for a job!

## LACE COMMENTS

I was pleased to receive a copy of the latest LACE (London Atari Computer Enthusiast Newsletter) and a copy of the minutes of their most recent meeting from their secretary Roger Lacey who may be contacted for more details of LACE at 47 Alvington Road, Crofton Park, London SE14 4AL, (phone: 0381 680 2548). Roger's accompanying letter begins with these comments:

"I have tried to like the new format of the magazine in the AS incarnation, but have decided that it is no longer a magazine - certainly neither as comprehensive as it used to be, even in the early days. I realise that lack of advertising is a problem, perhaps this could be attributed to

me? In the past my user group required all the cost and it resulted just too expensive for the amount of space. Wip out of our league in fact. Perhaps, in my mind at least, New Atari User has been degraded to Newsletter level, whereas it is still purported to be a magazine. ST Applications manage a monthly AS magazine at £3.95. Issues 8, 15, the Newsletter of the PALU, as it was, produced an AS size magazine, and we at LACE will do, albeit not typed as such. There seems to be so much missing too. The ST section has detoured away to just a few pages. There are no large type in BASIC listings to refer to, and of course the type-face is smaller. I do not like it thing back!!"

➔ What I gather you're not so keen on the AS format, Roger - ... Well, yes, I would like to respond to your comments - and there are my personal views (please remember that I only compile the Mail-Ag column, and am not involved in the editing and production of the rest of MAIL). I'm sure Les will add his own comments as appropriate. You say MAIL is "no longer a magazine ..." and "...has been degraded to Newsletter level ..." I'm unclear what your definition of "magazine" and "Newsletter" are. You seem to equate page size with status implying that a magazine can only be produced in AS size, and that anything in AS size (no matter how well pro-

duced) is a Newsletter. My personal view is that the only difference between the MAIL that was and the current incarnation is the page size, the paper used, and the inclusion/exclusion of listings - basically, apart from the size it shows really any difference between the content of the publication now and its previous incarnation? I've 1 comment on the cost of advertising - I'd like to invite you to discuss that with Les. The cost of ST Applications as I own's own page is with A&O is three times someone else's. You comment on the MAIL's AS size newsletter appearance as a AS magazine or a magazine? & I/O also had an erratic publishing schedule. With regard to the exclusion of large listings, you should have some idea that Les has experimented with this re-introduction in issue 71 and papers to make any technical problems encountered. Les also specifically asks me to point out that the large-type used in the AS issues is NOT smaller than in the AS issues! (There must be some optical illusion associated with the page size or something ...). Thank you for your feedback, Roger, without such comments the Editorial team don't know if they're doing the right thing. However, occasionally, perceptions may be clouded by misunderstandings of what constitutes the objective of the publication. I don't really add much to Alan's response except

to say that I agree with his comments. Surely the difference between a Newsletter and a magazine is that the former is addressed mostly to members of an organization and contains matters relating to the running of that organization, like the minutes of meetings, while the latter contains articles and information of a general nature not restricted to the interests of a small group. As to advertising costs, we have always tried to make these competitive with other publications and they have always been lower than any comparable magazine. Perhaps Roger has never enquired of advertising costs in magazines such as ST Forum when, last time I enquired, was asking over £1,000 a page. I just wish that we could have got some of that scale of advertising income over the years, even Alan did't pay that much when they finally placed a full colour double page spread many years ago!!"

➔ Roger also asks to some reliable information. First in response to previous letters about Classic Atari power supply units, he asks to the previous list the following:

Description	Price (incl. VAT)
1010 Cassette	£54.00
1020 Filter	£54.00
1100 Supply unit	
1020 Power	£54.00

"Incidentally, the 850 interface and 1020 filter pull less than 0.6A from the 3.0A supply transformer so a smaller placement can be

sought if necessary. I have successfully placed six extra lead into a 1000-watt transformer and it will run both a 1020 and 850 or 1010 and 850 or any combination thereof, safely. Turning off the individual components can be a problem sometimes due to the power switching arrangements when no connected however."

➔ Thanks for this information, Roger - perhaps you can help Eddie Jones with Paolo's power supply problem elsewhere in this column?

➔ Roger continues "...From Kenyon's article on Static Discharge in issue 70. Although fairly comprehensive did make some misleading and incorrect statements in the summary. I will describe what is engineering practice in the small and ever decreasing telecommunications company I'm at, that's WARNING: When working with static sensitive components NEVER directly touch (generally pointed), and NEVER use a conductive work surface. There are dangers and can be fatal. NEVER use a soldering iron with a grounded tip. Static in this instance is referring to Static Electricity. The nature of electricity is to transfer charge from a higher potential to a lower one. If this transfer takes place quickly, heat is generated and this causes damage. If an item of person is connected directly to earth, any charged compo-





ment, causing static current will then discharge its potential quickly, possibly causing damage to the component. In other words it is not just over-voltages that can cause damage, in fact any difference in potential between two items can cause a discharge of static electricity, which can cause equally as much damage to a component and can cause irreparable damage to the sensitive tracks or components formed within a microchip. Even a single transistor can be fatally damaged in this way and these are generally considered to be robust components.

The solution is to make everything "leaky" to Earth. The work surface should be insulated but have a conducting anti-static surface to equalize charge. Professional anti-static work coats are constructed in this way. They have metal dusts embedded in the conducting anti-static and allow attachment of anti-static cords. These cords have curved limiting resistors of 1 MegaOhm at each end of the cord and can be used both as connections between work-station and wrist strap. The anti-static wrist strap, too, should be connected via a cord to Earth.

We are now talking quite major resistance to Earth, 4 MegaOhms per cord plus the work-station resistance plus the 4 MegaOhms to the wrist-strap connecting the user to Earth. Insulating the linkage current and corresponding

Static Discharge is negligible. Certainly a different picture painted here than in Peter Kervin's summary. Incidentally, the reason the cords have a 2 MegaOhm resistor at each end of the cord is safety, if the insulation breaks down in the middle of the cord while a user is wearing a conducting wrist strap, he is protected by that 2 MegaOhm resistor.

I do hope you print this if only for the safety aspects of anti-static precautions."

## LISTINGS FORMAT

From *Stringbeane* in Kent, James Austin sends these comments on the listings format: "On receiving issue 71 of NAM I was intrigued to find the changed listing format. Being one of the people who led the listings should stay with the magazine, I support the change and feel it is necessary if the AD format is to be maintained. However, the new listings are hard on the eye - even a healthy 54-year-old like myself has trouble reading them. Just what are half the inverse characters supposed to be? It is also very difficult to type them in. I have just started typing in 'PLA9888' from the magazine, and I keep on making mistakes and misreading an N for an H, or an L for a 1, for example. Perhaps it would be better to change the listing font altogether, instead of just considering it down to readability? Any way, the listings are going to be harder to read now NAM is in AD format. Perhaps it would be better to remove your database and go back to AM? That way, all these problems would be resolved. Not only is AD easier to read, but the listings would be easier to read and type-in. I believe that many people would prefer that, even if they had to pay a little extra for a subscription. Perhaps it is about time we had a reader's poll to decide the format of the magazine, and perhaps to see what types of articles and features everyone would want in the magazine? Perhaps we should have an issue about the reader's different views for their Adnet, and what they do with it in their spare time? Perhaps YOU should write an article about what YOU do with it in your spare time? Go on, what is, even I will play Database! (smiley) Do the subject of Readers' Polls, when was the last time we had one? Perhaps we ought to have one to vote for what we think is the best program/article in Page 6 for 1988, and who has done the most to help the Adnet during the year. (Should be interesting). These ideas are only my opinions, and I am only a small part of the Adnet community, but we must all share ideas with each other to keep NAM interesting and

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information. It would be good to know what your ideas are for the future."

I thank you for your comments, James. Let me say to his editorial in issue 71 that he kept the new listing format would look satisfying that he would be reviewing the first output. As you've indicated there are problems with the clarity of the inverse characters particularly - it's a good job there weren't any machine code strings included with inverse special characters (I'll leave it hard now to be in comment on the future format and content of the magazine and the possibility of Readers' Polls - a poll only works, if raised, if you get a large enough response).

Well, James on the listings go it's about time. You are the only one to have been mentioned enough to rate expanded but in a discussion at the recent AMN show another reader said that it worked very well! The problem is one of proportion rather than anything else. In the previous issue magazine the listing were reduced to 50% of their original size to fit two columns in a page. To do that with the current magazine would mean reducing to about 50% and that would make them almost unreadable. The alternative would be to use the same size as before but the would mean a 1 inch column on every page and would take up three times as much room in the magazine. The option that I chose was to use a condensed (space) on the paper and use



1 full size. It is not ideal but I felt that it worked. Also, if you recall where there was a short program with substantial machine code strings printed in a much larger size. If anyone has the perfect solution, please let me know. (Ed.)

## IBM KEYBOARDS

Regular NAM contributor Fred Stone of Hingham, Bedfordshire sent this information in respect of IBM's recent, exactly about PC keyboards. "The original IBM PC was supplied with an 84-key keyboard. This was based on the standard QWERTY type writer layout, with numbers on the top row. On the left-hand side there was a bank of ten function (F1) keys and to the right a calculator-style keypad, which doubled up to provide cursor movement ('arrow') keys. This layout was pretty standard until the late 1980s although the IBM AT machines launched in 1984 featured a slightly larger design with the Caps Lock and other toggle functions now operating.

Towards the end of 1986 the 'AT enhanced' keyboard standard was introduced. This type is endowed with between 101 and 103 keys, depending on national variations. The number of 'F' keys has increased to twelve and they are lined up across the top row, along with Escape



and some other functions. The arrow keys and others are separated out so there is no need for enhanced doubling up. An additional benefit for touch typists is that the 'T' and 'Y' keys have small ridges to aid location.

There have been several variations on these designs (such as AT enhanced which doesn't have the status lights) but the AT enhanced keyboard is well established as the basic standard. Certain companies (e.g. Amstrad) have used alternative layouts but they are generally not well received. Microsoft recently came up with an innovative ergonomic keyboard, intended to reduce the risk of repetitive strain injuries.

Although all these keyboards will work (to some extent) with just about any PC, the only complication is that there are two kinds of micro-sites. The 2-pin Dte type referred to by Mr Tomlin is very common but some manufacturers use a smaller 6-pin 'D50' connector which originated with IBM's PS/2 machines. If you end up with the wrong sort, you can buy a converter plug to make works. Finally, if you find that some keys produce the wrong characters then you probably need to tweak the BIOS line in your AUTOCONFIG.BAT file - but I won't go into that now!"

**There's more!**



## BEATING BRUNDLES

Reginald Hatch of Doshier in Berkshire has tried to follow the "Speaker's Move in Issue 7" to modify his BRUNDLES! Game disk, but the program he has used to make it back up says (Roger Duper - Callie in PDW 98) allows him to copy the disk, but the disk editor supplied on that PD disk only refers to single density disks. So, to get sector 720 on HighLevel is unable to modify sector 831 on per the hint. Can anyone recommend a sector editor that copies with enhanced double density disks?

■ Finally, I made a brief mention of PC software magazines that allow you to run an Atari file emulation on a PC in last month's column. Since then, I found a copy of the PC version of this on the CD-ROM cover disk of one of the many re-released PC magazines. I had an interesting coming using an Acorn A4000 (read

with a PC card) to copy the files from the CD-ROM to the Acorn's hard disk PC partition and then to PC mode running the demos included via the PC Monitor utility. It was quite a pleasure to see the Atari Mac screen with 800x600 prompt and the 000 1:5 menu appearing on the monitor of the Acorn which was emulating the PC which was now emulating the Atari 8000! This could well be the future for the Atari Classic. By my estimation you should be able to get about 10 single density Atari 514 floppies onto a single IBM-format 350 100-disk. Once done, from TRWALG tells me that he has successfully used the commercial version of PC Monitor to run such things as Print Shop from the PC. How anyone else out there made their PC a nice home for their Classic Atari? (By a strange quirk of fate there may not be a review of PC Monitor in this very issue. Mac Alter also been listening to the same music again this time? Could his be another case for the X-Files? Ed.)

**Air your views on all things Atari or help your fellow users with their queries - even ask for help yourself. It's all interesting. If only you write it down. Here's the address:**

**MAILBAG**  
**NEW ATARI USER**  
**P.O. BOX 54, STAFFORD**  
**ST16 1TB**

Page 6's New Atari User

# BACK ISSUES

**Back issues of NEW ATARI USER are still available from ISSUE 32 up to ISSUE 71 except for the following**

**ISSUE 38 - SOLD OUT**

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**All issue disks from ISSUE 14 ONWARDS are still available**

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# Features and OPINIONS

# UPGRADES WHY BOTHER?

**Daniel Baverstock takes a somewhat surreal look at upgrades. Last time he asked "Why bother?" he came up with a convincing argument in favour of demos but will it be the same with upgrades?**

In the distance, obscured by countless raised stone statues slowly crumbling from neglect, stood a lonely figure. The sand-laden wind whistled around his feet and through loose clothing. Every so often tatty rags wrapped around his scrawny frame so tightly that his shadow was almost non-existent in the path of the harsh sunlight. Battered upon his long, weary arms was an enormous metal globe, with a small tag dangling from it, inscribed with the numeral 64. He'd been used there for so many years now, he'd almost forgotten his own name, but was reminded periodically every time his eyes

glanced towards a nearby stone with one letter 'W' chiselled into it.

"W" followed later - or, well - '83 as you have probably gathered by now, was scrawny, dressed in rather threadbare beanie garments, and to top everything, extremely bored! His age was, and had been for god knows how long, 64, the name 64 for, as with his name, it was also inscribed on another nearby stone. This particular day he'd woken up unusually late, due to the fact that this huge 100-tonne globe hadn't toppled off his metal-etched arms and squashed him flat until much later that week.

It, drawn after a particularly bad night's sleep, pulled himself from under the globe, lying back for a while. Standing up a few minutes later, he shuffled closer to the globe, leaning over as he prepared his own back for the first attempt at bringing it back to its rightful place. As usual, it bowed forward and sagged upward, a large bone protruding crack resounded here of the hazards of this lifestyle.

On the second attempt it managed to bring the globe upon his knee when the words "Good afternoon" in a rough voice started him. This was the giant globe off down a nearby street, killing a small spitty robot who had been unfortunate enough to pop out of his burrow to see what the commotion was all about.

It hadn't heard a voice for so long, and turned around. It was large, but pulled wind close by, trailing behind him a sticky old hard-driven cart. "Good afternoon" repeated the pedlar. "Can I interest you in anything on my cart?"

It, started and re-joyiced to actually see someone else, picked the fat pedlar to make sure he wasn't a mirage. Opening his account,



R spluttered: "We are go!" It had been so long since he'd had occasion to speak that he'd forgotten how to.

The pedlar shuffled over to the other side of the cart which was heavily decorated in gold lettering with words like "Upgrade", "hard ware" and "software". With a quick press of a lever, the cart unfolded with creaks and groans, increasing in size until it was no longer a cranky wooden cart, but a cranky wooden store.

The fat pedlar walked through a door in the side, and holding it open, beckoned to R. A small spiky robot appeared at R's feet, jumping up and down and jolting its paw at the other end, rather like a robot attached to the globe as it thumped down the side of a road down a few hundred yards ago.

The pedlar stopped, swinging his arm in front of him as if a welcome gesture to permit the store. Shelves and stacks of items, identified as he as R could see, which he'd obviously spent 100 far more his hi-sportables had been situated across him.

R approached a stack of items and picked one up. An electronic voice read: "197 package, 12K equid. He probed up another, and pressing a blue button on the side was greeted by "Upgrade, etc. usage in past problems. And up with your program potential being restricted to a slight 48K? Want to see more 25K and 25K programs, non-linear Desktop publishing and word processing software, simple equations and simple spreads? Contact Queens Development, 40 Northwood Place, Arkwood, BR8888888." The pedlar stepped in, grabbing the package. "Down store, the battery's gone, oh well."

In the corner of the store, a large metallic globe, similar to that which, unknown to R, was presently piling through a small robot village a mile away, caught R's eye. As he looked towards it, a few others came into view. Each was strapped onto the wall and had its own marking - 128, 256, 512, 1MB. Beside them was a console which powered up as R approached its screen.

"Hi there, what would you like to know? Please state your desired choice."

Memory Upgrade	Speed Sound Upgrade	Disk Upgrade
25K	Fast stereo upgrade	HighCap Acme I
25K	Slow stereo upgrade	MS 100/1000
512K		100/10000
1M		250/10000 upgrade

R examined "Memory upgrades please", his eyes a little more comprehensible.

The console, pulsing incessantly to process R's rather confused response, finally proceeded. "Upgrades - slow your machine into 50MB capacity enabling software with more potential. Example: Mouse-driven drop-down desktops, word processors, desktop publishers, art programs, sampled music and sound effects, more detail, colour and speed effects, and bigger, more involving games with cracker animation and animated sequences."

The console display disappeared momentarily, then reappeared with information about upgrades. The fat pedlar sat on a nearby chair which collapsed under him. He sighed and looked on -

Upgrades available:	
Mathematics	256K to 8020K
Desktop	256K to 8020K
Desktop	256K to 55/100K
1MB	to 1M/100K

Machines currently available with enhanced memory capabilities:

1000K 25K RAM

Current software utilizing 128K +

Burndell	Only saving many levels to memory. Gameplay still runs on 64K base memory
T-34	128K sampled sound & animated into sequence
The Battle Megadisc	2 player PD, utilizes stereo 64K for sampled music
Hi-Res Picture du'gig	128K
Dropshot	MUP-zaker - up to 254K
Acad-Simer	64K 128K versions
Ru	

MYCOS-45 256K version  
Video into 3Dny libraries and Comp Shop games. Deming lastly demes  
plus many more - - - - -

Many applications use advanced compression techniques to utilize the extra RAM expansion."

R turned his attention away from the console and towards the fat pedlar who had fallen through the wooden floorboards, and was struck. Used to lifting 100-lb. metal globes, R attempted to pull the fat pedlar out of the hole, was realising he weighed more than the globe. "Wierd man", chuckled the fat pedlar. "Too quiet, mightbe. Care to buy anything?"

R pondered over this, and after reaching in his pocket, finally the only one without a hole, he dragged out a limp wallet and peered inside. To his surprise, a 650 note lay intact. Prying it away from the wallet, which instantaneously fell apart, he walked over to the globe marked 128. "I'll take this one!" R said miraculously, in such a clear tone you'd imagine he'd been working as a Time Travel language for the past year.

"OK, here's the money by me" chuckled the leaning fat pedlar. "I'll take this three as well" R said as he took a new Desktop publisher package, a mouse and a new desktop system all the shelves.

The pedlar, gradually disappearing from view, pointed towards a contraption at the other side of the store, not unlike a remote ball launcher, only 64 tall. "I'll throw that in as well". "What is it?" R said, not sure whether to be pleased or worried as he looked up at them both with two red lights, and appearing to be offlined at being referred to as "I".

The pedlar replied "Oh, that's how R's a droid. He never does much sound from since we don't have much customers."

"Or, yeah, thanks, I'll have him then", said R as he placed the 650 note by the pedlar and walked towards the store. "Ege-eee" squeaked R, noting as he stepped out the door. Not the Droid slowly walking behind him, carrying R's baggages. As Ted approached the door, his arm, a large metallic rod with something

slightly resembling a brittle cylinder attached to the end, caught a lever. With straighty creaks and groans (and too unobscurely coming from the fat, but now quite fat, pedlar, the store folded in on itself, resuming its old form as a cart).

For the first time in his 64 years of, well, being 64 years old, R realised he could no longer lift his 128 globe onto Ted's head, he instructed Ted to stand still. "At least, I can put my feet up" said R, lying against a statue.

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R lives a quiet life nowadays. Every so often he is woken from deep through slumber by the sound of sparkling rodents who he often crosses the path of the huge globe, but otherwise life is peaceful.

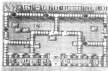
And the moral of this tale is, (and in case you haven't understood this extremely story), that upgrades give the start as much more potential. If you don't utilize extra RAM upgrades when they are available (10000K) and use 44K only, you are missing out on some wonderful software opportunities.

The same goes for extra storage available from upgraded drives. Improved stereo sound upgrades, and new developments such as the 700K drive interface from Micro Discount. This allows between 200K and 700K storage capacity to be utilised from 512" and 100" drives respectively. Just imagine game possibilities with so much storage space as just one disk!

T-34 - the battle is one of the first commercial games currently available to use 128K in full gameplay, incorporating sampled sound and an original turn screen. I hope it's just the beginning.

This article is dedicated to my father, who died at the beginning of May. R.D.

# TUBE BADDIES



It's long been known that several high quality games were produced for SLICE machines but were never released, simply because the copyright holders lacked their support for the full-blown production and marketing effort. **TUBE BADDIES**, by well known Atari software authors from Macintosh and Richard Munro, is one such game apparently owned by Atari Corporation but shelved when the company decided to abandon its commitment to 8-bit computing. The good news is that Richard Gore (who has also revised Jewelbreak and BreakAttack from the authors' archives) has tracked down the publishing rights and duly become the official distributor of this long lost game.

The premise of the game is a tad unusual, and also quite amusing. All told, the Tubular Underworld (more tubes here than a place with very many tubes indeed) has fallen into disrepair, so the Underworld's two resident handymen - known as Dip and Top - have been called in to put things back into working

order. Devising to avoid the numerous accidents that the Big Inspector on his annual inspection of big things that need to be inspected, the real Dip would be it without to stand around and gawk! What they don't know - or rather, what they may find out upon arrival in the Underworld - is that precisely like items known as Tube Baddies have infested the pipe network and are secretly causing a great deal of havoc. Conspicuously covered with a strategically effective No-Go sign is a waste basket called Barry (The Thinker). Dip - with the optional assistance of Top, assuming you can find a second player to assist - sets off on a mission to blast the baddies, patch up the pipes, and keep on good terms with the Big Inspector.

Each level of the game presents you with a new series of tubes, scenery and bonus objects. You can move your handymen in any direction over the playfield, which is just as well since it's essential to avoid harmful contact with the Tube Baddies. You can patch up holes in the pipes by lifting the ladders when positioned over a damaged section. To prevent the Baddies re-affording you need to knock them out with a blast from your star gun. Once chased they adopt a more predictable pattern of movement - with one or two further successful hits you can guide these wretches into a collision course with Barry (The Thinker) for permanent disposal. Penalties you incur at the pipes before the countdown timer reaches zero, extra points are awarded for a bucket bonus, which corresponds to Barry's contents.

The few low levels are easy enough but, naturally, as the game progresses the difficul-

ty later increases. A greater quantity of baddies with a more destructive disposition is only to be expected, but you also have to contend with baddie guns and spiders solely intended to hinder your speed of progress, solid walls that can't be crossed by the handymen and electric cubes that have to be approached with extreme caution. The game features various other objects too and collecting these may or may not prove to be advantageous.

Despite the game's relatively simple concept, its graphics have been well constructed. There are some nice touches including cartoon-style animation of Barry's face. An attractive title page and high score table add a professional finish to the presentation. The music is, as you might expect given the authors' previous achievements, good stuff. It plays throughout and helps to add a sense of urgency to the task.

Needless to say, Tube Baddies is an excellent game and would undoubtedly have sold very well had it been released several years ago, when Atari software could still be purchased from a variety of commercial suppliers. Alas, it was not to be. Due credit must go to Richard Gore for his initiative in reviving an otherwise forgotten program. How many more top-notch games are hiding in authors' attics?

<b>Title</b>	<b>TUBE BADDIES</b>
<b>Publisher</b>	Richard Gore
<b>Supplier</b>	0202
<b>Format</b>	Disk
<b>Price</b>	£4.95
<b>Reviewed by Paul Dixon</b>	

## DISK BONUS

### THE STARS DATABASE

by Johnny Chan

If you are expecting a program on astronomy, read on further for there are not the stars in the heavens but the stars of stage, screen and football field!

The program contains over 400 birth dates from Bruce Forsyth to Marilyn Chalkin and from stars of films and *Army in Neighbourhood*. There are also stars from Entertainment, Coronation Street, the pop industry and the world of film and television. You can search for anyone who was born in a particular year, any month or even those who share the same birthday as you. You can also search for occupations or find out how old a particular star is, to the nearest day!

If you are not satisfied with the stars already included a creator program allows you to add your own information to the disk. Why not add your family and friends to with the disk and keyboard?

Full instructions for this program and the creator are on this issue's disk.

THE STARS DATABASE is the BONUS on the issue 72 disk which disk subscribers will receive with their magazine. The disk is also available separately for just £2.95 from PAGE 5, P.O. BOX 54, STAFFORD, ST16 1TE. You may order by telephone on 01263 41183 using your Access or Visa card.

THE ISSUE DISK OFTEN CONTAINS ADDITIONAL BONUS PROGRAMS NOT MENTIONED IN THE MAGAZINE.

# COUNT ON IT!

Everyone can count in tens but with computers you need to count in different ways. Ann O'Driscoll explains how

Two programs here give a simple demonstration of the relationship between decimal, binary and hexadecimal numbers. In the first program, the computer cycles up or down between 0 and 255 when you press the arrow keys and shows each number in its decimal, binary and hexadecimal forms; the second program displays any decimal number input by the user in both binary and hex.

The decimal or BASIC 10 counting system is the one we use every day. We rarely think about how it works, because we add, subtract, and so on "automatically". If you do stop and think for a minute though, you will realize that the highest "single" number is 9 and each digit in a number is more than the digit to its right. For instance the decimal number 19 is made up of 1 ten (1 x 10) and 9 units. "62" is made up of 6 tens (6 x 10) plus 2 units, while the number 134 is made up of 3 hundreds (3 x 10 x 10) plus 3 tens (3 x 10) plus 4 units. We call the system the "BASE

10" system because the values of the digits go up by a factor of 10 from right to left.

The same principle works with binary or BASIC 2 counting. This time, the highest number to use is 1 and each digit is worth 2 times more than the one to its right. For instance, the number 11 in binary represents 1 x 2 plus 1. This is equivalent to 3 in 10 in decimal; the binary number 1011 works out as 1 x 2 + 0 x 2 + 1 x 2 + 1 x 2 plus 1 x 2 plus 1 x 2 plus 1 x 2 plus 1 x 2 in decimal. The binary system is, of course, central to computing. Computer circuits are called binary digit circuits or "bits" because they have only got two states: ON = 0 and OFF = 1. A "byte" is simply a group of bits; the "8 bit" Atari computers organize their bits in groups of 8, hence the name.

A quick way of converting an 8-bit binary digit to decimal is to put the following numbers, which represent increasing powers of 2, in a row:

128 64 32 16 8 4 2 1

and then put the binary number underneath, with a "0" or a "1" under each decimal number. Add up the decimal numbers which have a 1 underneath to get the answer. Some examples are:

128	64	32	16	8	4	2	1	
1	1	1	1	1	1	1	1	= 255
0	1	0	0	1	1	0	0	= 76
0	0	0	0	1	0	1	1	= 11

Anyone who has tried their hand at redefining character sets will, of course, be familiar with this process. Some common combina-

```

60 100 HEX ← DECIMAL POSITION 10,000
61 200 HEX ← DECIMAL DISPLAY
62 300 HEX ← DECIMAL DISPLAY
63 400 HEX ← DECIMAL DISPLAY
64 500 HEX ← DECIMAL DISPLAY
65 600 HEX ← DECIMAL DISPLAY
66 700 HEX ← DECIMAL DISPLAY
67 800 HEX ← DECIMAL DISPLAY
68 900 HEX ← DECIMAL DISPLAY
69 1000 HEX ← DECIMAL DISPLAY
70 1100 HEX ← DECIMAL DISPLAY
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97 3800 HEX ← DECIMAL DISPLAY
98 3900 HEX ← DECIMAL DISPLAY
99 4000 HEX ← DECIMAL DISPLAY

```

tions - like decimal 255 for binary 11111111 - will be remembered easily once you do them a few times.

To convert a decimal number into binary, you just continuously divide by 2 and if there's a remainder after each division, you note the binary digits, working from right to left. For example, decimal number 76 is converted as follows:

76/2 =	38 + 0	- lowest binary digit
38/2 =	19 + 0	- second binary digit
19/2 =	9 + 1	- third binary digit
9/2 =	4 + 1	- fourth binary digit
4/2 =	2 + 0	- fifth binary digit
2/2 =	1 + 0	- sixth binary digit
1/2 =	0 + 1	- highest binary digit

The binary equivalent of 76 is therefore 1001100.

Listing 3 - Equivalents of numbers up to 255 in different counting systems

There is no problem with counting in a base greater than 10 either. In fact, we use BASE 60 all the time without thinking about it, when we measure time. For instance, we might express 120 minutes as 2 hours 0 minutes, having mentally "carried" each 60 minutes into the hours column. We automatically change seconds into minutes the same way. From the computing point of view, the hexadecimal or BASIC 16 counting system rings up a lot, especially in assembly languages. In this system each digit is worth 16 times more than the one to its right. The numbers range from 0 to 15 and we use a new notation for numbers above 9: these are represented by the letters A to F (10A = 110).



# HEY! HEY!

It's  
**The TIPSTER**

Yes, indeed, I am beginning to get worried now. After all, how long does a Tipster live for? Being the first of his kind and facing onslaughts of at least three incarnations I am beginning to wonder whether this incarnation will be it. You see, I am not getting much satisfaction nowadays, in fact only one month ago I had done in one letter! Since the last issue and a Tipster can't go on like that. Maybe you are all tipped out? Maybe you just haven't got round to writing? Maybe you have already sent in every possible tip on every game you have ever played (should it). Whatever the reason for the lack of tips, do something about it for me. I just want to see another Christmas!

## GO ON - LEGGET!

Jason Kendall has sent in quite a few tips before and in response to an earlier request has this little gem for LEGGET:

1. Start on 2 player mode and when 1 player dies use the other one!
2. Turn the music off during the game. I don't know if this actually does anything or whether Jason just doesn't like the music!
3. Always wait for holes to cross over an level above before jumping up.

THE  
COURT

Mrv Morley of Eastbourne has some hints on **THE CRUISE OF CROWLEY MANION**.

Drop the growth on the table in the dining room, then go North into the pantry. Wait before returning to the Dining room to the south. The growth will break the cupboard over trying to sweep and will expose a letter opener and axe. Leave the axe until you come back. Take the letter opener to the parlor where you can open the writing table to find some helpful clues.

## REVISITING THE CITADEL

Joel Goodwin has advised that our recently printed list of passwords for The Citadel is incomplete. The last two passwords are

24 - EARTH  
25 - TOUCH

There is no password for room 26 but you are given infinite time and attempts for it.

Thanks to Joel, How did he get to levels 24 and 25? Easy, he wrote the game!

## ORSON

Set you haven't got to the end of our DEM BOMB (in issue 77, have you? Why, if you want to see the end animation without playing all the way through what is, if you want to CURE IT), author Joel Goodwin has let us in on the secret.

On the title screen press 4 followed by SHIFT-F for the copyright. You should now see the end of game animation.

## SPELUNKER

Bob Downes of Cheltenham has the information to complete the first two levels of the golden oldie SPELUNKER. Pick-up the objects in the following order to complete the "elevator" and "ropes" levels.

## CRYSTAL CASTLES

Keith Hughes of Bitterbridge Lane has got himself hooked on the ROM cartridge **CRYSTAL CASTLES** and has come up with a full expose which should help you live long and prosper (or at least get you a bit further into the game). If you are playing for the first time, let the demo screens run through. This will give you a preview of some of the 16th-screen screens you may encounter along the way. Whenever possible, collect the gems from the highest platforms and screens first whilst the Gem Eaters are busy. Use the Magic Hat only as a last resort or to kill Berrilda the Witch. You may need it to help you complete particular screens so leave it till last. To start the game at the highest level allowable use the secret warps to get you to level 7. Survive until the second screen on level 7 then the Banker the game and use the warp door on screen 1 level 1 to warp back to level 1 with all your spare lives intact. Note: You must be good to start from level 8 and very good if you are to reach level 20.

### THE SECRET WARPS

There are a total of 3 secret warps which can take you from levels 1 to 8, 8 to 5 and 5 to 7. Do not be fooled into thinking that this is an easy way to get you nearer to level 30 without doing any hard work. In particular level 30 can prove good practice since it can be as demanding as level 3.

**WARP 1** (the easiest) Screen 1 level 1. Go to

the lowest screen, i.e. where there are no gems. Use the outside path. When at the back, in the screen, jump. This will take you to level 1. **WARP 2** (the hardest) On the 8th screen (**SHINY SAMPS**) Method 1 - as the Gem Eaters land, jump over towards the tree. You should automatically pick up the Magic Hat, get on the elevator. When you are on the highest level make your way down the outside (hidden) ramp. When in the center jump. You must be wearing the hat at this point. Method 2 - make your way to the higher level by way of either the left or center elevators. You are now relatively safe with time to think. Go around to the top of the right side elevator. If successful you can temporarily trap the tree diagonally behind you as you come down the elevator. Then Get the Magic Hat and proceed back up the elevator as in method 1. Now you are on level 5. You must survive until screen 3 (**CROSSROADS**). Again, there are two methods. The easy, or quick, one is to run up the right hand side, jump over the Honey Pot etc. You should automatically engage the Magic Hat. This will protect you while you go up the elevator, go left and in the corner - jump. It's as simple as that. Alternatively, go left, wait, enter the two down the ramp, now go back to the elevator to the high level ramp and continue as above. You can enter the tree down the elevator then run up the ramp instead if you wish. The Magic Hat is not required for this way.

That's it! ▼ ▼ ▼ ▼ ▼ ▼

Send your hints, tips, maps, questions, solutions (anything) to

**THE TIPSTER**  
**NEW ATARI USER**  
**P.O. BOX 54**  
**STAFFORD**  
**ST16 1DR**

WATKINS

Key: W-Gem down one tunnel, F-Flame, D-Cyanide, B-The dynamite to proceed past obstruction, L-Rocks to lift, P-Power, R-Race lift, BR-Blue key, GR-Green key.

### Elevator level:

W W F D P L W E P X P B E D P L W P  
T R A D K P B E L W P L W F F B E D P F X P L  
W W B P L W D O O R B P P D F

### Ropes level:

B r i d g e F B r i d g e P P C r o s s R o p e s D o o r F X E P  
F O R C r o s s R o p e s F D D o o r B E D E P

# TUTORIAL

# DISKS AND

**You probably use disks all the time but do you really know everything about them? John Foscett explains all**

**A** floppy disk is a thin ferric oxide coated plastic film permanently housed in a square casing in which it rotates when in use. Data is written to a disk in the form of signals in exactly the same way as signals are recorded onto an audio or a video cassette. The way that signals are recorded to and read from a magnetic surface, whether tape or disk, requires an understanding of physics and electronics which is far too involved to concern ourselves with here. In this article we shall only concern ourselves with the software configuration of the floppy disk as it applies to the Atari classic.

A floppy disk is housed upon a 90 track configuration which could be visualised as 90 concentric circles around the centre of the disk where each track is divided into a fixed number of segments. A disk formatted in single density has each track divided into 18 segments or "sectors" whilst an enhanced den-

sity disk has 26 sectors per track.

Naturally, the sectors contained on the innermost track are smaller in length (or are) than those of the outermost track, therefore data stored in the innermost track is more compressed. This, in effect, limits the density of a disk to whatever the innermost sectors can cope with.

## THE DISK SECTORS

A disk formatted using DOS 3.3 in single density has a maximum of 720 sectors (48 tracks x 15 sectors) whilst a disk formatted in enhanced density contains a maximum of 1040 (80 tracks x 13 sectors). No matter whether single or enhanced density is considered, the disk always contains 128 bytes in each sector of which only 125 can be used for storing data. Using a scale of 0 to 127 to label the bytes in each sector, the last three bytes, labelled 125 to 127 are used by DOS for its own purposes.

## SECTOR LINKING

DOS uses a "chain-chain" method of keeping track of all the sectors used in each file on the disk so that the file name entry in the directory needs only to give the address of the first or starting sector of a file. Once the starting

# DOS

sector has been located, it is just a matter of DOS following the chain to locate the next sector and then the next and so on until the last sector has been reached. In the chain chain, each sector of a file gives the address of the next sector in the sequence which is stored in bytes 125 and 126 in a special way. The actual address for sector linking is stored using the two lowest order bits of byte 125 and all of the bits of byte 126 in order to make up 16-bit binary numbers. The sector link address is calculated as follows:

```
HIGH(BYTE 125) * LO-BYTE 126 * H14  
SECTORLINK + BYTE 126 * LO*256
```

In all the examples, BYTE126 is assumed to be the value stored in BYTE126.

Since 256 is the maximum value that can be stored in an 8-bit byte and 0 is the maximum value that can be stored in two bits, then it follows that the maximum value that the variable SECTORLINK (above) can contain is 255 \* 256 + 1023.

Therefore sector 1023 is the highest sector on a disk that DOS can access and hence the reason why you cannot access more than 1024 sectors in enhanced density even though there are 1040 sectors available. Because the highest sector that DOS can access is 1023, it becomes obvious why sector 1024 was allowed for the second VTDC sector when Atari first designed the enhanced density system.

Although sectors 1025 up to 1040 cannot be

accessed by DOS, there is no reason why these 14 otherwise unusable sectors cannot be used for storing data by accessing them directly. They could be used for example, by a game program which stores a hi-score table. Its most cases it is not important that these 14 sectors do not have VTDC protection, but if a program was to access them for read and write, then there is no reason why they could not be protected within the VTDC by making use of some of the VTDC's unused bytes.

## INTEGRITY CHECKING

This is a check which is only performed when a deleted file is being restored and is based upon the fact that every sector used in a file contains the address of its own file name entry in the directory. Whenever a file is written to a disk, the address of the file name entry on a scale of 0 to 63 is written in each of the five sectors, where 0 is the first file, 1 is the second, etc. The file name entry address is stored using the 6 highest order bits of byte 125. Thus going back to the calculations for SECTORLINK, it can be seen that the variable "H1" contains this address, since dividing BYTE 125 by 4 and taking the integer of it gives the value stored in the six highest order bits.

The maximum value that can be contained in a 6-bit binary number is 63, hence 0 to 63 or 64 addresses. This is the reason why the maximum number of files that can be contained on a D38 2.5 disk is 64. The calculations then become:

```
CHECK-INT(BYTE 125) * LO-BYTE 126 *  
CHECK-4 * SECTORLINK + BYTE 126 * LO*256
```

where CHECK is the integrity check file name address and SECTORLINK is the

address of the next sector to the file.

In order to successfully restore a deleted file, each of the file sectors must contain the address of its own file name in the directory. The integrity check is said to fail when a sector is found in the data chain that does not contain the deleted file address. This may be the case when a file has been deleted and another file written to the disk afterwards which may have "taken" some of the deleted file's sectors. In this case a deleted file cannot be restored.

## DATA STORAGE RECORD

A record of the amount of data stored in each sector is stored in the last byte of the sector, that is byte 127, where the value will always be 128 for all but the last sector of a file. When examining a well used disk with a sector editor, it can be seen that the last byte of the sectors will usually always contain 128 (7D) in hexadecimal or the clear screen arrow character.

## THE DIRECTORY

A disk's directory is made up of eight sectors each containing eight directory entries. The directory sectors are 361 to 368 which is a well used position on a disk between the first and last sectors of a single-density disk. This means that whenever a file's sectors are on a disk, the directory is no more deleted than halfway across the disk. The directory is actually at the beginning of track 20.

Each entry in the directory uses a total of 20 bytes which is the reason why there are eight entries in each directory sector (160/20 = 8) bytes and therefore why there is a maximum of 64 files on a disk, 64/8 = 8. This lines up perfectly with the above calculations

involved with integrity checking.

In each directory sector, the address of each file name entry (the first byte) is 0, 16, 32, 48, 64, 80, 96 and 112. The first byte of each file name entry (the address byte) stores the file status, that is whether the file is currently locked, unlocked, deleted, open or unopened. There are two status values for locked and unlocked files to indicate whether or not a file uses sectors outside the range of the single density format or those that use "enhanced sectors". This is used by DOS to enable it print the triangular brackets around "enhanced sector" files to show which are not accessible in the single density DOS 3.0a. The value stored in the status byte together with their meanings are

0	Unused entry
1	Unlocked file
2	Locked file
3	Unlocked file (not accessible in DOS 3.0)
4	Locked file (not accessible in DOS 3.0)
5	Open file
6	Deleted file
128	Deleted file

The first two of the next four bytes following the status byte of each directory entry is used to store the number of sectors that a file consists of and the next two bytes store the address of the file's first data sector, both are stored using the usual Atari two-byte format, that

```
SECTOR0-DTYS+DW*BYTE1  
ADDRESS-DTYS+DW*BYTE2
```

Note that the variable ADDRESS contains the address of the first data sector of a file as stated in "sector linking" above.

The remaining eleven bytes of each file name entry is the actual file name itself, that is the first eight being the main file name and the last three being the file name extension. Whenever a file name comprises of less than the maximum eleven characters, the unused bytes are loaded with spaces (ASCII 20), where the characters used for the file name

SECTORS 360-368  
THE FIRST SECTOR OF A FILE

occupy the first available bytes. Note that the file name extension always occupies the last three bytes, even when space is available within the main file name area and that the extension is padded out with spaces in the same way as the main file name when necessary.

## THE VTOC SECTOR 360

The VTOC sector 360 is a special sector used by DOS in which it keeps a record of all the currently used sectors on the disk. It does this by using all the bits of 96 of the bytes in this sector in a special way. All the bits of bytes 0 to 95 are used individually, so if to make up one 720-bit binary word (90 bytes x 8 bits = 720 bits). Since a single bit can contain either a '0' or a '1' and with 720 individual bits in the VTOC table representing the 720 sectors on the disk, the way the VTOC table is used becomes clear. All usable sectors are initially indicated in the VTOC table as "free for use" by setting the appropriate bits to '1', this is done automatically when the disk is first formatted. Whenever any sector on the disk is written to, the appropriate bit in the VTOC table is reset to '0' so as to record the sector as currently "in use" and in this way DOS calculates which sectors can be written to without overwriting a previously saved file. Using a '1' to represent a free sector and a '0' to represent a used sector is known as negative logic, since in many ways, it would have made more sense to let a '0' represent a free sector and a '1' to represent a used one.

The 96 bytes, that is bytes 0 to 95 in the VTOC table have their respective bits allocated thus - the highest order bit of byte 10 represents sector zero (sector zero cannot be used), the second highest order bit representing sector 1 and so on right up until the lowest order bit of byte 95 represents sector 718 (720 bits on a scale of 0 to 718). Of the 720 sectors of a single density disk,

there are some that can never be used for storing data and they are always marked in the VTOC table as used sectors. These sectors are the eight directory sectors (361 to 368), the VTOC sector itself (360) and the three boot sectors (1 to 3) making a total of 13 unusable sectors. Because of the hardware constraints, sector zero can never be used which now makes a total of 15 unusable sectors. Subtract this from the maximum number of sectors available, 720-15=707 and you have the reason why there are 707 sectors available on a single density disk.

The VTOC table is also responsible for keeping a record of the total number of usable sectors on the disk, which is 707 for a single density disk and 1010 for an enhanced density disk. This number is calculated using the normal Atari two byte format as follows: —

```
SECTOR0-DTYS+DW*BYTE1
```

The total number of free sectors available for use is also stored here and again it is stored in the usual Atari two byte format, that

```
FREESECTORS-DTYS+DW*BYTE2
```

All other bytes in the VTOC table are unused, these are bytes 4 to 9 and bytes 108 to 127.

## THE SECOND VTOC SECTOR 1024

When a disk is formatted to enhanced density, a second VTOC sector is needed in which to record the status of the extra sectors and sector 1024 has been allocated for this purpose. Much of this sector duplicates a great deal of VTOC sector 360 and the bits of bytes 0 to 121 are used in exactly the same way as previously described. The highest order bit of byte 0 in this VTOC sector represents sector 48, the second highest represents sector 50 and so on up until the lowest order bit of byte 121 represents sector 1024. In this VTOC sector, there is no record for sectors 0 to 48

which are reserved for in VTDC sector 360, sectors 49 to 718 are duplicated in both and sectors 750 up to the maximum of 1023 is reserved for only in this VTDC sector.

Because of the duplication involved together with the fact that there is no record for the first 48 sectors in this VTDC sector and also that there are 18 sectors on the disk that cannot be accessed by DOS allows that the enhanced density format of DOS 2.15 and the 1050 disk drive was simply "added-on" to the original single density DOS 2.0a.

In the enhanced density format, there are 1000 sectors available for use, which is the result of subdividing the number of accessible sectors from the maximum number on the disk which DOS can access, that 1023 (3\*100).

This VTDC sector 1024 also stores a number of free sectors, but in this case the maximum number stored is 203, these sectors are in addition to those stored in VTDC sector 360, therefore 787+203=1010 free sectors.

It is important to note that VTDC sector 360 contains the same regardless of the disk format density, except for the maximum number of sectors on the disk. In the case of a disk formatted in enhanced density, the number of free sectors would be 1410.

When writing a file to a disk formatted an enhanced density, the number of free sectors in VTDC sector 360 is reduced accordingly, just as if the disk was formatted in single density. Only when the number of free sectors available in VTDC sector 360 is reduced in two, are sectors in VTDC sector 1024 used. One way of visualizing this is to imagine two glasses of water where one glass must be completely emptied before the second glass is begun.

The number of free sectors in this VTDC sector are again stored in the usual two byte format using bytes 122 and 123 in the usual way, thus

```
FREESECTORS=BYTES(122,256*BYTES) 22
```

The remaining four bytes in this VTDC sector are reserved, they are bytes 124 to 127.

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### WHAT'S IT ALL FOR?

Well, the more you understand about how your disk drive works, the better equipped you will be when something goes wrong. Dig out a sector editor and examine some of your disks and you will get a better understanding of some of the points mentioned in this article. Better still to a DOS 2.15 formatted disk at first though as there are many other unique formats that could well confuse you.

If you have some disks which have become scrambled you might be able to change appropriate sectors to recover some data. This might be able to work out how to increase the storage capacity of your disks (do you really need eight directory entries? You may even end up writing a super sector disk editing utility. If you do, send it to us as well to enjoy!

**Next issue John Fokett presents a super disk utility that uses much of the information discussed in this article**

## The CLINIC TURBO ARRAYS

**In this first column of programming hints David Sargeant explains a memory saving method of using arrays in Turbo Basic**

I was working on a program in Turbo Basic when I have to store numeric data for each day of the year, so I set up a two-dimensional array with DIM ARRAYS(0,3). At first, I could not understand why this was taking up so much memory but I then realised that, although the values were integers which could be stored in one or two bytes, each value was actually stored as a 4-byte binary Coded Decimal. Thus, in effect, wasting about two thirds of the space.

In Q it is possible to use several different types of array depending on the sort of data you want to store and the way which is of interest in this case is referred to as an Integer Array. Each element in the array can be either one or two bytes which means that integers between 0 - 255 or 0 - 65535 can be stored.

Applying this concept in Turbo Basic is just as straightforward as it is in C. In some ways C is more able to machine language than it is in Basic as it regards memory from a much lower level. An area of contiguous memory needs to be reserved with a pointer ranging from zero to one less than the maximum size of the array to access any value. In Turbo Basic memory can be reserved by dimensioning a string variable and, although this is not the correct use for such a variable, it does not really matter what is stored here as long as it

is not printed.

Hopefully, this simple program will help to demonstrate a one-dimensional integer array. For a two-dimensional array just set up as many strings as are needed.

```
10 DIM ARRAYS(3)ADDL=ADR(ARRAYS)
20 CLS: ? "Integer Array":
30 FOR P=40 TO 5
40 NUM=INT(RND(256))
50 POINT=ADR(P,NUM)
60 ? NUM":
70 NEXT P
80 ? "": ? "to exit": P=10
90 REPEAT
100 ? "Pointer 'P' points to 'POINT
110 GET KEY P=VAL(KEY+42)(P=5)
120 UNTIL KEY=27:END
```

**Line 10:** Dimension an integer array for 5 values and finds the address of the array  
**Line 20:** Clears the screen and prints text  
**Line 30 to 70:** Loads the array with random integers between 0 and 255 and prints each value

**Line 80:** Prints text and resets the pointer to zero

**Line 90 to 120:** A loop where the value of the pointer and the integer value in the array are printed. The pointer is incremented or decremented depending on which cursor key is pressed. The loop ends when the Escape key is pressed

The only drawbacks of an integer array are that more forward planning and programming code are required but it will certainly save memory on a large array.

**How you get any programming tips or examples for solving problems that we can feature in the Programmer's Clinic? Maybe you have a programming problem that we can ask others to solve. Write to the usual address.**



# The CLASSIC PD



Now that we are back on Earth there is time to catch up with the latest offerings from the Pastore. They have been busy releasing many new titles since last we were here. Let's take a look at some of them...

## THE MAKING OF A MASTERPIECE

**INK ARTIST** is a graphics 7+ art package with 25 commands at your disposal. Centred via a joystick and all commands are available from a grid display on the main menu. Also displayed are the 8 brush types, 4 colours (from a palette of 256) and 13 patterns. Cook a joystick and you're away!

All of the standard commands are available including Draw, Line, Circle, Box, Fill and Copy. The speed with which these commands draw is quite slow when compared to some commercial packages, though not enough to annoy. Also available is a Windows mode similar in style to the one in *ArtArtist*. A selected colour is displayed in all 256 colours.

The magnify mode (Magn) is excellent. The draw screen is divided into two sections with the left displaying the magnified section. At the top is an actual size view. You can scroll all over the screen and both displays move

# ZONE

with you. Movement is quick and smooth. There are three mirror modes available from the main menu: Horizontal, Vertical and 4 way. Any use of right brackets can be selected with the Draw command. The Rotate and RotateL commands take a short while to get used to but soon become second nature. By selecting Rotate you can use your joystick to pick one of the 17 colours and patterns displayed in the pattern palette at bottom of the screen. What on the draw screen you can use the TAB key to change the colour.

The pattern palette contains flat solid colours, twelve patterns and one user-definable pattern which can be altered with the Define Texture command. To change a colour you use Selecter. The line colour options are displayed in large boxes above the pattern palette. After choosing one you move your joystick up or down to change the luminance, and left or right to change the hue. Press the button when you're ready and the colour is stored.

The Undo command is essential to any quality art package. Whether you're experimenting with designs or you've simply made a mistake, an Undo command must be there to... credit NRC's Undo is two-way, i.e. press the joystick button and your last action is undone. Press your button again and it returns.

To check your work from the main screen you use the View command. This allows you to flip back and forth from the menu to the draw screen. If you don't like what you see and wish to begin again, just select Erase. There is an alert key to avoid accidental erasing.

The text commands are where *INK Artist* excels. They allow you to place text on the screen in any size, colour or font. You begin with the Text Parameters command which allows you to define the content (up to 20 characters), size and direction of the text. To plot your defined text on the screen you sim-

ply select the Text command, enter the screen to where you want your text to begin and press your joystick button. The text then appears on the screen. With *INK Artist* you can also change the font, by selecting the Font command you can load any 9-vector font with a .FNT extension. These are available on the disk ROMAN.FNT is useful.

These text commands give you the ability to mix all manner of text on the screen. Of course, the text can also be mixed with your artwork.

The final line commands are for saving or loading from disk. The Save command will save your picture as a Kink file. It automatically gives it a .PIC extension. There are three modes for loading pictures: Kink, MicroPainter and MagnPrint. Seven pictures are included on the disk, including some rather funny cartoons.

The ability to load MicroPainter files is very handy, however a MicroPainter save option should have been included as well. To convert Kink files to MicroPainter I use Pixel Artist Deluxe which features an optional save mode.

Overall, *INK Artist* is a terrific art package. It is easy to use and has almost every command needed for general use. The powerful text commands are particularly impressive. Of course, there are other features I would have liked to have seen in *INK* such as a tablet/canvas mode. Cut/paste commands, screen clamp facility, antialias, blend command, etc. However, what must be taken into consideration is that *INK Artist* is not an expensive commercial art package. It is PD! This is easy to forget as it is so impressive.

Of all the PD art packages around, I rate *INK Artist* and Pixel Artist Deluxe (PAD) the most. PAD has the advantage of a tablet mode plus Draw and Airbrush commands. However, *INK* fights back with three mirror modes and powerful text commands. It's difficult to pick one over the other but for me *INK* gets the nod because of the text commands.

## STONE AGE SPACE INVADERS

Fast of Backbone Software will enjoy the next disk. The Arcade Machine was a game creator package released by Backbone in the early 1980s. Although it was never widely available in the UK (Dillon Shop imported it for £48) there remains a number of PD titles which were created with it. They are all basically the same, i.e. Space Invader-type shoot-em-ups. Most are downright awful with zero playability but there is the odd one worthy of its parent program. One such title is **TIME SQUATTING PEOPLE**, an interesting variation on the usual Arcade Machine format.

The *StoneTime People* begins with you, a boulder pushing creature, at the bottom of the screen. Above you are a number of eraggy logs from which many boulder-pushing creatures (most have been a popular incarnation deep rocks on you and large holes appear looking for their next meal. You can kill the master above you with what I presume to be your shog (which lives either like a giant). Cracks in the ledge allow you to kill the creature below. They push their boulders over the edge. Kill enough masters and you advance one level whereby the gameplay becomes a little harder.

The graphics are quite good and give a stone appearance to Canyon by Datacube. The way the creature tumbles from ledge to ledge is nicely done. Press "C" to change the background colour and "L" to change the luminance. Sound effects are limited to blips and jingles.

The *StoneTime People*, like all other Arcade

by  
**Stuart Murray**

CLASSIC PD ZONE RATING: 93%

Marble creations, suffers from a degree of 'slow-down' when too many characters are on the screen at once. If you judge this game by first impressions you may well never load it again. Given a chance, it proves to be reasonable entertainment. True, it is very basic but this gives it an old-time Breakboard/Diskworld feel which has held my interest for longer than anticipated.

The Stonehenge People is the best example I have seen of an Arcade Machine creation. It's one for fans of the golden era of Atari computing.

**CLASSIC PD ZONE RATING: 80%**

## DEFLECT AND DESTROY

Working in a gaming generation, we have **LASERMAZE**, a demo version of the 1992 commercial release by NE-Soft.

Lasermaze is an action puzzle game in which you must deflect a laser beam around a maze in order to destroy a number of objects. To do this, you can use sections of the screen border, the maze walls and movable blocks. Press your joystick button and the laser beam shoots out from the centre of the screen and bounces around until it hits something. Watch out that it doesn't hit you because you'll stop the beam and a shot will be wasted.

You begin Level 1 with 24 shots. As the levels increase so do the number of shots. Run out of shots and you lose a life. Run out of lives and the game is over. As you progress, power-ups become available which, when hit by the laser beam, will give you extra ammunition, lives and points. The puzzles included are intriguing and will keep you occupied for a short while.

As mentioned earlier, this is a demo version.

It features only the first five levels. The completed version is available from the address on the intro screen and features 85 levels, music and a level editor. The display is a mixture between the usual blocky 80-bit graphics and the shaded style of Zappella Colour is limited but shading is used to good effect. The objects are quite detailed in design and the laser beam moves smoothly around the screen.

Lasermaze is an enjoyable game of budget commercial quality. Obviously, this demo is limited by the lack of extras which are included in the completed version, however the price of a PD disk is so well worth considering and will keep you occupied for an hour or so. It also gives you the opportunity to try before buying - a luxury which is sadly no longer possible for most Atari 8-bit titles.

Another perplexing puzzle from the puzzle range of NE-Soft.

**CLASSIC PD ZONE RATING: 70%**

## SEE-YA!

Before you can say "Atari Corp. masterpieces are common in disguise" it's time to report to Air Atari's Terminal or Europe's Spaceport. Earth leave is over and another flight is about to depart for the Classic PD zone. I have a strange feeling that this journey is going to be different!

The disks reviewed were

**DISK 241 - BDK ARTIST**

**DISK 200 - THE STONETIME PEOPLE**

**DISK 243 - LASERMAZE**

## XL/XE PROGRAMMING

# RANDOM NUMBERS

**David Sargeant explains some techniques which could be useful in all sorts of programs**

One can never be called 'random'. A more appropriate term would probably be 'pseudo-random' and this means the RAND function (and also the RND function for that matter) is reliable only for using code and not for creating a sequence of numbers.

The method I have come across recently for generating a sequence of pseudo-random numbers is one based on prime numbers, the algorithm for this is:

1. Set up the routine by choosing a prime number and a starting seed. The prime number must be greater than the highest number required in the sequence and the starting seed can be any number within range, or it can be generated from the internal clock by using the RND function. Here I want to generate numbers in the range 1-25, so I use 11 for my prime number and 1 for my starting seed. The reason for using this particular prime number is it has a special attribute which all prime numbers do not share. It generates every number in the range 1-11 less than the prime number.

2. Begin a loop which is terminated when the starting seed and the number generated are equal. Note that the condition (START=SEED) is true at the outset, but the value of SEED is altered within the REPEAT...UNTIL loop. So, after the first iteration of the loop, this condition is now false and the

The way to generate random integers in Turbo BASIC is to use the RAND function. LINE1994 1 demonstrates this by generating 100 numbers in the range 1-10, accumulating the occurrence of each number in a numeric array and then printing a simple frequency chart using the totals in the array. Notice the occurrence of every number is not equal, some numbers are generated more times than others. Given that there should be an equal chance of generating any number, it would seem to me that all the numbers should be produced an equal number of times.

So are those numbers really random? In the true sense of the word, they are not. The numbers are generated from the computer's internal clock and, since this pulses at regular intervals, numbers produced by these means can arguably be produced and theo-

```

04 10 GOZ *****
05 10 GOZ *
06 11 GOZ * GARDON NUMBER: LYTING 1 *
07 11 GOZ *
08 12 GOZ *
09 13 GOZ * BY DAVID SARGANT *
10 13 GOZ *
11 14 GOZ *****
12 14 GOZ *****
13 14 GOZ *****
14 14 GOZ *****
15 14 GOZ *****
16 14 GOZ *****
17 14 GOZ *****
18 14 GOZ *****
19 14 GOZ *****
20 14 GOZ *****
21 14 GOZ *****
22 14 GOZ *****
23 14 GOZ *****
24 14 GOZ *****
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29 14 GOZ *****
30 14 GOZ *****
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32 14 GOZ *****
33 14 GOZ *****
34 14 GOZ *****
35 14 GOZ *****
36 14 GOZ *****
37 14 GOZ *****
38 14 GOZ *****
39 14 GOZ *****
40 14 GOZ *****
41 14 GOZ *****
42 14 GOZ *****
43 14 GOZ *****
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67 14 GOZ *****
68 14 GOZ *****
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72 14 GOZ *****
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74 14 GOZ *****
75 14 GOZ *****
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77 14 GOZ *****
78 14 GOZ *****
79 14 GOZ *****
80 14 GOZ *****
81 14 GOZ *****
82 14 GOZ *****
83 14 GOZ *****
84 14 GOZ *****
85 14 GOZ *****
86 14 GOZ *****
87 14 GOZ *****
88 14 GOZ *****
89 14 GOZ *****
90 14 GOZ *****
91 14 GOZ *****
92 14 GOZ *****
93 14 GOZ *****
94 14 GOZ *****
95 14 GOZ *****
96 14 GOZ *****
97 14 GOZ *****
98 14 GOZ *****
99 14 GOZ *****
100 14 GOZ *****

```

#### Listing 1

loop continues until all the numbers have been generated.

**LISTING 2** is the coding required for the above algorithm. I have added an extra piece of coding around the variable SWEEP which ensures that only the 10th pseudo-random number is chosen as each iteration of the loop. All 10 numbers are still generated, but to a different, more varied, order, the value for SWEEP must also be a prime number, although it need not be a special one.

If I wanted to generate the starting word from the computer's internal clock, I would replace START\*(n) with STAFF+RAND(10)456. To simulate dice throws where random would have to be in the range 1-6, I would alter line 180 to IF RAND<=6 THEN RAND.

**LISTING 3** (below) is a small program to verify whether or not a prime number gives

```

04 10 GOZ *****
05 10 GOZ *
06 11 GOZ * GARDON NUMBER: LYTING 1 *
07 11 GOZ *
08 12 GOZ *
09 13 GOZ * BY DAVID SARGANT *
10 13 GOZ *
11 14 GOZ *****
12 14 GOZ *****
13 14 GOZ *****
14 14 GOZ *****
15 14 GOZ *****
16 14 GOZ *****
17 14 GOZ *****
18 14 GOZ *****
19 14 GOZ *****
20 14 GOZ *****
21 14 GOZ *****
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28 14 GOZ *****
29 14 GOZ *****
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31 14 GOZ *****
32 14 GOZ *****
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34 14 GOZ *****
35 14 GOZ *****
36 14 GOZ *****
37 14 GOZ *****
38 14 GOZ *****
39 14 GOZ *****
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41 14 GOZ *****
42 14 GOZ *****
43 14 GOZ *****
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74 14 GOZ *****
75 14 GOZ *****
76 14 GOZ *****
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78 14 GOZ *****
79 14 GOZ *****
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84 14 GOZ *****
85 14 GOZ *****
86 14 GOZ *****
87 14 GOZ *****
88 14 GOZ *****
89 14 GOZ *****
90 14 GOZ *****
91 14 GOZ *****
92 14 GOZ *****
93 14 GOZ *****
94 14 GOZ *****
95 14 GOZ *****
96 14 GOZ *****
97 14 GOZ *****
98 14 GOZ *****
99 14 GOZ *****
100 14 GOZ *****

```

#### Listing 2

by the user has the special attribute mentioned above. Note even though 1 and 2 are prime numbers they cannot be used in this program as they would give the wrong results - the input routine will not accept them.

## SIMULATIONS

Pseudo-random numbers can be used to simulate events, although a lot of preparatory work has to be done as well. For instance, using these numbers alone to determine the scores for a football match would imply that a team would have an equal chance of scoring 0 goals as it would have of scoring 1 goal. This does not happen in reality and so results have to be weighted to ensure there is more chance of choosing certain numbers. This is achieved by taking a sample of actual results and re-computing those into the system used for generating pseudo-random numbers.

For example, last season in the Carling Pre-

```

04 10 GOZ *****
05 10 GOZ *
06 11 GOZ * GARDON NUMBER: LYTING 1 *
07 11 GOZ *
08 12 GOZ *
09 13 GOZ * BY DAVID SARGANT *
10 13 GOZ *
11 14 GOZ *****
12 14 GOZ *****
13 14 GOZ *****
14 14 GOZ *****
15 14 GOZ *****
16 14 GOZ *****
17 14 GOZ *****
18 14 GOZ *****
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21 14 GOZ *****
22 14 GOZ *****
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38 14 GOZ *****
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42 14 GOZ *****
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74 14 GOZ *****
75 14 GOZ *****
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79 14 GOZ *****
80 14 GOZ *****
81 14 GOZ *****
82 14 GOZ *****
83 14 GOZ *****
84 14 GOZ *****
85 14 GOZ *****
86 14 GOZ *****
87 14 GOZ *****
88 14 GOZ *****
89 14 GOZ *****
90 14 GOZ *****
91 14 GOZ *****
92 14 GOZ *****
93 14 GOZ *****
94 14 GOZ *****
95 14 GOZ *****
96 14 GOZ *****
97 14 GOZ *****
98 14 GOZ *****
99 14 GOZ *****
100 14 GOZ *****

```

#### Listing 3

miering game were 400 matches 0-0, 11 matches 1-0, 42 matches 2-0, 11 matches 3-0, 42 matches 4-0, 42 matches 5-0, 42 matches 6-0, 42 matches 7-0, 42 matches 8-0, 42 matches 9-0, 42 matches 10-0, 42 matches 11-0, 42 matches 12-0, 42 matches 13-0, 42 matches 14-0, 42 matches 15-0, 42 matches 16-0, 42 matches 17-0, 42 matches 18-0, 42 matches 19-0, 42 matches 20-0, 42 matches 21-0, 42 matches 22-0, 42 matches 23-0, 42 matches 24-0, 42 matches 25-0, 42 matches 26-0, 42 matches 27-0, 42 matches 28-0, 42 matches 29-0, 42 matches 30-0, 42 matches 31-0, 42 matches 32-0, 42 matches 33-0, 42 matches 34-0, 42 matches 35-0, 42 matches 36-0, 42 matches 37-0, 42 matches 38-0, 42 matches 39-0, 42 matches 40-0, 42 matches 41-0, 42 matches 42-0, 42 matches 43-0, 42 matches 44-0, 42 matches 45-0, 42 matches 46-0, 42 matches 47-0, 42 matches 48-0, 42 matches 49-0, 42 matches 50-0, 42 matches 51-0, 42 matches 52-0, 42 matches 53-0, 42 matches 54-0, 42 matches 55-0, 42 matches 56-0, 42 matches 57-0, 42 matches 58-0, 42 matches 59-0, 42 matches 60-0, 42 matches 61-0, 42 matches 62-0, 42 matches 63-0, 42 matches 64-0, 42 matches 65-0, 42 matches 66-0, 42 matches 67-0, 42 matches 68-0, 42 matches 69-0, 42 matches 70-0, 42 matches 71-0, 42 matches 72-0, 42 matches 73-0, 42 matches 74-0, 42 matches 75-0, 42 matches 76-0, 42 matches 77-0, 42 matches 78-0, 42 matches 79-0, 42 matches 80-0, 42 matches 81-0, 42 matches 82-0, 42 matches 83-0, 42 matches 84-0, 42 matches 85-0, 42 matches 86-0, 42 matches 87-0, 42 matches 88-0, 42 matches 89-0, 42 matches 90-0, 42 matches 91-0, 42 matches 92-0, 42 matches 93-0, 42 matches 94-0, 42 matches 95-0, 42 matches 96-0, 42 matches 97-0, 42 matches 98-0, 42 matches 99-0, 42 matches 100-0.

There also has to be a method of scoring the Goals Scored table. The one I have devised, although there may be others, is to use another statially sized numeric array to hold

No. of Goals	No. of Teams	Table
0	268	1-268
1	341	269-609
2	190	610-809
3	79	810-889
4	30	890-929
5	14	930-944
6	1	945-946
7	1	947-948

```

00 10 REM *****
01 11 REM *
10 20 REM * RANDOM NUMBER: LISTING 4 *
00 31 REM *
00 34 REM * BY DAVID SAUNDERS *
00 35 REM *
00 38 REM *****
00 40 REM *****
00 41 REM ---
00 42 END EXEC EXEC:EXEC DISPLAY:END
00 43 ---
00 44 ---
00 45 PRINT END?
00 46 PRINT END?
00 47 PRINT END?
00 48 PRINT END?
00 49 PRINT END?
00 50 PRINT END?
00 51 PRINT END?
00 52 PRINT END?
00 53 PRINT END?
00 54 PRINT END?
00 55 PRINT END?
00 56 PRINT END?
00 57 PRINT END?
00 58 PRINT END?
00 59 PRINT END?
00 60 PRINT END?
00 61 PRINT END?
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00 89 PRINT END?
00 90 PRINT END?
00 91 PRINT END?
00 92 PRINT END?
00 93 PRINT END?
00 94 PRINT END?
00 95 PRINT END?
00 96 PRINT END?
00 97 PRINT END?
00 98 PRINT END?
00 99 PRINT END?
01 00 PRINT END?

```

LISTING 4

FUTURE

## VARIABLES USED IN LISTING 4

<b>TEMP0</b>	Temporary string for reading track names
<b>TRACK0</b>	String holding track names
<b>I</b>	Loop counter
<b>J</b>	String and array pointer
<b>GOAL_TABLE</b>	Goals scored array
<b>LIMIT</b>	Goal limit used to create goal array
<b>NUM_GOALS</b>	Current number of goals scored
<b>INDEX</b>	Array holding indexes for accessing goal array
<b>START</b>	Starting seed for number generation
<b>SEED</b>	Current number generated
<b>PRIME</b>	Prime number
<b>RAIP</b>	Varies random number generated
<b>COL</b>	Column position
<b>ROW</b>	

parade randomly generated indexes to the range 1-804. The index array can then be accessed in whichever way is suitable, but the index itself will always be random.

As you can see from the program coding of Listing 4 the initialization section is quite lengthy and it takes a while to execute. With all the hard work done through, the display routine, in contrast, is relatively straightforward and is just a matter of printing track names from the team string and the number of goals scored from the Goal table.

Well that is the end of **RANDOM NUMBERS**, but it need not be, you can take this matter a stage further on your own if you want to know more. The logical progression would be to consider whether the data used to construct the sample is typical. Complex methods can be used to predict the probability of discrepancies in your data and a sample which reflects these will give even more realistic results. Any good book on Statistics will provide the details. Anyway, I hope I have provided a few thoughts and maybe it will encourage some of you other programmers to include this sort of technique in your own games or simulations.

## THE NATIONAL LOTTERY

With Lottery obsession gripping the nation at present how about one of our 'retired programmer' readers coming up with a super Lottery number selector using, perhaps, the random number selecting machines in David Saunders' article?

We have already received a couple of programs of this nature but they are quite simple and would do with a few bells and whistles. Apart from the quality programmers that the Atari Classic is capable of, how about including features such as the ability to enter previous draws to select 'hot' numbers, or the ability to 'jump' a series of numbers to give better chances of winning on multiple entries? What about the ability to use random seed methods on lucky numbers? If you are a real technical programmer you could even have a lottery machine producing the balls similar to the every first machine simulators that I have been programmed over the years.

There you have a good challenge, the results of which will be enjoyed by the majority of readers. We will publish the best program submitted and if the Editor takes the jackpot then he guarantees that a couple of grand will be on its way to the lucky programmer!

# Hints & Tips

## SSSHHH!

Paul Hollins shows  
you how to

## QUIETEN DOWN YOUR NOISY 1050

**T**he Atari 1050 is the most widely used disk drive on 8-bit systems. The drives are reasonably fast, store quite a lot of data, but they do suffer from one major drawback... they are incredibly noisy! The base that this becomes the most apparent is when someone is upstairs in bed, and then you are still hearing away at the keyboard on your latest masterpiece and it's time, once again, to do the dust-carrying deed and **SAVE** your work to disk. You carefully type **SAVE**, "**Diskbase:00**" and gently press **RETURN**. **CLUNK! WHEEK! BOOM!** Congratulations you've just succeeded in making the entire household.

What can you do about it? Well, you could buy an expensive air-tight, sound-proofed case to put your drive in, however it's not exactly practical to do that. Or you could try and get an internal modification kit to quieten it down, but they are expensive and very hard to get hold of. So what now?

Fortunately there is an answer, and the good

news is that you do not need any knowledge of electronics whatsoever because no soldering is required and, here's the best bit, it's absolutely free!

All you will need is a small Phillips type screw-driver, a couple of cotton-wool buds (the type you use to clean your ears with), a jar of Vaseline and a relatively dust-free environment to work in.

Remove any disks and unplug all the cables from the disk drive, including the 150 cables. Turn the drive upside down and remove the six small screws holding the upper case to the lower case. Without separating the case turn the drive back up the right way. Remove the top cover by tilting upwards from the rear of the disk drive. The black plastic front-panel can now be removed as well.

Without touching anything, study the inside of the disk drive and look for two small bars with a sliding "thingy" in the middle of them. This "thingy" is in fact the READ/WRITE head and now that you have got close to one of the main operating parts of the drive, obviously extreme caution is needed.

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Using a cotton-wool bud, apply a little Vaseline onto each of the two bars being very careful not to use too much or get any on the

## APPLY THE GREASE!

Using a cotton-wool bud, apply a little Vaseline onto each of the two bars being very careful not to use too much or get any on the

## GETTING STARTED

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NORTH OF SCOTLAND ATARI USER GROUP

# FUTURA

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READ/WRITE head itself. Once you've done that, gently move the READ/WRITE head and put some Vaseline underneath where this was first sitting, once again being very careful. By the way, you may think that the more Vaseline you use, the quieter the drive will be, and to a certain extent, you'll be right. However by doing that, you also run the risk of getting it onto the READ/WRITE head, and it always feel that if you do use too much, you can't hear a rustaking purr from your drive. You then start wondering whether it's functioning correctly or not!

removed from the lower case. Finally, reconnect the drive to your computer and power supply.

Overall the process is quite simple and I can't see you having any problems with it whatsoever, but I must remind you that if you do attempt it you will undertake any warranty you may have on your disk drive. Also I cannot be held responsible for any damage caused whilst you are attempting to do this minor surgery, or resulting from what I have suggested in this article. You will find that you have to repeat the process from time to time, when your drive starts to get noisy again. I've usually find that I have to do this every 4 to 12 months, depending on usage.

Incidentally, some people prefer to use sewing-machine oil or 3-in-1 oil instead of Vaseline. It's just a matter of preference, as all of them have the same effect in the end but Vaseline is less likely to get into the bearings of your drive if you use too much.

## ALL DONE

That is all there is to it. You now have a much quieter 1050. It's now time to re-assembly the drive. Bolt the black plastic front plate and top cover, securing the six screws

## Bits & Pieces

# DISKFILE SOLUTION

I mean it's disk contained a couple of business programs which were not mentioned in the magazine in great measure for buying the disk if you are not a disk aficionado, one of which was DISKFILE. Users will recall that I could not get the program to work from the issue disk but Leslie Harrison has come up with the answer.

Diskfile works perfectly but only with enhanced density disks. It stores the descriptions on sectors 1005 onwards as these are not accessible to Atari DOS. The issue disk is always in single density to ensure maximum compatibility which is why it would not work straight from the disk. Diskfile is a great program that allows you to have an extended directory on your disk with descriptions of your files, by it.

If you only have a single density drive, you could try Super Directory from PD disk #95 - UTILITIES-4 which performs a similar function but stores the description in a file.

**Don't forget**  
our new  
phone number  
**01785 41153**

## XL/XE UTILITY

# MULTI FORMAT

*Take the easy way  
with formatting  
with M. Tomlin's  
easy to use format-  
ter that will let you  
format disks as  
you wish*

I know what you are going to say - I met another formatter program - but I think this will turn out to be your favourite. This small program will format a new batch of disks for you, write DOS and lock the file in either single or enhanced 1680 density. It uses the DOS command which is not documented very well in all the books I have read on Atari (DASC). The little trick I have used to write the DOS.BIOS file won't work, but it will not write the DUP.SYS file. If you need DUP.SYS on your disks you will have to use the normal DOS menu option B.

```
00 00 000 *****
01 00 000 # MULTI FORMATER #
02 00 000 #
03 00 000 # A. TOMLIN B.L.C. #
04 00 000 #
05 00 000 # 1988 #
06 00 000 # April 1988 #
07 00 000 *****
08 00 000
09 00 000 *****
10 00 000 *****
11 00 000 *****
12 00 000 *****
13 00 000 *****
14 00 000 *****
15 00 000 *****
16 00 000 *****
17 00 000 *****
18 00 000 *****
19 00 000 *****
20 00 000 *****
21 00 000 *****
22 00 000 *****
23 00 000 *****
24 00 000 *****
25 00 000 *****
26 00 000 *****
27 00 000 *****
28 00 000 *****
29 00 000 *****
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```

## HOW TO GET DOS?

It's a shame the program won't write DUP-SYS but perhaps somebody can improve it to do so. Now's that for a challenge for someone! There are plenty of users in the program so you can follow what is going on very easily. It should only take a hour to type in or get this issue's disk where it will be ready to run. The program is stress driven, with constant warn-

ings to remove your program disk. Because of the descriptive nature of the program, make sure you follow the onscreen prompts.

The program runs on the DOSXL and DOSXE but I cannot say if it will work on the other 8-bit Ataris as I have never had one and I believe due to the different operating system, it probably won't.

I send greetings to all Atari users around the world. Have Fun!

# TUTORIAL TIME

by Ian Finlayson

## BACK TO BASICS

My article is not a tutorial this time - to be frank I ran out of ideas! The subject is a Basic programming subject that you would like addressed in some detail please write and let me know.

### VISUAL BASIC

I have been working to some depth with Microsoft Visual Basic on my PC over the past few months, and that is what prompted this article. Visual Basic (I will call it VB from now on) is becoming popular as a programming language for Windows for the same reason that the various clones on much smaller computers, like the Atari, have been popular with home computer enthusiasts over the years. That is, the accessibility of the language.

VB is a Windows program and it is different in many ways from earlier versions of the BASIC language. First it needs a reasonably fast processor (mine is a 3860040) and lots of memory (4 Megabytes is only just enough). Compare Atari BASIC at 60 running on a 64K machine! Second it has a good range of ready-to-use controls, and takes advantage of the windows environment, so creating a start-machine interface is very quick. Thirdly all of those with push button controls, check boxes, radio buttons, drop down lists, text

boxes and graphic boxes can be created easily. Also the use of a mouse and its pointer is readily handled automatically.

Over the screen, layouts are complete: there is still a need to write code to make things happen, and here again VB is different. The code is all event driven. This means that the program is created to small modules or sub-routines and these are usually attached to an event. Each control has a set of events that can be used. For example if you use your mouse to point to a control and then click on the mouse button a click event is initiated and the code you have attached to that event will be executed. It is at this level that VB's heritage in older BASICs is revealed. Many of the program structures are recognizable.

### BASIC ON THE ATARI

The original Atari BASIC was a bit different from other BASICs, particularly in its string handling, and it was also missing some of the common programming structures. However it did have the advantage of being concise and some of its features such as graphics and sound were quite revolutionary. Although its range of structured programming commands was limited they could be used to build more complex constructions though the resultant code was not always very easy to read. It was, and indeed still is quite a good language to start to learn on.

Turbo BASIC for the Atari is much more recent. It is quite remarkable in that it is a little easier than Atari BASIC, but it has all the original Atari BASIC commands and a whole lot more. It runs programs faster, and it has a compiler which allows programs to be compiled and to run yet faster by 3 to 8 times. This compiled code is rather like the code compiled by VB - neither produces true stand alone code. Compiled Turbo BASIC programs need the RUNTIME.COM module and VB programs need the V800.P800.DLL function

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module to run. The extra structured programming commands in Turbo BASIC include DO...LOOP IF...GOTO...ENDIF...KEYPAD...UNTIL...WHILE...WHEN. They make it much easier to write highly readable tightly structured code and they can be recognized with slightly different syntax in VB. Turbo BASIC is available from the Page 6 Auxiliary Shop (Disk 0096). If you don't have it you can't use it so order today - remember your old Atari BASIC programs will run faster with Turbo BASIC.

short cuts by using "toolskit" of useful sub-routines and so on that others have developed. Page 6 has a list of these that you can look at at very little cost. Try the following:

005	Atari Basic Power Pack
018	Extended Atari Basic
0400	Turbo Support 1
06705	Turbo Basic Programmer Kit (1 disks)

### GET STARTED

So, if you have never tried to write a program, now is a good time to start. Atari BASIC is OK, but I would recommend starting straight on to Turbo Basic. Programming is fun, and it certainly keeps the brain ticking over. Who knows, at some time in the future you might find this skill can be extended and turned to commercial use (with appropriate rewards).

### UTILITIES

BASIC for the Atari has been around for quite a number of years - indeed a very long time in computer terms. This means that many other people have already gained experience in the language. You can take advantage of their experience by analysing their programs, and you can also take some

# XL/XE PROGRAMMING

## BIG SCREEN

*Ann O'Driscoll uses her own recent tutorials on display lists to show how you can extend the screen area for added effect*

**T**he short listing shown here is a simple demonstration of how the blank area above the normal screen display might be used by a program. If you look at a display list in any of the Graphics modes you will see that the first three transmissions are 112, 112 and 112 - this tells Apple to show 3 blank scan lines three times, or 24 scan lines in all. This is equivalent to the height of three rows of Graphics 0 characters. The original purpose of the scan lines was to ensure that the screen display, set by the text or graphics transmission, would be fully visible. On older televisions the top rows tended to be cut off and the scan lines were used to push the picture down. This is not a problem with screen TV sets and monitors so we can now

use this area ourselves.

The program shows how a game title and score could be put at the top of the screen. The "score" is increased each time the spacebar is pressed. Hitting any other key shows the ASCII code. The title and score are stored in a separate area of RAM and stay on the screen even when the main screen display scrolls off.

### RESERVED SCREEN RAM AREA

The pointers to the start of screen RAM are at memory locations 48 (low byte) and 49 (high byte), so you find the starting address by

```
POKE(48) + 256*POKE(49)
```

On the conventional Graphics 0 screen, location 48 holds a 48 and location 49 holds 155, giving a screen RAM start of 64 + 256\*155 = 40064. **LINE5** (line 5) is 540 of the program set up a protected screen RAM area for the next line and more conventional screen RAM

continued on page 48

## The Accessory Shop

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down to a lower memory location. **LINE 134** sets the high byte for the reserved screen RAM at page 196 followed by the variable *Y*. **LINE 135** moves the top of user memory, found by **POKE 1000**, down below this, to page 158. The high byte for the conventional screen memory is lowered as a result - this is now defined by the variable *B* in **LINE 140**. The contents of location 88 (screen RAM low byte) are not affected by the changes. The variable *SCR* in **LINE 150** shows where the protected screen RAM starts; the **FOR NEXT** loop shows the area which will be used by the program.

## A NEW DISPLAY LIST

**LINE 150** to **160** make a new display list and put it in Page 6 of memory, which starts at location 1028. The first 5 numbers in the list will replace the 112, 110, 112 from the original Graphics 0 instruction set. **LINE 170** holds the new instructions in a DATA statement:

- 70 **DATA** Load Memory Block 040 plus show a Graphics 1 line 01
- 80 **DATA** the low byte address for the screen RAM for our extra lines (the number found in location 88)
- 100 **DATA** the high byte address for the new screen RAM, as defined in **LINE 134** above
- 9 **DATA** show a Graphics 1 line
- 0 **DATA** show a Graphics 0 line

The main of the new display list is basically the same as the remainder of the original one. The only changes are in the last two bytes, which now direct the computer to the new display list memory location at Page 6, and the 8th byte (1826+4) which puts the new high byte for the ordinary screen RAM into the relevant LMS address.

## WRITING ON THE SCREEN

Text is printed directly to the new screen area in **LINE 510-530** using the standard **FOR-NEXT** and **PRINT** commands. In order to do this, the high byte for the reserved screen RAM is poked into memory location 89 (**LINE 500**). **LINE 530** reintroduces normal screen RAM, by **POKING** the "conventional" high byte back in to location 88. The 24 line Graphics 0 screen is now operational again.

**LINE 540** to **550** look after the same routine. **LINE 510** converts the screen values to a string. **LINE 520** subtracts 32 from the ASCII value of each character in the string - this gives us the "internal code" for each number which may be **FOR**fed directly to screen RAM. This is done in **LINE 530**. **SCR** is the protected RAM area's starting address as defined earlier. The plus 31 brings us a little over half way along the second line of Graphics 0 text, because this mode uses 20 bytes of RAM per line. **LINE 540** sends the program back to get another bypasse over the screen has been updated.

That's all there's to it. I hope the above account on what the program does has been clear, and that I have given enough information to enable you to adapt the routine for use to your own listings.

*Have you got any programming gems like Big Screen? If so, let's see them so we can share them with others*

# The Accessory Shop

## ISSUE 72

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## ST Review

# ATARI WORLD

The director of the highly regarded ST Review magazine was a painful blow for its thousands of ST users - indeed, many thought it signalled the final doom of mainstream ST support. However,

it's well known that Atari owners are a dedicated bunch (to say the least) and, in some ways almost no time at all, ST Review's editor, *The Legend*, is back in the driving seat of a new publication called Atari World. The publisher is Neil Oxlson, who also happens to own the Atari supplier Compco Software Ltd., so it's no surprise that Compco advertises heavily - almost throughout the mag.

Atari World is subtitled 'The essential guide for all Atari Computer Users' but it's not readers shouldn't get too worked - I couldn't find more than a passing mention of the XL/XE, though Palace and Jaguar owners do get a fair look in. The launch issue contains 94 pages together with two 'free' pull-out supplements of 18 pages each - ST Source and Atari Pro, covering beginners' topics and serious matters respectively. Unlike previous ST magazines there is no cover disk attached but a 'readers disk', containing programs related to articles in the magazine, can be purchased by mail order. This arrangement means that the cover price is pegged at a reasonably affordable level.

Atari World's news section is surprisingly large, which will come as a relief to those who thought that ST computing was only shrouded in history lessons. A Colliet show report reveals the typical absence of Atari Corporation,

**No, not the shop that closed down a few years ago but a new mag for the ST!**

but there is increasing mention of innovative ST emulation on Apple Macs, running MagicMac software. Elsewhere, the main features cover Paytron 4.0 - an apparently lightweight word processor from

Germany - and music routines, including the present controversy over MIDI file licensing. A reviews section forms the core of editorial content. Here we find detailed coverage of The Quill 2, ScreenMaster 2 (Palen) and Video Supreme. Diggster 3 and Positive Image also get a spin, whilst for gamers there is mention of forthcoming games, Tron, Pitfall Deluxe (Palen) and Cannon Fodder (Magard). The beginners' pages of ST Source cover the basics of text disks, accessories and desktop enhancements. The Atari Pro section discusses the Falcon's display modes and direct-to-disk recording facilities. Desk Top Publishing is also subject to investigation.

Although the first issue isn't exactly over-reheated with content, I'm pleased to report that Atari World is a good quality glossy with the 'readable' house style of ST Review and a generally high standard of presentation. For those dismayed by the closure or scaling back of most other ST publications, Atari World is a very welcome development. I wish it well.

Atari World is published by Specialist Magazines Ltd. and distributed by SH Distribution. It's available from newsagents at a price of £2.95 or via quarterly subscriptions at £7.50.

reviewed by Paul Dixon



# JOURNEY INTO CYBERSPACE

**John S Davison tackles the Internet in an ultimate quest for the fabled Information Superhighway**



**I**nternet, TCP/IP, E-mail, FTP, Usenet, Telnet, World Wide Web, Cyberquest - these various terms were coined as part of the communications revolution that's overtaken the computer world during the last few years. It's an area I've recently had to start grappling with, so in the next few sections I'm hoping to share some of my experiences with you, dispel some of the mystique surrounding this brave new world, and perhaps even encourage you to start exploring it yourself.

This first article describes how I found myself needing an electronic mail (e-mail) connection with the world, and how this led me to sign up with a communications "service provider" to obtain a means of accessing the Internet.

First, I have a terrible confession to make - my initial experience in using an IBM PC rather than an Atari system. OK, OK, you may think I'm a traitor, but my choice of computer was driven by a business requirement and personal preference. My intention now is to employ the knowledge gained with the PC to attempt to connect my Atari 520X and 130XE to the Internet, and find out what it has to offer the Atari community.

## GOTTA GET WIRED!

A little over a year ago I left the company I'd been with for most of my working life to set up a business of my own. Almost everyone I previously worked with routinely used electronic communications - fax, electronic mail (e-mail), data file transmissions, bulletin board access, remote database access, and so on. In my new business I still needed regular con-

tact with my old colleagues, but felt particularly bothered without the e-mail word all rolled up so far in bag. Also, it seemed highly likely that my new clients I worked with would also use e-mail, so my first priority was to get myself "wired" for this. The problem was to find a means of connecting into a worldwide e-mail network at affordable cost and minimum hassle.

On studying the computer magazines it soon became clear that the Internet was taking off in a big way. Everyone was getting themselves connected - big companies, small businesses, and even private individuals were signing up with Internet service providers for access facilities ranging from simple e-mail to complex on-line multimedia applications. I was aware of the Internet but hadn't really paid much attention to it, so I thought it was well mainly by universities, the military, and government projects. A little research showed that was no longer the case, as the following background information illustrates.

## THE OBLIGATORY HISTORICAL BIT...

The Internet's origin can be traced back to 1969, when a USA defense research project was set up to create a resilient data communications network which would still work if part of it became disabled by some technical glitch - such as a nuclear attack! American universities were brought in to help with the research, and soon their computers were connected and the feasibility of the concept demonstrated. The network became known as ARPANET. The military eventually went their own way and created DARPAnet based on similar concepts, but ARPANET began to grow as American universities clamored for connections to allow easy data exchange. By 1971

there were about two dozen systems connected, and over 40 by the following year. At this point the first real e-mail system capable of distributing mail messages across the network was established.

In 1973 ARPANET went international with the connection of several universities in Europe taking the number of computers past the 60 mark. So far the connected machines were individual mainframes each supporting large numbers of terminal users scattered across the USA and Europe, but with the advent of mini-computers the idea of "Local Area Network" (LAN) to interconnect a number of smaller computers within a limited area (e.g. an office block) came into being - and the Ethernet LAN was born.

As LANs came into use the next logical step was to provide gateway connections from them into the ARPANET, providing all the LAN attached computers and their users with access. It's probably this which led to the idea of ARPANET being a "network of networks", a term now also applied to the Internet. By 1980 a set of standards was established for interconnecting systems and networks, using software based on Transmission Control Protocol (TCP) and Internet Protocol (IP). Theoretically, any type of system using these standards would be able to easily connect in. The set of networks thus interconnected became known as the Internet, and the name and TCP/IP standards are still with us today.

Funding by various academic and government bodies in the countries using the network allowed the Internet's "backbone" infrastructure to grow to take an ever increasing number of connections. The overall concept of the Internet was such that this could be done with minimal impact to existing users - to most users the growth was invisible. This infrastructure is likely to form the basis of what will become the much discussed "Information Superhighway" of the future.





## COMMERCIAL CONNECTIONS

In 1984 IBM launched the PC, then low-cost workstation computers began to appear, and from here on connections to the Internet began to rapidly accelerate and soon over 1,000 systems were connected. By 1986 there were over 5,000 systems connected, 10,000 by 1987, and 180,000 by 1989. Up to this time connections were mainly related to academic or governmental research activities, but then a major breakthrough occurred. It was decided that e-mail gateways would be allowed between the Internet and commercial networks, and companies immediately began considering their private networks to allow easy e-mail exchange with other companies. NCI and CompuServe were the first to wish "public" e-mail services, although they were still rather expensive to use at that time.

This was followed later by the availability of full Internet facilities via service providers offering direct connections to the Internet. Competition caused prices to tumble, opening the floodgates further, and by 1990 there were over 800,000 systems connected. The millionth system connected to the Internet in 1992 and the connection rate has continued rising since then. It has been estimated that at the current rate of growth, response on the planet could have an instant connection within the next seven years!

This explosive growth was made possible by service providers making available low-cost dial-in gateways to the Internet. By low cost I mean from as little as \$6 per month for simple e-mail facilities up to around \$20 a month for more complex services (plus a small one-off set-up charge). The big surprise was that these are usually flat rate charges, with no extra costs related to usage time or data transferred to you personally. I was amazed. I was so

inexpensive.

But there's one small snag. Naturally, a dial-in connection uses the public phone system, and here the potential cost is much greater, especially if you have to make a long distance call to reach the service. However, to reduce this cost many service providers are setting up "Points of Presence" (PoPs) around the country. These are regional dial-in points, which theoretically allow you to call a local number to connect to a distant located service. PoPs tend to be in the major centers of population such as Birmingham, Manchester, Bristol, and Edinburgh, but smaller cities such as Cambridge may also have one. Unfortunately if you aren't near a PoP you still have to make a long distance call.

Some companies (CompuServe for example) provide PoPs which use Minitel or IT data transmission services for onward connection to the gateway. These carry an additional charge over and above the cost of your local call, but the total cost is still less than a normal long distance call.

## FREE ACCESS?

Even better, some cable TV/phone companies now offer free off-peak local calls so if you and your service provider subscribe to the same cable network then your calls could be totally free!

Certain service providers advertise completely free Internet access, but their gateways can often only be reached via BT's horrendous premium rate 0800 numbers, making the overall usage cost VERY high. Beware! Connection to any data communications system via a phone line requires a modem, a piece of equipment which links digital data into a signal suitable for transmission via the phone system. I already had an old modem, previously used for connecting bulletin boards

to my Atari computer. My current standards is 2800bps transmission speed was very slow, but adequate for sending Internet e-mail messages. Modem prices have crashed over the last two years and you can now easily buy one from around \$50 for 1400bps, \$100 for 24,450bps, and \$250 for 38,500bps (as even) - the fastest available for general use. You should buy the fastest you can afford.

## CHOOSING A SERVICE PROVIDER

My next action was to survey the marketplace and determine which service provider gave me the best value for money for the facilities I needed. After much research three companies made my shortlist, all meeting my requirements for a total cost of around £10 per month. Wider considerations including how each treated me as a potential customer (support facilities provided, additional facilities available) and general reputation helped me make a final decision. Although they didn't offer full Internet facilities at the time, CompuServe got my vote.

You also need suitable communications software to enable you to dial into a service. Most service providers include this as part of the deal, or even as a "freebie" in advance of signing up to tempt you into trying out their wares. Some of this is excellent, using state-of-the-art graphical user interfaces for maximum ease of use. The trouble is it's usually only available for the IBM PC or Apple Mac - Atari users have to make do with whatever generic communications programs they can find, and often in test mode. I obtained one of CompuServe's free trial kits given away as a complimentary magazine cover disk. Installed and configured the software to suit my PC system, and fired it up. It dialled into CompuServe via the

Cambridge PoP, registered me as a new user, and I began using the service straight away.

One of my first actions was to use CompuServe's Internet gateway to send e-mail messages to all my old colleagues in the UK and abroad announcing my new e-mail address. Within a few hours I received replies back from them all. Yes, it really worked! It takes my first step into cyberspace, the ritual would be repeated by Internet users.

In the next issue I'll tell you more about CompuServe and its recently announced full Internet connection service, and what this means for Atari users. In the meantime if anyone reading this already has a mail account please drop me a note via the Internet, I'll be delighted to hear from you, especially if you tell me about your experiences using your Atari on the Net.

Contributor John Scotland on

100286.1877@compuserve.com  
or 100056.1877 from within CompuServe!

## WANNABE AN ST REVIEWER?

As we no longer have a regular ST reviews this could be your chance to make a contribution to New Atari User with a review. We have the following software for review:

### E-Z ART

(you guessed it, a drawing package)

### HERO

(an arcade shoot)

If you would like to be the reviewer of either of these, please get in touch. We would prefer someone who has written reviews before but not necessarily for Page 67 but that is not crucial if you can write. You get to keep the software and get the fame of having your name in the magazine.

## ST PUBLIC DOMAIN



# ROUNDUP

## THE WORLD OF BUDGIE PART 2

This time in PD Roundup we continue our look into the world of Budget UK, whose range of software has recently been released into the public domain.

Budgie seems noted for their quality games. Right from the start we've featured titles by talented programmers. It's true that not all of these games were out of the box drawer but most were.

Let the games commence.

by  
**Stuart  
Murray**

## ST SHANGHAI

If you are looking for a new puzzle game for your ST then check out **MATCH-IT!** This is a clone of Shanghai, the puzzle in which you have to remove tiles from a board by searching them out pair by pair. The game begins with 80 tiles which must be paired off before a timer runs out. You don't have long to move that mouse quickly!

As in Shanghai, you can only pair off tiles which can be joined with a consecutive list of two numbers or less. Also, the tiles must lie in a few areas, i.e. not blocked by other tiles. These factors make for a very challenging game.

There are some special tiles in Match-it which stop the clock for a short time. Pieces are matched to flowers, flowers to numbers. Such can help when you're in a sticky situation and can't find a pair. By hitting the HELP key, however, you can get the computer to pick out a pair of tiles for you. You begin with

two of these helps and one is added after the completion of each level. Try to hang onto your helps if possible because they are added to your score at the end of each level.

The graphics in Match-it are detailed and colourful. The overall appearance is of a commercial release. The background music is pleasant but does become annoying after a while. Press **W** to toggle it on or off.

One criticism is that Match-it operates on a single level of tiles. The true version of Shanghai is in 3D with tiles piled on top of one another. A 3D option would have made all of the game perfect. This game looks Match-it is great entertainment and truly additive to any fan of puzzles.

## THE RETURN OF JETPAC

Budgie UK's **JETPAC** is a recreation of that old Spectrum shoot-'em-up of the same name which received new reviews back in 1994. I

remember playing the game at the time and wondering what all the fuss was about. After all, these were clones of the superior titles on the Atari 2600. Anyway, for old time's sake, an re-3-D version has decided to bring Jetpac into the 90s and onto your ST.

The object of this game is to guide the jet-packed character around the screen collecting parts of a rocket which must be dropped over a landing pad at the bottom. This allows you to build the rocket and therefore escape to the next level. There are three rocket parts to collect plus six packages of fuel. Attempting to hit your progress are a number of enemies including birds, hovering bubbles, indestructible mines and lasers.

Score increases can take multiple hits. Touch an enemy and you explode! However, if you manage to grab an air bubble you become invulnerable for a short while. Also flying around are a variety of bonuses which can boost your score. This Budget UK version features 80 levels and an end sequence. I don't know what the end sequence entails because I haven't found long before it.

The screen layout consists of three platforms hanging in the air and a landing pad on the ground. Parts of the rocket are positioned on each platform and fuel packages fall from the sky. All must be delivered to the platform to



STACK 'EM UP - Tetris with a subtle difference!

allow take-off. Everything in the screen layout is large to design and thus creates a disorientable atmosphere which dampens the entertainment. Gameplay is just too repetitive to offer anything more than a few games. On the plus side, Jetpac is written in machine code and moves both fast and smooth. The music on the main character is well done, as is the title sequence which looks like a diorama. The background music is very catchy and sound effects, although a little sparse, are quite good.

As a PD title, Jetpac is perhaps worth a blast if you want to recall memories of the original, however, as far as I am concerned, it is still an average title as it ever was and should remain buried in the Space graveyard! It's certainly not of the usual high standard expected from Budget.

## TANTALIZING TETRIS

Receiving normal service, Budget have released **STACK 'EM UP**, a superb version of Tetris which just had to make it into this collection of reviews!

Tetris is an all-time puzzle game in which you have to manipulate falling objects into vertical, horizontal and diagonal lines. Complete a certain number of lines and you progress to the next level. Stack 'em Up features 80 levels, bonus lines, level codes, colourful graphics, background music, etc. The main play area takes up the centre third of the screen. Control is via a joystick or mouse. Use a mouse as it allows quicker movement of the pieces. There are one and two player modes, if two

