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NEW

ATARI USER

The Resource for the ATARI CLASSIC and the ATARI ST

Issue 74 - October/November 1995

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FOR THE ATARI CLASSIC

⊗ ONE TWO EIGHT

Add dramatic special effects to your
programs with these routines

⊗ IOCB's

Not difficult when you know how

⊗ BEHIND THE SCENES

A look at organising for a show like AMS



PLUS REVIEWS OF NEW ROMS FROM ATARI!

FOR THE ATARI ST

PD ROUNDUP

visits *Star Trek* and
The X-Files and delves
further into the unknown!



PLUS ... DES UPDATE ... CHOOSING A PRINTER ... COLTS ... ROBOBOMB REVIEW ...

This issue's

Thanks

Lee Ellingham puts it all together and fills up the gaps but the real thanks goes to the following who made this issue possible

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

For their regular contributions

John B Davidson
Paul Dixon
Ann O'Donnell

Aileen J. Palmer
Stewart Murray

Ann O'Donnell has sent us in so much stuff, and there's more to come, that I thought I was doing her wrong when I didn't include her in "regular contributors" list!

For their contributions this issue

John Peckert
Aaron Dumbrava
Andy Dullimore

Dean Garraghty
Joel Goodrich

Special thanks this issue to John Peckert who has sent almost all of his big batch of contributions in print, instead of waiting for submitting his computer-only material. The Classic card to James Weatherly for writing in a great bunch of stuff that almost made it to this issue but for lack of space. I should do in the future, sorry!

Some of these files have supported us even when the magazine will without. Some we could not be here. Some 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

PACE 4 shows just what you can do with your disk. NEW ATARI USER has always been created entirely with Atari equipment, initially on the XL line more lately with a Mega II and other stuff. My words "PC" or "Mac" or "Hardware" include a Mega II or equivalent in this. All I'll mention again. IBM's Word Doc, a MS-DOS 2.0 system (Word perfect, PageMaker, etc.) or a Macintosh, a complete Atari disk system, MS-DOS 2.00 system, floppies, software used to format and then Atari Publisher's disk editor software include Ken's, Tardis, Turbo Basic and various custom systems programs on the XL line. Software development on a PC or Mac can be transferred across to the AT via TURBOBASIC. Programs are coded on the AT and printed out directly for printing after the typesetting is completed. All major editing is done with the Atari and editors are fed out with the Atari Publisher. Each page is checked directly from the source on a PC/LaTeX II which produces finished pages ready to go to press. All work is done in-house at the magazine and offices.

Well, it's never going to stop so that you get the deal

Inspiration

Kathy Hatten continues to be the latest and greatest inspiration for this issue with a CD entitled Time Passes By. It has one of those songs that feels a part of me and got elevated to the Hall of Fame of the finest songs ever written. The song in question is Asking Us To Dance by Hugh Prather. I don't know what it is but it has the power to make a response even after dozens of plays. I would have liked to report on a new CD by John Price, his first in four years, but it will have to wait until Christmas presser time. Life without music is hard indeed!

CONTRIBUTIONS

Without contributions from its readers, NEW ATARI USER would not be possible. PACE 4 welcomes and encourages its readers to submit articles, program and reviews for publication. Programs must be submitted on disk or cassette, articles should wherever possible be submitted on text files on disk. We seek to encourage your participation and do not have a word limit for submissions. If something interests you, write a program or article and submit it!

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ATARI

USER

The Magazine for the Dedicated Atari User

ISSN No. 0058-7195

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AMS '95

Note that photocopies of the voucher opposite will be accepted, so there is no need to spoil your magazine

LISTINGS CRACKED?

Last issue the program listings were still cut right with lines here and there hard to read. It looks okay when it goes off to the printers but I have no control over the exposure of the plates and the amount of ink laid down and don't know until the magazine is returned from the printers what the result will be.

The intention behind printing the listings in the format you have seen for many years is that you get in the magazine exactly what you are on the screen, thus making it easier to spot mistakes. When you can't read what is in the magazine, however, the system doesn't work! This issue I have gone back to a method of printing listings that we used to use over 10 years ago. It takes a little bit of working out but you should find it much easier to type in the programs. The system simply identifies internal and control characters and gives you a key to allow you to type them in. Although you can't see exactly what you are supposed to be typing, the Type rules will ensure that you get each line right.

Hopefully, the problems of the last few issues are now solved but if you have any comments please let me know.

CONTRIBUTORS SQUEEZE TIPSTER!

We have had some excellent contributions to recent months and I thank all of those who have set down and made the effort to share their experience and knowledge with other Amat users. There are some great articles this issue but one of the problems was that I had to squeeze out the Tipster. The column was completed but I couldn't find three pages to drop it in to. Inevitably, you can not assured that The Tipster will be back with a vengeance next issue.

My request for commercial releases to use on Disk Reviews was taken up by Joel Kosterik whose program The Citadel appears this issue and I think has greatly for permission to use Disk. There are, however, hundreds of commercial releases that are now gone forever and will not see the light of day again unless the authors allow us to use them. If you know the folks that need to write programs for English Software, Red Hat, Zappata or any of the dozens of small companies that spring up over the years, have a word and let them know that they can get their work seen more easily.

WHERE DID YOU GO?

While the contributors have been busy the readers seem to have fallen a little quiet. The long hot summer seems to have taken its toll as we had one of the quietest Augusts ever with only a few phone calls, a few orders and fewer than usual e-mails. Now that the weather has turned a few more e-mails are trickling in but, as I have said many times before, we need your enthusiastic support to make it all worthwhile. If you did not know that you obviously can't be reading this, but if you have friends who use Amat, would you give them a call and make sure that they know about New Amat? And that their subscriptions are up to date.

There is still a great deal of interest and support for the Amat Classic but we have to keep pushing the message home that we all have to work together to ensure a bright future.

Les Ellingham

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Mailbag



Not so hot for Mailbag!

The hot August weather seems to have made Mailbag tend a little this time. Not only were there fewer letters than of late but I was late in sending them to Allan and he couldn't manage to get enough free time to get the columns together in time for the deadline. So, this time it's still Allan Palmer's Mailbag, but with me as guest compiler. The format might be slightly different but, as of course, it is your views and opinions that are being expressed. Read on and write in, let's make Allan's keyboard smoke next issue!

Les Eklington

WHOOPI!

Let begin with an apology to Brad Rogers who writes — "I wish to register a complaint. Well, sort of. In a letter of mine printed in issue 73, all references to the frequency of statistical matrix changes were printed as MHz. This is incorrect and should be Hz. I would be grateful if a correction could be printed. Having just checked the letter I sent to yourselves, all frequencies are given as Hz. How that M crept in I have no idea, whatsoever!"

■ Sorry, Brad, Allan has admitted to transcriptionally changing your Hz to MHz in our magazines. It is strange! Few when typing up copy a mistake made once in often repeated several times, the letter seems to latch on to the first mistake and copy it through-out. Good job I wasn't compiling the last column, as I'd be the only column a bit weird, wouldn't I?

NEW FORMAT RULES, OK!

James Kendall of Thelby, Essex has written many times before and now comes in our defence — "Pleased to see a long Mailbag in issue 73. Just a note to support the current format, after reading Huger Lacey's letter. I believe

that the AT magazine is still an excellent read. I suspect most Atari Users no longer type in letters any more and subscribe to disk (as it's very reasonable), and if not they can send a SASE for a copy of the letters if required. I have both STII and OE and now no longer use the ST at all. If I did I would carry on self-writing to one of the multi-screen AT mags such as ST Forum. I still like to keep up to date with the world of Atari, but I feel that Page 4 should now mainly concern items on the beloved 8-bit.

Keep up the good work.

■ Thanks for the support, James. You are probably right when you say that most readers do not type in the letters but there are still a lot that do and we have received a number of requests to keep the type in that mag from those who subscribe to disk. Having a printed listing is helpful to those who write their own programs, as a listing can almost be read as an article if you are familiar with program numbering. It runs the full, and can solve a few problems, looking down a listing and trying to figure out how it works.

ATARI FUTURE

Byron Wilkison from South-oxford sends us a few more type for Dirk and has some questions about transferring tapes to-disk (as words do

letter off) with — "While watching Blake Runner on TV the other day I noticed a brief shot of a prominent man (not Pugh) legs. The film is set in the year 2020 so surely this means that Atari Corp. will finally be getting their act together. Perhaps the changes won't be the floppy to new appears, or maybe they'll resurrect the 130002? Byron goes on to ask "Could you ask if anyone has been able to transfer the following games from tape to disk. I have tried using Transdisk II and Howlers Tape to Disk utility, but I have had no success with either: Ace of Aces

Frank Manager (I have tried the solution in issue 68's Mailbag but it doesn't seem to work)

Head Over Heels (I bought copy at first but then tried to find further stages from cassette)

Spy a Spy Trilogy (as Head Over Heels, they had but try to read further stages from tape)

Superman Tank Commander Transdisk"

■ Thanks for the extra Dirk tips, Byron, which will find their way into The Operator's column this issue or next. The Blake Runner sequence is quite a famous one of the Atari logs and Atari themselves were quite obliged to have it included. As to whether it means Atari will be around in 2020 I am not sure

after all the (the 2001) A Space Odyssey has a passenger shuttle going to the moon run by Pan Am, and where are they now? I would have put more money on Pan Am surviving than Atari. If Atari makes it to 2020, I'll eat my piston head!

On the tape to disk problem it is over the new readers for their solutions. If you have the answer to any of the above let us know right away to put Byron out of his misery. Transferring tapes to disk might be a big topic, since there are still plenty of games available on tape but few on-disk. If you would help on particular tapes, let us know.

MORE TAPE PROBLEMS

While we're on the subject of tape to disk transfer, I had a letter from long time US subscriber Ken Magellan who sends you a couple he said that he has never been able to get Transdisk to work on a number of tapes that he has purchased from the UK. He asked whether I could transfer the tapes over for him but I have never found the time and don't have copies of some of the games. My apologies to you, Ken, for seeming to ignore your letters but let's see if we can put things right with help from our readers. If you have been able to be

Page 6's Best Atari User



transfer any of the following to-disk, send us a copy of the disk. I will pass on a complimentary disk to Ken and return your original disks. Here is the list: Ace of Aces, Arkonoid, Storm, Asteroids, Twilight World, Universal Wars, Thunderbolt, Little Devil, Heavy's House, Frost, Shooting Disk, Snakes, Snake and Speed, Hawk.

ATARI USER TOOLKIT

Regular contributor John Parker has some help with the Atari User Toolkit — "In Mailbag from issue 73, Mick "Waco" Tomlin speaks of transferring the old Atari User Toolkit from cassette to disk in answer to the plea of Brian Arnold in issue 70. I had no idea that Toolkit had become so rare. I have Toolkit on disk and always use it in connection with Atari BASIC. I use Toolkit with a ROM BIOS utility which was originally a type-in listing in one of the old Atari User magazines. This utility must be on disk to call it from BASIC after the normal loading. Toolkit with ROM BIOS work very well together.

When loaded, the Toolkit master disk presents a menu giving an introduction, instructions on how to use the Toolkit commands with the option to print them and to program a work disk. It pro-



pass a work disk by first formatting it and writing 0000-0000, 0400-0000 and finally by writing 0000 as AUTHORING-0000 file to the disk. If necessary, I will forward a copy of the Toolkit master disk to Len for distribution.

Also in Issue 73's Mailbag, David Rogers wrongly states the main electricity supply frequencies as 50/60/100 Hz instead of 50/60 which may cause confusion. The prefix Mega literally means one million times. The frequency of an AC mains electricity supply is typically 50Hz/60Hz which means 50/60 cycles per second. 50000/500000 is 50/60 million cycles per second which is actually in the VHF range, a bit lower than the FM transmission band!

I think for the information on the Toolkit, okay. Any interest in its distributing the disk content? The magazine to David Rogers have already been mailed earlier, but your additional comments are quite interesting. Whether it is a choice the electricity 50Hz if you could just have the 60Hz is over the air?

HIGH DENSITY PROBLEMS

Dear Arnold came, pleased to see a response to an earlier query that issue from M. There is but goes on to say ... I should be glad to send him a

copy of the Atari User Toolkit on tape for him to attempt to convert it if only I knew where to send it. You are welcome to pass on my address and/or phone number to him, or suggest any other means of contact!

I worry about not giving M. Taylor's address but we are never sure whether it is right to publish correspondent's addresses unless they have specifically asked us to do so. If you insist to get in touch with someone from Mailbag, give them a no address, you can always send whatever you want to us with a request that it be passed on and we will happily mail it on to the person concerned, if you write to Mailbag offering help with anything and do not send your address being published, please make it quite clear in your letter that your address can be included.

Eric's guess on with a little problem ... I recently bought, at a car boot sale, a quantity of disks which were to have marked Double Density. On opening the boxes I found that the disks themselves were labelled High Density. They all appear to be brand new, and of a good, well-known make. The only trouble is that I cannot see them! Attempting to format only produces a permanent grinding noise from my poor old 1080, and after several minutes I give up and switched off. I tried four disks at random, all with the same

result. Any ideas?

I always understood that the Atari could only use single or double density disks but the disks on one currently using for the laser disks and Library are Quad Density, 90 tracks per track, left oriented and they work fine. I believe the key words are 'left oriented' which means that the arrangement of the sectors is not fixed and can be changed by a formatting program on any computer. It could well be that your disks are pre-formatted for use on a PC and that the sectors are fixed. Not having PC experience I cannot state this for certain but I am sure someone knows the answer and will tell us next time.

REACH FOR THE STARS

Johnny Chan dropped to a line to hope that everyone had his Stars Database that was the Disk Home in Issue 72 but has pointed out a small bug which badly affects option 7, Starman Search. To fix this, load DATABASE, 7700 and on line 24-40 modify with the following: 2440 TRAP 0000: IF NAME1=BLK:G= THEN GOTO 2440: I'm very, very sorry for this problem. My progress did go through a month of testing, not just by me, but a few friends as well. If there is any



interest in a revision I containing more holidays, then I will consider finding more holidays although it's not very finding new ones. If anyone is finding difficulty modifying the master program, please write to me and I will give you more information, but please enclose a stamped addressed envelope.

For those people with PC SFORMER 3.0, the Stars Database works fine on it. My hint is to select ATARI 8000L mode, as the ATARI 1000L mode is a bit slow!

I thank for the correction, Johnny. Don't worry about the odd bug, how do you think all those PC consultants manage to make such a good living? If you want to write to Johnny, you can find his address in the instructions for The Stars Database on the Issue 72 disk.

WHITHER ANG?

To exclude Ipswich Mailings from Specs asks for information on ANG Software ... I ordered the game Mirror

Widgit from ANG Software of Wilford some months ago. As I haven't had any answer from them, I'm already asking myself what could have happened. Is ANG Software still alive? It'll be very grateful if one of your readers or one of the ANG group could give me an answer!

I let us know if you have, or haven't, heard from ANG recently or can give Ipswich any information.

Well, that's a little slow. The fruits of a long, hot day's sun are holiday which kept most 5000 coming from their computers. It's rather nice and the night are drawing in so it's time for you to think of something interesting to send to Mailbag. Get out the word processor or, if you still haven't got yourself a printer, the handy old line and drop us a line on anything interesting to do with the Atari or computing in general. Alan has had a rest now and I am sure he is dying to get his long-awaited all-stamped-up for the next issue.

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

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BACK ISSUES

Back issues of NEW ATARI USER are still available from ISSUE 31 up to ISSUE 73 except for the following

ISSUE 62 and 31-500 BT

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upon which they are printed. The actual character colour values in page 6 are not changed by the values that location 209 contains; they are merely bypassed. The original character colours may be restored at any time by loading location 209 with a zero.

A SECOND CLOCK

Although location 209 is used by CES itself to regulate the cursor flash rate, it may be used on a second clock in the same way as location 80, since it is incremented at each VBI. If the cursor is being used, then location 209 may be PEEKed but should not be POKEd as poking it would cause a disruption

in the cursor flash rate. If the cursor is turned off then this location may be POKEd at will.

LOCATION 209

This location is used by CES itself as a counter to synchronize the colours to the correct screen lines. This location is incremented each time the DLJ is called by the display list, which is 24 times. Thus location 209 increments to 24 before it is reset to zero by the VBI. This register tells the DLJ when to read the data from page 6 to load into the appropriate two hardware colour registers. This register should never be POKEd since this would cause a nasty flicker on screens as the colours suddenly become "out of sync".

This location could be used as a number counter generator, generating numbers in the range of 0 to 24 which is achieved by simply PEEKing location 209 from basic.

CES TECHNICAL DETAILS

WHY NOT 'WSYNC'?

The usual way of synchronizing the loading of the hardware registers is to use the "WSYNC" register at location M280. When used, the colours of the lines were fixed to be rock steady, but they appeared to wobble when text was printed to the screen creating a nasty unattractive appearance. This results

Machine Code Routines for CES III

VBI Routine	DLJ Routine	Colour Loading Routine	Colour Reset Routine
PLA	PLA	PLA	PLA
LDX #0	TAX	TAX	BEQ DEFAULT
STA 77	PLA	TAX	PLA
STA 767	TAX	DEX	PLA
STA 209	PLA	DEX	STA 209
INC 209	INC 209	PLA	PLA
LDX 209	LDX 209	PLA	PLA
BEQ CHANGE	CPX #255	PLA	STA 207
LDX #0	BEQ RESET	STA 209	DEFLTCT
STA #04	RETURN	BEQ UNLOCK	PLA
LDX #04	NOP	LDX #04	LDX 209
STA 767	NOP	STA 209	LDX 209
CHANGE	LDX 1000,X	UNLOCK	STA 1000,X
LDX 204	STA 0000	PLA	CPX #255
BEQ ON	LDY #05	PLA	BEQ CHANGE
LDX 209	BEQ BYPASS	PLA	RETURN
AND 204	LDX 1000,X	CLC	INX
ORP 204	BYPASS	ADC 209	CPX #40
BEQ ON	STA 0001	TAY	BEQ LOOP
BEQ OFF	PLA	LOOP	RTS
CURSOR	PLA	PLA	CHANGE
STA 768	TAY	PLA	LDX 207
PLA	PLA	PLA	BEQ RETURN
PLA	TAX	PLA	BEQ RETURN
JMP #0000	PLA	PLA	STA 1000,Y
-----	RTS	-----	-----
ON	-----	MY	DEFAULT
LDX #0	RESET	DEX	LDX #100
BEQ CURSOR	LDX #0	BEQ LOOP	STA 209
OFF	STA 209	RTS	LDX #000
LDX #0	STA 207	-----	STA 207
BEQ CHANGE	BEQ RETURN	-----	BEQ DEFLTCT

from the WSYNC register synchronizing to the next scan line down the screen due to the timing requirements for screen printing and then returning to the previous line. To overcome this problem, two "NOP" instructions between the colour code loading are used instead of the WSYNC register to sufficiently delay the loading of the hardware registers to ensure that it is done all screens which provides colours that are rock steady at all times.

THE DISPLAY LIST

The display list is stored in the form of a relocatable string DLJM and is a normal mode 200 display list modified to call up a DLJ interrupt 24 times. Some line format characters have been included in the display list to produce the hard screen. A partially hard screen may be created by simply removing the

```

7 D=07100010111101010100001110
D1 000 1=087000COL:00001,0,1,0,0,0,0,0
087000COL:00001,0,1,0,0,0
A 000 1=087000COL:00001,0,1,0,0,0,0,0
087000COL:00001,0,1,0,0,0,0,0
E7 000 001 000
F0 000 POSITION 7,20-7 * 1, PARTIAL SCORE
M 3, NORMAL SCREEN 7 * 1, 1; IF PLA1
M=4 THEN 7 'FLASH';
BE 070 IF PLA0M1 THEN 7 'RESET';
CO 000 7 * COL:000 1, TEXT 00/071
TH 000 7 * 3, KEYCODE SCREEN 7, RATE OF
FLASH 7 * 4, KEYBOARD LOCK 3, RESET
BE FLASH; RETURN
  
```

Insertion: INVERSE CHARACTERS - | - CONTROL + CHARACTER - - - - - INVERSE CONTROL + CHARACTER

The information on this page is derived from

printed on CDS Version 81.

USING CES IN YOUR OWN PROGRAMS

It is a simple matter to delete the example program from the listing (after saving it if desired) and begin writing your own program in its place. When using CES in your own programs, it should be remembered that the 48 colour registers in page 6 initially contain a zero which results in a black screen with no visible text. This can easily be overcome by initializing, at least temporarily, with `3=00=HALFBRILLANCE`.

As previously stated, CES Version 81 includes two additional machine code routines to load colour data at machine code speed. Although writers for CES, they are complementary routines and do not form an integral part of CES itself and if either of them is not being used within a specific basic program, then they can simply be left out.

A SMALL DISADVANTAGE

Due to the use of machine code strings, CES has virtually no initializing time since there is no time consuming data to load. One possible disadvantage of this is that if a programmer is entered to direct mode, there a crash could result. This is because machine code strings load around in Basic and the respective vector addresses for both the VBI and the DLJ would not necessarily contain the correct values and hence might cause a crash. A small price to pay for the advantages of CES Version 81.

I hope you enjoy using the routines in your own programs.

POSSIBLE ERRORS

Decrease up to 20 parameters may be used in the routine, errors may result due to stack overflow (error 10) or line too long (error 14). If such errors are encountered, then a Basic FOR-NEXT loop can always be used instead.

RESET AND FLAIN SCREEN COLOURS

This is achieved using `RESET` via the IBM command and is used to colour the whole screen with a single colour and to set all lines of characters to a single brilliance. The routine can be used with either two parameters or with no parameters at all. When no parameters are used, the routine defaults to the standard colour values for a mode zero screen, which is 148 and 202. The routine is used in the following two ways ...

```
3=00=ADR(RESRTE),A,B
```

- where ...
- A is the screen colour and
- B is the character brilliance

To reset the entire screen to the usual mode zero colouring of blue with white characters use ...

```
3=00=ADR(RESRTE)
```

Of course, the first method using two parameters could always be used instead thus ...

```
3=00=ADR(RESRTE),A,B
```

where A=148 and B=202

THE BASIC LISTING

The CES program itself is the top part of the listing with the example program following. The example program shows some of the

Machine Code Routines for CES 81

appropriate low ASCII characters from the display list string. Thicker lines are obtained by replacing the appropriate ASCII characters with characters having ASCII codes of a multiple of 16. If the display list is altered in any way, then the first two characters of the display list string may need to be changed to re-control the display in the normal way.

The disadvantage of storing a display list as a relocatable string is that it must not cross a page boundary. If it does, the screen display is affected in the same way as FORKING odd values into location 500 and 560. The cure is simply a matter of pre-empting this, which can be achieved by placing a BEM extension consisting about 30 to 50 characters at the beginning of a Basic program to push the whole program along a bit in RAM. The BEM may be removed after further development of the Basic program.

USE WITH TURBO BASIC

CES may be used with either Turbo Basic or standard Atari Basic since it PEEKs location 80 and loads the sixth display list character according to the value found. This is necessary because of the different screen RAM addresses used in the two languages.

The sixth character of the display list string may be changed permanently by issuing to a particular program which will avoid having to PEEK location 80. For standard Atari Basic, the routine "up-arrow" character, ASCII code 130 is used and for Turbo Basic inverse "v" character, ASCII code 138 is used.

LOADING THE COLOURS

CES contains two relocatable machine code string routines for loading the colour data to

provide virtually instant screen colouring. The routines are described separately as follows.

MULTICOLOURED SCREEN DATA LOADING

This is achieved by using "COLOURS" via the IBM command as follows ...

```
3=00=ADR(COLOURS),A,B,C,D,C1,C2,C3...
```

- where ...
- A selects line or character colouring (line for line and zero zero for character)
- B is the first line to be coloured (0 to 23 where 0 is the top line)
- C is the actual colour data (0 to 255)

This routine may be used with a minimum of three parameters (A,B and C) up to a maximum of 20 parameters (A,B,C-D-C3). The routine is flexible and will only load as many colour values as there are parameters in the command and therefore it is inoperative if the actual number of parameters used. The computer will therefore not crash if the wrong number of parameters are used.

SOME EXAMPLES

```
3=00=ADR(COLOURS),A,B,C1,C2,C3,C4 ...C20
```

Will colour all 24 lines of the screen (not the character).

```
3=00=ADR(COLOURS),A,B,C1,C2,C3,C4
```

Will colour four lines beginning with line 0.

```
3=00=ADR(COLOURS),A,B,A,A,A,A,A,A
```

Will set the brilliance of eight lines of characters to black starting on line 5.

```
3=00=ADR(COLOURS),A,B,A
```

Will set the characters on line 10 and 11 to black.

BEHIND THE SCENES

**It's showtime again!
But have you ever
wondered how all
those exhibitors get
there? AMS stalwart
Dean Garraghty
explains all**

Over the years, I have written many AMS show reviews for *The Show*.
Disk + Paper (my main magazine).
These reviews give a good idea of what actually happened on the day itself, usually picking up the story at 9 a.m. on the morning in question. But for as it doesn't start there at all. This article will hopefully give you more of an insight into what actually goes down before the day itself.

We have to start thinking about the show some four months in advance. This is when we get the information and booking forms from Showmail Productions, the show organisers. The show is now as popular that you have to book and pay for the stand virtually as

soon as the firms enter in order to be sure of getting a stand. Once this has been sorted out we can usually forget about the show for some time yet.

The next difficult of shows to organise was the November 1990 show because we had Harald coming over from Germany for the day. Getting this sorted out alone was enough of a problem without thinking about everything else! As this show took so long to organise, I will use it as an example of the work Showmail involved in getting a show together.

INTERNATIONAL TRANSPORT!

I had asked Harald earlier that year if he would be able to come over. It took some working out, but Harald decided that he could make it. It was then that I had to "put my money where my mouth is" and actually turn that idea into a reality. Luckily Harald made some of the arrangements and I organised the rest.

The first problem was actually getting a plane from somewhere near Harald to somewhere near me. We needed to get Harald as close to Düsseldorf as possible, but Harald wanted to get a plane from as close to him as possible. Several possibilities came to light, but some wouldn't really work. The plan we decided on involved Harald taking a 1 hour train journey in Germany to get to a major

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airport in order to fly home to the UK. He would then have to take a 1 hour tube journey to Kings Cross to then take another 1 hr (Sloane) train journey to Doncaster. The plane journey itself took only an hour!

The action starts to heat up about a month before the show when I have to decide what exactly we will be taking in terms of equipment, and also what. Having worked this out, I have to set about and copy lots of checks and organise lots of photocopying. This can take a while!

Next I have to sort out the posters for the stand before it. Yes, I'm the one who has to dream up what to write and then write it. It's not too easy on such bright paper. My eyes go all blurry after a while!

Next I do a layout plan for the stand. It may look like we just turn up and clamp all the stuff on two tables, but we do actually work this out in advance! We need to ensure that people can see stuff, and that people can see us! We usually have more stuff happening behind the stand, and again we have to make sure we know what we've got where, although this doesn't stop us losing things! Advance planning means we don't waste too much time on the day. Everything is packed into boxes and labelled. We also have various lists of what we have taken down, and these are checked when we pack and unpack things. This not only saves stock, but also everything down to price and list/sold!

I took care of the UK train tickets and sent them over to Harald. He would, however, have to sort out the tube journey himself. There was, unfortunately, a slight problem. It was impossible to work out which particular train Harald would catch at Kings Cross. The plane could be late, the tube may take longer - I had to know in order to be at Doncaster station in time to pick Harald up. The obvious solution was for Harald to phone from Kings Cross. Sounds easy? Unfortunately not! We had no small change. Finally, Harald would have no UK coins for the phone. I solved that by sending him some coins in advance. Next problem Harald had never used a UK passport! I had to send him details of how to use one! This is a good example of just how much we have to think about while organising shows!

UK TRANSPORT

In addition to international worries, I had the rest of the show to think about. Our main problem has always been transport. Getting ourselves there has in the past always meant us to miss the show. Luckily, Richard Gore was able to buy a his van and drive down for us. John Day's also offered to drive down as well in order to take Harald and Mike.

Next I do a layout plan for the stand. It may look like we just turn up and clamp all the stuff on two tables, but we do actually work this out in advance! We need to ensure that people can see stuff, and that people can see us! We usually have more stuff happening behind the stand, and again we have to make sure we know what we've got where, although this doesn't stop us losing things! Advance planning means we don't waste too much time on the day. Everything is packed into boxes and labelled. We also have various lists of what we have taken down, and these are checked when we pack and unpack things. This not only saves stock, but also everything down to price and list/sold!

In addition to Harald, lots of other people were coming along to help, all from different parts of the country. All had to be contacted and confirmed. The day before a show is always chaotic. How do you do everything? How everyone know what they're doing? I usually do all the packing the day before along with packing all the exhibitors. It's then time to phone people to make sure there are no last minute problems. With Harald coming over on the Friday, the day before is November 1990 was more chaotic than usual! I had to go and collect Harald and bring him back in my van. He was bringing over the labels for Harald which we were to release at the show.

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CALLING HELPERS

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Features and Credits

... Shows a little bit and it shows some off

We quickly put all the labels on the ready duplicated disks and got back to more printing matters - our treat!

The fans and games was to go on quite late on that particular Friday. Richard had to bring some copies of *Alvin* (that for at least I think it was *thirty* which he had literally just finished). Also, Richard had just transferred *Fungo* over from Germany, but it needed sorting out because it was on a 30-disk. We failed to agree to get it to work, but I couldn't seem to be able to get the start side of things working. Richard went away with some bits and pieces and I had to literally get it working. Luckily it worked but I didn't actually get to see it working myself until the morning of the show!

I sometimes continue organising well into the night, perhaps until 2a.m. I get about 2 hours sleep, and then have to get up! This is a habit!

WE'VE ARRIVED!

We often say to ourselves that 'after writing up...' we do this that and the other. However, the writing up part is also hard work. There's lots to be done before you get away in the 30s. We race against the clock, often still writing up minutes before the doors open. We usually get to the stand itself about 7.30a.m. We then check the van and go about organising all the boxes. At this point it is just chaos and we spend about half an hour just moving things around in circles. Eventually it starts to take shape. Getting the machines set up and tested is usually job one. Somebody then puts up the posters (usually wall). We usually take two tables of our own design which we use for a machine at the back of the stand, and one for other bits and pieces. We usually spend ages finding something to prop these tables up with, because they always collapse! We then unpack the stock for the

day, some of which goes on what space is left on the stand and some of which is left behind the stand (pieces of all our commercial stuff and work like). Getting all our work, hardware and software to fit is often difficult, which is why it is usually just to a pile!

After all this is sorted out we have to spend six hours actually doing the show. Once the show is over, we then have to re-pack everything. If this takes as long or longer than it did to unpack everything, then we know we haven't sold much!

BACK TO GERMANY

For most shows it would now all be over, but in November 1990 we had Harald over and we had to get him back down to London on the Monday. We had all this planned, but thanks to Heidi's Bad News, as most people will probably know, I don't have a lot of time left, all the crates that morning there in London were running late. Twenty minutes of chaos followed on Doncaster station. Nobody knew what was happening. The train finally arrived, but they knew that it would be further delayed down the line. I wasn't too happy about all this and made it clear to Harald that I wasn't relaxed his place. I would hold him totally responsible. As it happened, Harald got on the plane with 2000 minutes to spare, but he had to run everywhere. He very nearly did miss his plane back. Conclusion: don't rely on 200

I hope all this has given you all some idea of the amount of effort we put in to shows, and how much has to be done to make it all happen. It is made easier with the help of the many people who we always thank at the end of the reviews.

See you all at the next, about 3, won't be long, we're already started work!

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SEEING THE LIGHT

Micro Discount have discovered some ROMs that Atari never released. Paul Rixon checks them out for value

Remember those heady 'golden' years of Atari computing when software companies were still producing new games for XL/XE machines? The magazines were never short of product announcements and hopeful reviewers. Sometimes the software made it into the shops and onto entire catalogues, but other times the reality was - nothing. Why did organisations such as Ocean place full-page adverts in magazines but never release the featured software? Did these games even exist, or were companies just testing the water?

Following the recent discovery of Duke Droids (see issue 7) I'd like to know that Atari Corporation, for once, commissioned games which were duly completed but never sold. Several excellent programs have remained unknown to all but the authors and, presumably, a small number of Atari employees. No doubt there are valid reasons why Atari put these games on hold, but it does seem a shame that programmers' hard work may never be enjoyed.

OLD SECRETS DISCOVERED

Now for some good news ... Micro Discount have stumbled upon a small supply of 'unknown' games on ROM cartridge - *Hexagon*, *Tower Toppler* and *Deflektor* - inside a re-assignment of goods from Atari's Stamford warehouse. It appears that Atari's development section used ROMs to distribute programs to their test-systems, who were responsible for checking them prior to final release. For these three games, the release never came, but now you can buy them!

BERZERC

Berzerc is the oldest game it was completed in 1982) and, not surprisingly, the most graphically primitive. I've a feeling it may have vanished before someone but it hasn't been widely distributed. *Berzerc* is a simple shoot-em-up similar to the equally basic *Behemoth 2548*. A joystick-controlled 'beastoid' is pursued by a screen-full of robot aggressors. Your task is to shoot the baddies before they die the same to you, avoid a mass of walls and head for the nearest exit. If you take too long a bossy 'thing' comes to get you.

Berzerc would be a poor show if it wasn't for the inclusion of innovative software speech. *Triwizard* alert! says your Atari. The bossing must not escape! ... Chunks, light like a robot! ... Got the beastoid, get the intruder. Anything else? Well, you just have to play

and see. Could be addictive, that!

TOWER TOPPLER

Tower Toppler dates from 1987 and was developed by Howson. Page 6 reported in issue 28 (see first) that Howson, who had previously published hits including *Gridman* and *Pho Lord* for other machines, now turning their attention to Atari. How many Howson/Atari games can you think of? Well, *Tower Toppler* made it on the AT but the 8-bit version, which was evidently sold to Atari, stayed out of circulation.

If you're keen on platform games, *Tower Toppler* is a real treat. On the classic planet *Neobias* there are eight mysterious towers. Your job is to knock them down. To do this, you have to climb each tower using the post-solar platformer whilst avoiding traps and obstacles designed to hinder your progress. The towers are protected by indestructible materials, flying eyes, vicious robots and huge rolling macehambers. You're equipped with a wonderful gun, but it's only effective on a few of the maces. Some bridges crumble beneath you and others make you slip - if you don't take the correct path, you'll end up descending in a polemic mist. After each tower there's a sub-boss bossa round where you can shoot 'bad' in a misty web. There it's only the next one.

The graphics are based on the Atari's high-resolution mode so there isn't much colour variety but the detail is very nice indeed. A clever technique is used to give the impression you're walking around a circular tower. The features of the tower 'wraps' into view from the edge, so you walk to the left or right. There's a certain amount of flicker to the screen borders (maybe this explains why Atari wouldn't mention a release?) but this doesn't detract from the game itself. There's nice music at the start and suitable music throughout. Overall, *Tower Toppler* is a genuine quality product.

DEFLEKTOR

Deflektor is a US Gold development by Vortex Software for Atari Corp. It dated 1986, which suggests that Atari may have had it lined up for their larynxal 'Gaussian Center' promotion. Around this time, Atari did produce several rare releases.

It's a special game similar in style to the high-quality imports from Germany and Eastern-European countries. The ROM boots up with the digitised sound of *Deflektor*, followed by an original tone and colourful introduction screen. Press the trigger and the game starts. The aim is to destroy blockers on each screen, using a laser beam. The beam is fixed in position at source but, using a variety of swivelling deflector 'gadgets', you can change the direction and find a way to reach different parts of the screen. Some objects are indestructible whilst others react as overhead on the laser. Some have special functions that help you to wipe out otherwise invulnerable blockers. When all the prepared items have been sapped, you can raise onto the next level.

Like most puzzle games, *Deflektor* doesn't sound overly exciting on paper but addition soon sets in when you start to play. The graphics are superior and the playability rating is high. *Deflektor* is as good as - if not better than - other puzzle games that have made it into the market. It's well worth investigation.

There are more it - these great games that Atari didn't release. How many more have yet to be discovered? And how many authors were paid to write super games that were not subsequently published? Did someone put over coin? Will we ever know? ...

Deflektor, *Berzerc* and *Tower Toppler* can be purchased from Micro Discount (0121 383 8730) while stocks last. Each cartridge costs £12.00 inclusive.

An introduction to ...

INPUT/OUTPUT CONTROL BLOCKS

Ann O'Driscoll
continues her
series of articles
explaining some of
the basic opera-
tions of your Atari

OPENING A CHANNEL

While some operations (like `PRINT`) have automatic `OPEN/CLOSE` channel functions built in to them, for other operations you must tell the computer what to do. The BASIC command `OPEN` takes a channel to a device and takes the form

```
OPEN #A,B,C,D
```

where

- A = the channel (IOCB) number
- B = a number specifying the kind of access allowed
- C = an auxiliary code, used
- D = the device to be used

The channel, is normally a number between 1 and 5, as the other three channels (0, 6 and 7) are not always freely available to the user. Channel 0 is used for the screen editor (EO), channel 9 is used for the screen display (FD) in the graphics modes and channel 7 is used by `PRINT`, `LONG`, `PRINT`, `LIST` and `TEXT` routines.

The access number, is generally set as either 4 or 8. For input/output operations the data will either be transferred from (read) or sent to (written) the device. Input, or reading, is specified by a 4 output, or writing, by an 8. Other actions include reading the disk directory (specified by a 0) and write and append (specified by a 6).

The Atari has 8 channels (numbered 0 to 7) which are used to communicate with (i.e. get information from or put information to) all the input/output devices such as the keyboard, the disk drive, the printer, and so on. These lines of communication are the Input/Output Control Blocks. If you want to use an IOCB in a BASIC program, the general procedure is that you open the channel up, tell the computer to transfer the data and then close the channel down again when you are finished.

```
T0 10 REM *****
I0 20 REM # IOCB'S - LISTING 1
A0 30 REM # By
C0 40 REM # Ann O'Driscoll
M0 50 REM #
T1 60 REM # READ FROM DISK - GET TO
T0 70 REM *****
M0 80 REM
M0 90 REM
M0 95 REM *****
M0 100 REM *****
M0 110 REM *****
M0 120 REM *****
M0 130 REM *****
M0 140 REM *****
M0 150 REM *****
M0 160 REM *****
M0 170 REM *****
M0 180 REM *****
M0 190 REM *****
M0 200 REM *****
M0 210 REM *****
M0 220 REM *****
M0 230 REM *****
M0 240 REM *****
M0 250 REM *****
M0 260 REM *****
M0 270 REM *****
M0 280 REM *****
M0 290 REM *****
M0 300 REM *****
M0 310 REM *****
M0 320 REM *****
M0 330 REM *****
M0 340 REM *****
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M0 380 REM *****
M0 390 REM *****
M0 400 REM *****
M0 410 REM *****
M0 420 REM *****
M0 430 REM *****
M0 440 REM *****
M0 450 REM *****
M0 460 REM *****
M0 470 REM *****
M0 480 REM *****
M0 490 REM *****
M0 500 REM *****
M0 510 REM *****
M0 520 REM *****
M0 530 REM *****
M0 540 REM *****
M0 550 REM *****
M0 560 REM *****
M0 570 REM *****
M0 580 REM *****
M0 590 REM *****
M0 600 REM *****
M0 610 REM *****
M0 620 REM *****
M0 630 REM *****
M0 640 REM *****
M0 650 REM *****
M0 660 REM *****
M0 670 REM *****
M0 680 REM *****
M0 690 REM *****
M0 700 REM *****
M0 710 REM *****
M0 720 REM *****
M0 730 REM *****
M0 740 REM *****
M0 750 REM *****
M0 760 REM *****
M0 770 REM *****
M0 780 REM *****
M0 790 REM *****
M0 800 REM *****
M0 810 REM *****
M0 820 REM *****
M0 830 REM *****
M0 840 REM *****
M0 850 REM *****
M0 860 REM *****
M0 870 REM *****
M0 880 REM *****
M0 890 REM *****
M0 900 REM *****
M0 910 REM *****
M0 920 REM *****
M0 930 REM *****
M0 940 REM *****
M0 950 REM *****
M0 960 REM *****
M0 970 REM *****
M0 980 REM *****
M0 990 REM *****
M0 1000 REM *****
```

Include - WHERE CHARACTERS - [] = CONTROL CHARACTER - < > = BYTES CONTROL CHARACTER

The auxiliary code, is usually set at 8. Sometimes you might see a value of 128 here when the `OPEN` command is being used to transfer data to or from the cassette recorder, because this speeds up the process. The device, can be any of the Atari's input/output devices, such as the keyboard (KL), the printer (PL), the disk drive (DL) or the cassette recorder (CR). If you're using the disk drive you must also specify the filename or range of filenames. For instance,

```
OPEN #1, 4, 8, "D:\TEST.BAS"
```

opens channel 1 to read the disk file called "TEST.BAS", while

```
OPEN #2, 8, 8, "D:\TEST.BAS"
```

opens channel 2 to read the disk directory for all files with a .BAS extension. The screen editor (EL), the screen display (FD) and the serial port (SD) are also considered to be devices.

Listing 1

OPEN #0,4,8,"D:\PNT"

opens channel 0 to read the disk directory for all files with a .PNT extension. The screen editor (EL), the screen display (FD) and the serial port (SD) are also considered to be devices.

TRANSFERRING DATA

Once you have opened a channel, linked it to a device and specified whether you are reading, writing, etc., you must get the computer

PROGRAMMING

to actually transfer the data. The BASIC commands to do this are PUT and GET (the single-byte) and INPUT and PRINT (for strings). The details are shown in Table 1 overlaid.

The channel number is also specified in the command. For example,

```
OPEN #1, 4, 8, "C:"
```

which opens channel 1 for input from the keyboard, would usually be followed by something like

```
GET #1,N
```

which gets one byte from channel 1, usually,

```
OPEN #2, 8, 8, "D:\*
```

which opens the disk directory for reading on channel 2, would be followed by a command like

```
INPUT #2,AB
```

which reads a string for this case, a filename from channel 2. One thing to note here is that BASIC was only transfer settings of up to 128 bytes at a time, so you have to put in a *for* loop if your string is longer than this. There is no such limitation with single byte transfer.

CLOSING A CHANNEL

When you are finished transferring the data you should close the (BASIC channel) by using the BASIC command **CLOSE #N** where #N is the channel number. It's important to do this because you will get an error message if you accidentally try to open a channel which is open already - this applies even if the second operation is exactly the same as the first. Incidentally, closing a channel which is already closed does not cause an error - this makes it possible to provide the open statements with a *close* statement in a program - often a useful way to avoid the "already open" error.

TABLE 1 DATA TRANSFER COMMANDS	
TYPE OF ACTION	BASIC COMMAND
INPUT (READ)	GET (byte) INPUT (string)
OUTPUT (WRITE)	PUT (byte) PRINT (string)

PRACTICAL EXAMPLES

These simple examples of BODC operations, using the BASIC commands discussed here, are given in LISTINGS 1 and 2. The first program opens channel #1 to read the disk directory (LINE #0) and prints the results on the screen one file at a time. LINE #0 opens channel #0 for keyboard input and the name file is displayed each time the specifier is pressed. In both cases, the channels are closed before the OPEN statement, as mentioned above.

The second program uses channel #1 to store a Graphics 7 screen to disk and then reload it back again. This should work with the cassette recorder if you change "DISKWRITE.PIC" to "C:" in LINE 80 (initial) and LINE 260 (loading). You must also remember to reset the tape before loading! The program uses single byte (PUT and GET) transfer.

The PBMS should give a good idea of what Listing 3 does. A Graphics 7 screen is shown at the start of the program. LINES 110 and 120 save the graphics mode memory location 807 and colour registers locations 708 to 712 in a disk file called DISKWRITE.PIC which was opened for writing in LINE 60. LINE 130 works out the number of bytes to be saved. The pointers for the start of screen RAM (defined as SC in the program) are at memory locations 88 (low byte) and 89 (high byte). The pointers for the text window RAM (defined here as

```

TO 1 SC# *****
LN 2 SC# 0  'ESC' - LISTING 2  0
LN 3 SC# 0  'y'                0
LN 4 SC# 0  'Are Y Pressed?'  0
LN 5 SC# 0  *****
LN 6 SC# 0  'ESC,PAUSE'*****
LN 7 SC# *****
LN 8 SC#
LN 9 SC#  'SAVE AND LOADING WITH'
LN 10 SC# - 'OPEN CHANNEL 1 FOR INPUT'
LN 11 SC# GRAPHICS 7,FILE 70,1
LN 12 SC# FOR #0 TO 79:COLOR INPUT #,A:FORM
TO CH,ENDOT 0
LN 13 SC# - WAIT FOR RESPONSE
LN 14 SC# FOR 704,755:IT 'ESC,PAUSE Press a
by to save?' 'ESC,PAUSE This screen
to disk'
LN 15 SC# FOR #0=255:END THEN 70
LN 16 SC# - 'OPEN CHANNEL 1 FOR INPUT'
LN 17 SC# CLOSE #1
LN 18 SC# OPEN #1,A,A,"DISKWRITE.PIC"
LN 19 SC# - 'SAVE GRAPHICS MODE'
LN 20 SC# PUT #1,POKE807
LN 21 SC# FOR #0=708 TO 712:PUT #1,PEEK80+
#0 0
LN 22 SC# - 'WORK OUT NUMBER OF BYTES' b
etween the start of screen ram (SC) as
4 text window ram (TW)
LN 23 SC# SC-PEEK80+256*PEEK809-704-PEEK8
0+256*PEEK810-#0*#N-SC
LN 24 SC# - 'SAVE FILE'
LN 25 SC# FOR #0=0 TO #0*#1,PEEK80+40+
#0 0
LN 26 SC# CLOSE #1
LN 27 SC# OPEN #1 TO GRAPHICS 7...
LN 28 SC# GRAPHICS 0:POKE 752,1:POSITION 2,4
LN 29 SC# 'ESC,PAUSE'*****
LN 30 SC# FOR #0=0 TO #0*#1,PEEK80+
#0+256*PEEK810+256*PEEK811+256*PEEK812
LN 31 SC# - 'LOAD BYTES'... and puts them
into screen ram
LN 32 SC# FOR #0=0 TO #0*#1,PEEK80+SC+40
+PEEK810
LN 33 SC# CLOSE #1
LN 34 SC# POKE 704,255:POKE 752,0
LN 35 SC# 'All done!')
LN 36 SC#
LN 37 SC# 'ESC,PAUSE will reload it again
'
LN 38 SC# 'ESC,PAUSE'*****
LN 39 SC# *****
LN 40 SC# 'ESC,PAUSE'*****
LN 41 SC# *****
LN 42 SC# 'ESC,PAUSE PRESS A KEY TO DELAY
5 1'
LN 43 SC# 'ESC,PAUSE'*****
LN 44 SC# *****
LN 45 SC# - WAIT FOR RESPONSE
LN 46 SC# POKE 704,255
LN 47 SC# IF PEEK80+255 THEN 370
LN 48 SC# FOR #1,A,A,"DISKWRITE.PIC"
LN 49 SC# - 'OPEN CHANNEL 1 FOR INPUT'
LN 50 SC# OPEN #1,A,A,"DISKWRITE.MODE ...and q
a file that was
LN 51 SC# GET #1,GRAPHICS 0
LN 52 SC# POKE 752,1:ON KEY Tare off cursor
LN 53 SC# - 'LOAD COLOURS'... and put th
e values in the colour registers
LN 54 SC# FOR #0=708 TO 712:GET #1,C:POKE #,C
NEXT 0
LN 55 SC# - 'WORK OUT NUMBER OF BYTES' b
etween the start of screen ram and
text window ram i.e. screen size
LN 56 SC# SC-PEEK80+256*PEEK809-704-PEEK8
0+256*PEEK810-#0*#N-SC
LN 57 SC# - 'LOAD BYTES'... and puts them
into screen ram
LN 58 SC# FOR #0=0 TO #0*#1,PEEK80+SC+40
+PEEK810
LN 59 SC# CLOSE #1
LN 60 SC# POKE 704,255:POKE 752,0
LN 61 SC# 'All done!')
LN 62 SC#
LN 63 SC# 'ESC,PAUSE has been saved. Now

```


NOW I'VE GOT A PRINTER!

One of the most difficult items of equipment to choose is your first printer. John Foskett might be able to help out as he tells the story behind his purchase

About a year ago, I decided that it was time that I invested in a printer that was continually put off by the vast number available and of course by the nagging question "Would they work with the Atari 8 bit?" As far as connecting leads were concerned, there were many about nicely packaged in the shops which were ideal for a PC, but not for the Atari. When asking about printers in the various shops, I got many blank looks from sales staff upon mentioning "Atari" and got many extremely unhelpful answers like "What's that?". They tried to look knowledgeable by throwing in phrases like

"Epson standard" and "Centronics parallel interface". It was even given what must be the biggest cop-out of all time "If you have the software to drive it, then it can do anything". About as helpful as saying, if you have the money, then you could own the world!

WHAT TYPE OF PRINTER?

The first decision to be taken was to decide what type of printer would best suit my needs and the obvious choice for me was clear. I needed a letter quality (LQ) printer since I wanted to use it for all my correspondence and so a near letter quality (NLQ) 8 pin dot matrix printer was out of the question. Walking the talk to do and the inevitable concluding put me off of the talk jet range and so the answer became obvious, a 24 pin dot matrix printer.

Reading an article in the IGBB (Brian Garrahy Software) newsletter number 15 about the Panasonic KX-F1123 told me that a trip to my local Argos store (Kingston) to look at one was called for and being one of the main showrooms they were bound to have one.

Looking at the KX-F1123, it was large and heavy but looked to be very well made with quite a complex control panel. It looked to be

about the best choice of 24 pin dot matrix printers in the price range (about £175), but due to circumstances beyond my control I was in no position at that time to purchase one. A few weeks later, the new Argos catalogue was published and looking through it I was amazed to find that the KX-F1123 had been discontinued and replaced by the KX-F2123, a colour printer. I didn't need a colour printer and I certainly didn't see any point in paying another £20 to £30 for something it didn't need, so I asked the obvious question and was told the obvious answer "It's not in the catalogue, it's not available". A trip to some other shops in our locality proved to be just as disappointing and so the obvious question that came to mind was "What was wrong with it?" or "Was it wrongly priced?"

Prior to its disappearance whenever I saw the KX-F1123, there was the smaller Epson range of printers sitting beside it and, looking in our local handy store, I took an interest in the 24 pin dot matrix Epson LQ180 (presumably "LQ" stands for "Letter Quality").

Having decided to purchase an Epson LQ180, my next step was to consider driving it and a telephone call to Derek Peve (Miss Discount) was rung on the agreed. Speaking to Derek about connecting a printer, he told me about the Microport interface.

THE INTERFACE

The interface is basically a lead of about 1 metre in length with a small electronic unit built into a larger than normal Centronics connector at one end and the usual Atari connector at the other. The electronic unit converts the serial-data output from the Atari into the parallel Centronics standard to suit the printer and it is powered directly from the Atari so no further power supplies are required. The interface unit simply transmits the printer to a various peripheral connector which is most likely to be a connector on the back of a disk drive.

An important point to note here is that the interface is the only lead necessary to connect a printer to the Atari. When purchasing a printer, the sales staff will most likely try to sell you a lead to connect it to a PC, telling you that such a lead is essential. Such a lead is NOT essential for the Atari Classic and would therefore be a waste of money.

SHOPPING AROUND

I decided to sleep around to see if I could beat the Argos price and had a look through the "Computer Shopper" magazine. This proved to be a nightmare since the more the looking through a nightmare discovery. I finally went through the magazine and took out every page which mentioned something to do with 24 pin dot matrix printers and then discarded the magazine. Looking through the torn out pages, I compared the prices and delivery charges of several different types of 24 pin dot matrix printers and found that the Epson LQ180 was one of the better buys for the price range. The cheapest supplier for the LQ180 turned out to be a company named "Computers by Post" of Woodbury. I first tele-

planned them to make sure that they had an LQ100 before ordering one and to compare the price and order numbers. It actually found that the printer was a good cheaper!

Including the delivery charges and VAT, I paid £119 for the LQ100, £28 cheaper than the special language price of £128 in *Tandy (Sep/Oct 1984)*. The price in the latest *Argus catalogue (Feb 1985)* is £128, which I've still beaten by a margin I didn't have to wait long for the delivery either. I posted my order on the Tuesday and had the printer delivered the following Friday morning. I have no reservations about recommending "Computers by Post", telephone 081-980-8380.

One point of interest is that in the whole of the *Computer Shopper* magazine, I only saw the Panasonic KX-F1120 mentioned once!

PREPARATION

After unpacking my new LQ100 printer, the first thing to do was to open it up and remove a piece of packing material which could from the print head mechanism which was included to prevent damage during transit. Operating the printer without first removing this could damage the mechanism. The ribbon cartridge was packaged separately in the box and had to be fitted which was a simple matter of clipping it in place around the print head. The main lead was also packaged separately and is about 3 metres long ready fitted with a 13 Amp mains plug.

A SLIGHT MOD

Before connecting the interface to the printer, it is necessary to ensure the two small retaining clips from either side of the connector are then inserted by obtaining a standard connector and cut the interface. The

retaining clips actually prevent the interface from being plugged into the printer and are best removed using a pair of long nose pliers.

THE PRINTER ITSELF

Firstly the manual supplied with the printer is A5 in size and is called a user guide rather than a manual and is literally just that, a guide. The user guide gives some plainly obvious information but leaves the reader to work out the more complicated details such as how to change the size of the variable font.

The printer itself is quite compact measuring about 18" (467mm) wide, about 10" (254mm) deep, about 5" (127mm) high and weighs little (4.5kg). The paper guide when fitted increases the height to about 10" (254mm). Looking at the printer from the front, the Controller console, for connecting the interface, is on the left hand side and the main lead plug into a socket on the right hand side.

The printer may be used in either the normal flat position or if required in an upright position. The upright position allows the use of the single sheet manual feed which is under-reach the printer when viewed in the flat position. In the flat position, the paper tray is used which has to be fully extended before use and is designed to hold up to 80 A4 sheets.

THE CONTROLS

Apart from the main on/off switch and the "power on" indicator, the LQ100's control panel consists of just two push buttons and two LED indicators. There are seven built-in fonts, each selected in sequence by pressing

the left hand push button and indicated by the two indicators with a combination of a steady glow or flashing. The right hand push button is for "line feed" purposes such as to remove a sheet after printing or to continue printing after refilling the paper tray.

If the printer is switched on while holding down one or both of the two push buttons then the built-in functions are entered as follows:

- 1) Switching on while holding both push buttons prints the Epson LQ100 test sheet
- 2) Switching on while holding the left hand (font) push button enables the set-up procedure
- 3) Switching on while holding the right hand (line feed) push button prints the current characters

Further use of the two push buttons is made as a Yes or No option during the set-up procedure which the LQ100 stores in memory and acts as the default every time the printer is subsequently switched on.

There is an internal lever for altering the paper thickness setting which has to be used to accommodate the printing of labels and envelopes.

CHARACTER SETS AND ENHANCEMENTS

The LQ100 has several different character sets built-in to suit different languages such as Arabic, Greek, Russian, etc. Some character sets have graphic characters allowing simple diagrams to be printed whilst others have mathematical characters.

The printer can be software controlled to provide enhancements to any of the character sets such as bold, underline, italic, outline,

shadow, condensed, proportional, etc. The actual character sets themselves can be changed within a single document under software control to allow different languages to be mixed such as for printing translation lists from English to Arabic, Russian to Greek, etc.

TECHNICAL DETAILS

The LQ100 printer has an 8K buffer, a print speed of 70 CPS (Characters per Second) in letter quality (LQ) and 200 CPS in draft. The color level of the printer is 300DPI.

The printer has 7 built-in fonts, 8-bit letter quality (LQ) which are Roman, Swiss Serif, Courier, Prestige and Script. It has 8 draft fonts which are Draft and Draft condensed. The Roman and Swiss Serif fonts are available in size from 8 point to 24 point in 2 point increments.

PUSH FEED TRACTOR

An optional push feed tractor unit is available for use with continuous sprocket fed fanfold paper and self-adhesive label sheets. The push feed tractor fits onto the back of the printer and allows the fanfold paper to be fed into the printer from below.

SINGLE SHEET PAPER FEED

When looking inside the printer, the two position rollers can be seen to be a little off-set to the left which allows the use of smaller sized sheets. As a guide, I would recommend using a maximum sheet size of A6, which has half the area of an A4 size sheet.

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Review

ROBOMASH

Paul Rixon
discovers yet another 'oldie' that becomes the latest new release for the Classic

and cockpit. The secret of this game is knowing what all the various screen components do. For example, steel walls are perfectly safe, while elevators were most definitely area 51. Doors need to be unlocked with keys, bombs are best avoided, while the rail guard is the place to be once you've finished each level. Good luck!

The graphics are fairly simple, albeit not without a reasonable amount of animation. Sound effects are similarly straightforward. Anyway, let's be clear about one thing - this game is not for beginners! On each screen there's a lot going on and staying out of trouble is easier said than done. There are 12 screens, with 68 possible difficulty settings. That makes 816 levels in all, so I've only got 448.5 to go...

For those people who'd argue they could do a better job designing screen themselves, an opportunity is provided on the top side of the disk. The Robomash Construction Set allows you to plant any of the obstacles, scenery and other items onto a blank playfield. You can save the screens to disk and then load them into the Robomash game itself.

TRWJG deserves support for their continuing efforts to revive the fortunes of 8-bit Atari. I hope to present a detailed report of the group's activities in the next issue of NRG.

ROBOMASH is available on disk from TRWJG. Write to P.O. Box 8, Walkers, Tyne & Wear NE28 6DQ for details.

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ROTTEN DESIGNER

and about two thirds of the width.

Knowing that a sheet feeds squarely is quite a difficult process because the sheet suddenly goes "grated" and drops into the printer whether you are ready or not. When sheets do not feed square, they may be recovered by feeding them right through the printer by pressing the three feed push buttons. I do not recommend trying to pull a mis-fed sheet sideways in an attempt to square it because of the danger of partly withdrawing it. This could result in the top line (or lines) being printed off of the top of the sheet and onto the roller which could also lead to a paper jam because of the inevitable crumpling of the top edge of the sheet. One way of inserting a square paper feed every time is to make up a jig out of a piece of thick card, how to make such a jig becomes fairly obvious when look-

ing underneath the printer.

IN CONCLUSION

It was not too long ago that a 24 pin printer was beyond most people's price range and cost the cheapest 8 pin printers were around £250. Now you can get top quality printing from your Atari Classic for a week's tuition fees.

It is fairly obvious that the days of the 8 pin printer are numbered because, chances are, that if you wait a little longer you might pick up a 24 pin printer for just £99! I will feel that £119 is not a bad price for quality printing though and would recommend the Epson LQ100, unless you know of a better bargain!

A CULT FOLLOWING?

Supporting the Atari has always been a bit of a cult, but what other cults do Atarians follow? Irishman Avram Dumitrescu (honest he's Irish!) has been finding out

disk and paper magazines though, unless you're lucky, too many Atarians do not spend their remaining free time interacting with humans instead. They have other cults to join in.

I have been investigating a few of the religions that lots of Atari owners subscribe to and in which they end up giving all their money, time and energy. If an Atarian you know keeps going to worship at the altar of Adams and drinks so much coffee they'd be better with a coffee-machine implant, gently soo them away and encourage their back to society. This article will help you identify these trends.

This guide is only a preliminary study of some of the cult religions Atarians have been known to take in. It'll try and keep you informed of any more cults I discover in the future but, for now, tell these followers: "It's good to talk."

THE HITCH-HIKER'S GUIDE TO THE GALAXY

A famous science-fiction radio play first broadcast in 1978 that evolved into a number of books (different from the radio series) and a television series, Adams released HITCH - The Computer Game, several songs have been composed about it and, recently, a picture book with the text from the first novel has been created. A film is, supposedly, being worked on.

The books and all other versions centre

around an incredible travel guide like HITCH that has entries on EVERY subject in the universe. As new planets, life-forms and, most importantly, life-style's constantly form procedures are employed by Megalodon publications to fill the missing gaps. Douglas Adams uses several very memorable characters to move through his fascinating and hilarious universe and tells the reader, for instance, how to fly and the correct meaning to life.

What makes this a cult is the number of formats the one basic story is in, the humour that never loses its freshness and the wealth of very usable quotes:

ON CURDS - Looks like a fish, tastes like a fish, smells like a cow.

ON LIFE (AN UNCOMPLETED VIEW) - Look at it or ignore it, you can't like it.

ON NECESSARY BELLS - members writes on restaurant cheques within the confines of restaurants do not follow the same mathematical laws as numbers written on any other piece of paper in any other parts of the universe.

Douglas Adams has also written a number of other books. His best one HITCH goes in the middle book Last Chance to Die.

Anyone deeply interested with the series of Hitches the Personal Android et al can get the latest news from ZEN Phred 2 Alpha's Monthly Newsletter magazine. It costs £5 a year and you can get details from Neil Colyer at 25, Northampton Road, Croydon, Surrey CR9 7HA.

STAR WARS

1987 was the twentieth anniversary of the trilogy of 'Space Westerns' by director George Lucas. The three movies were phenomenally successful because they appealed to youngsters and adults. There is no sex, offensive language or violence but beautifully intricate storylines, an exciting plot that isn't too long, wonderfully varied alien creatures and a

galaxy of imagination.

I was too young to appreciate the first Star Wars cult but it seems to be happening all over again. Walk into any sci-fi shop and, along with the Japanese Manga comics and Star-Trek merchandise you will see Star Wars books, technical manuals, holograms, pencil cases, collectors cards and so on. If you have any of the old spacehips or toys that were launched to be in with the film, hold on to them. Single figures in good condition will be around £1. In £3 while any local sci-fi shop have sold unopened, boxed figures for £20 and boxed spacehips can start you around £50 (with prices like that I'm tempted to call this, not a cult, but a religion. Please also remember that these prices are not definite. Visit the shops and enquire).

Be prepared for another wave of Star Wars merchandise quite soon. Two and three are released in 1987. Star Wars - A New Hope, The Empire Strikes Back and Return of the Jedi (quite fun, five and six) MAY be releases in cinemas during Christmas 1989 but the videos can be bought for around eleven pounds Interestingly, laser disc versions of parts four to six can be bought but retail for the merely price of three HUNDRED pounds. 1. May the Force be with you and your bank manager plus with/without if you get the laser discs.

DEATH METAL MUSIC

Like the extreme of programming languages (especially language) this is the extreme of music. It is noisy, thrashy and only a barrage of confused growls and screams to those un-experienced to this kind of sound combination. Assembly programmers usually give credit to at least one of these groups - My reading the entire message in a drum and Slayer or something will pop up. Death Metal bands tend to be driven by hate against the system. It's girls, men, pick any topic and some group will be spitting lots of phlegm.

Art owners are a strange bunch. No other computer has such a strong legion of followers who pour so much dedication into their little box of silicon chips. Through the faith and this of software titles a true Classic owner will defend their machine, stating how much better it is than any other 8-bit and will continue to sign petitions with all sorts of new hardware enhancements from the building ponds of creativity in Poland and Germany.

Very few people give up all their time to their computer this intensity of your words run

REVIEWS and ADVERTISING

over it. Perhaps, like machine code, the pain experienced from it involves a kind of pleasure? If you intend sampling some of these books by Blake, Anderson, Metzloff, Sage Against the Machine or Sanders,

STAR TREK

You know this is a big catch if the idea of Star Trek money was launched, briefly for it may have been telephone cards - my memory's not completely veridical at the wretched old age of 40/41.

Since the first episode, 'The Cage', Gene Roddenberry's space adventures have gathered fans like a curious snowball, resulting in world-wide recognition, seven films (Star Trek Generations is the latest) and several extra-TV shows from Roddenberry himself: The Next Generation/Deep Space Nine/Star Trek Voyager.

If you haven't experienced any Star Trek, give it a go. The original has a lot of lovely moments that, quite often, rely gripping scripts, whereas Next Generation doesn't shine as well in the story department (the holodeck seems like a device to give more variety to the stories but can often leave the space aspect too far behind) but the fantastic clips and often made-up battles (its short-running Deep Space Nine has had but don't's measure up to the previous shows and Voyager hasn't been shown on US or Irish television yet).

Other sci-fi shows you may be accused on to see are: X-Files (amazing but excellent programme with two FBI agents solving some quite unusual cases), Babylon 5 (hasn't occurred on this one because I've only seen a few minutes of it), The Outer Limits (there have been a few thrilling and exciting episodes but the majority are average and sometimes quite flat). The title reads in very good) and Gerry Anderson's (Thunderbirds, Captain Scarlet etc.) latest Space Patrol. This (age-by-space) show can be summed up with this:

wonderful line I read to one of its reviews somewhere: "One million possible have been spent on each episode. Obviously 2000,000 have given an approval effort because if any more than a few has been spent on scripts then the producers have been stopped." And back to StarTrek. Once it's a go and become a trekker, attending conventions, dressing up in Star Trek uniforms and so on. Remember, before you embark, you can become a great follower but never the greatest. Gene had his advice launched into space...

SCI-FI LITERATURE

Computers and Science Fiction go hand in hand and the future, according to the words of many of these authors, could become dominated by ever-increasing intelligent machines (read 'The Final Question' by Isaac Asimov for the ultimate computer).

There are hundreds of authors in this genre but the most famous authors are Arthur C Clarke (pleasant sci-fi), Asimov (a warmer writer than Clarke and was one of his great friends) and Douglas Adams (see the Hitch-Hiker's Guide to the Galaxy paragraph). These authors supply this cult. Try any bookshop, magazines (Beyond is an excellent one English magazine) or, best of all, (in your neck hole) your local library.

COFFEE

The success of the programme, Ever share your stomach thinking in history the juice of the coffee bean has been essential (Grist-nutrient). Assembly language programmers never by it when back-encoding. Basic programmers still it now their Atari Basic Reference manuals and computer websites just can't get enough of it.

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DISK BONUS THE CITADEL

by Joel Goodwin

"The Citadel" is a puzzle game for one player which was originally released by Tiger Developments. Thanks to New Atari User it now sees the light of day again!

Why is someone sitting around with an explosion strapped to their back, trying to escape an 800-number fortress that will respond to any bomb? Because its good nature, that's why. Most also seek, sometimes (over the twenty-six rooms of the Citadel only to discover that it's a bit easier to see that healthy completion than gain the title of Citadel Champion with all the prestige and (less importantly) of course money it brings.

In the addition as you 'GO' and 'NO', I'll refer to Citadel (remember that isn't the 'longer') After that the TV producers decided that they had found this week's (momentary) When they approached you with a large paycheck and said it contained high-explosive you started to look your (in)famous in 1994. You are sure the (photo) seemed plausible refers to the fact that such thoughts come a second too late. Ah, well, such is life.

THE GAME The idea is simple. In each room, you have to reach the exit (usually the 'outside') within a specified time (or, sometimes, the backdoor, which cannot be followed, all supports (can't be too disappointed because you have three attempts to enter each room before you really go up in smoke) at the foot of the display you will see the room number, the number of attempts remaining (total of eight) (outside) and the time remaining.

The 'outside' is your way-out-to-beat-as follows.

Blocks: These are fairly light and you can push a number of these at once.

Buttons: Quite heavy, you can only push one of these at a time.

Fire: These are square tiles and round tiles. Blocks fit up square tiles just as buttons fit up round tiles. If you attempt to walk a block onto a round tile or button onto a square tile then the block/button will get stuck and cannot be pushed any further.

Teleporters: If you enter a teleporter you will emerge out of another. You cannot get where a teleporter leads to without entering it yourself. You cannot push anything into a teleporter.

Buttons & Teleporters: There are plenty of bombs lying around. They are just as heavy as buttons and so you can only push one at a time. Every time in a room will explode if you step onto a detonator. So be sure you are not too late to enter bombs when you do this.

OPTIONS

On the title screen you can change the speed by pressing SELECT. This is so you can adjust the game control to suit yourself (it is not intended as a difficulty setting).

Pressing OPTION will bring up a menu displaying all of the details of the game. Also, every room has an associated password and this can be entered, via the keyboard, on the title screen.

Finally, you may get a question during the game where you cannot get out of a room without finishing. Pressing OPTION will start the current attempt while OPTION will end the game altogether and return you to the title screen.

I wish you took inside the Citadel. Every room has a solution - nothing is impossible, no room needs 28 and 28 (turns) in the show (ought to be) if you make it through. If not, there's always next week's constant...

Thanks to Neil O'Riordan for originally agreeing to release The Citadel through Tiger Developments

This great game is the BONUS on this issue's disk. If you are not a disk subscriber you can still obtain a copy for £2.99 from NEW STAR USERS, P.O. BOX 24, STAFFORD, ST16 1RL. Please make cheques payable to PAGE 6 PUBLISHING or order by telephone with your Visa or Access card on 01783 341102.

ONE TWO EIGHT

Andy Guillaume presents some stunning graphics effects that you can include in your own programs

This program demonstrates the use of a Display List Interrupt (DLI) to change the colours on each screen line over the entire height of the screen. Five areas of memory (with 16-bit Colour Tables) are used to hold the colour of a particular screen register at a certain line, so to alter the colours at a particular line you need only POKE the colour number (Colour*16 + Location) register into the relevant memory location. This gives you 9 Colours on each line (Locations 768-772 although 711 is not usually needed).

The program works by setting a DLI at the top of the screen, on one of the first Display List (DL) lines. The DLI routine then loops around for the required number of lines setting the colours as needed from the Colour Tables. The routine will work in any Graphics mode but you may need to alter the position of the DLI in the DL or the number of lines

used. Sometimes keyboard input is affected, just reduce the number of lines used or only use the Control keys or Joysticks for input (the 280 on line 80, the 16th number in the DATA statement is the number of lines that the DL starts on).

Have a look at the Assembly listing (SOURCE.LIST) to see how it works. X is used as an index register into the Colour Tables. The value is loaded into the appropriate location for each colour. X is incremented and the routine loops around until all of the lines have been used. Note that the first value loaded is also stored into \$D000 (\$4000) to get a smooth colour change.

Type in and have the main program 'COPY-BANK'. This puts in the DLI routine code and sets up the Colour Tables and graphics screen (the program will just return to GOTO if RUN now). This program is just for convenience for setting up everything. The following three routines show some ways of achieving nice graphics effects in Turbo BASIC to spruce up file screens and such like.

After setting, type NEW to clear program memory and type in any of the three extension routines. You should then save these in Listed format (i.e. LIST "D:\RUNBANK.BAS"). After loading the required system to disk, re-load COPY-BANK. Save, merge the required routine (i.e. ENTER "D:\BANKROW.COPY"). Then RUN.

The Colour bit addresses start with 000 at \$2760 then 010, 020, 030 and 040 every 250 bytes. These refer to Playfield registers

```

10 I=0:FOR C=0 TO 8:FOR L=0 TO 255:GOTO 20
20 I=I+1:IF I=256 THEN GOTO 30
30 I=I+1:IF I=512 THEN GOTO 40
40 I=I+1:IF I=768 THEN GOTO 50
50 I=I+1:IF I=1024 THEN GOTO 60
60 I=I+1:IF I=1280 THEN GOTO 70
70 I=I+1:IF I=1536 THEN GOTO 80
80 I=I+1:IF I=1792 THEN GOTO 90
90 I=I+1:IF I=2048 THEN GOTO 100
100 I=I+1:IF I=2304 THEN GOTO 110
110 I=I+1:IF I=2560 THEN GOTO 120
120 I=I+1:IF I=2816 THEN GOTO 130
130 I=I+1:IF I=3072 THEN GOTO 140
140 I=I+1:IF I=3328 THEN GOTO 150
150 I=I+1:IF I=3584 THEN GOTO 160
160 I=I+1:IF I=3840 THEN GOTO 170
170 I=I+1:IF I=4096 THEN GOTO 180
180 I=I+1:IF I=4352 THEN GOTO 190
190 I=I+1:IF I=4608 THEN GOTO 200
200 I=I+1:IF I=4864 THEN GOTO 210
210 I=I+1:IF I=5120 THEN GOTO 220
220 I=I+1:IF I=5376 THEN GOTO 230
230 I=I+1:IF I=5632 THEN GOTO 240
240 I=I+1:IF I=5888 THEN GOTO 250
250 I=I+1:IF I=6144 THEN GOTO 260
260 I=I+1:IF I=6400 THEN GOTO 270
270 I=I+1:IF I=6656 THEN GOTO 280
280 I=I+1:IF I=6912 THEN GOTO 290
290 I=I+1:IF I=7168 THEN GOTO 300
300 I=I+1:IF I=7424 THEN GOTO 310
310 I=I+1:IF I=7680 THEN GOTO 320
320 I=I+1:IF I=7936 THEN GOTO 330
330 I=I+1:IF I=8192 THEN GOTO 340
340 I=I+1:IF I=8448 THEN GOTO 350
350 I=I+1:IF I=8704 THEN GOTO 360
360 I=I+1:IF I=8960 THEN GOTO 370
370 I=I+1:IF I=9216 THEN GOTO 380
380 I=I+1:IF I=9472 THEN GOTO 390
390 I=I+1:IF I=9728 THEN GOTO 400
400 I=I+1:IF I=9984 THEN GOTO 410
410 I=I+1:IF I=10240 THEN GOTO 420
420 I=I+1:IF I=10496 THEN GOTO 430
430 I=I+1:IF I=10752 THEN GOTO 440
440 I=I+1:IF I=11008 THEN GOTO 450
450 I=I+1:IF I=11264 THEN GOTO 460
460 I=I+1:IF I=11520 THEN GOTO 470
470 I=I+1:IF I=11776 THEN GOTO 480
480 I=I+1:IF I=12032 THEN GOTO 490
490 I=I+1:IF I=12288 THEN GOTO 500
500 I=I+1:IF I=12544 THEN GOTO 510
510 I=I+1:IF I=12800 THEN GOTO 520
520 I=I+1:IF I=13056 THEN GOTO 530
530 I=I+1:IF I=13312 THEN GOTO 540
540 I=I+1:IF I=13568 THEN GOTO 550
550 I=I+1:IF I=13824 THEN GOTO 560
560 I=I+1:IF I=14080 THEN GOTO 570
570 I=I+1:IF I=14336 THEN GOTO 580
580 I=I+1:IF I=14592 THEN GOTO 590
590 I=I+1:IF I=14848 THEN GOTO 600
600 I=I+1:IF I=15104 THEN GOTO 610
610 I=I+1:IF I=15360 THEN GOTO 620
620 I=I+1:IF I=15616 THEN GOTO 630
630 I=I+1:IF I=15872 THEN GOTO 640
640 I=I+1:IF I=16128 THEN GOTO 650
650 I=I+1:IF I=16384 THEN GOTO 660
660 I=I+1:IF I=16640 THEN GOTO 670
670 I=I+1:IF I=16896 THEN GOTO 680
680 I=I+1:IF I=17152 THEN GOTO 690
690 I=I+1:IF I=17408 THEN GOTO 700
700 I=I+1:IF I=17664 THEN GOTO 710
710 I=I+1:IF I=17920 THEN GOTO 720
720 I=I+1:IF I=18176 THEN GOTO 730
730 I=I+1:IF I=18432 THEN GOTO 740
740 I=I+1:IF I=18688 THEN GOTO 750
750 I=I+1:IF I=18944 THEN GOTO 760
760 I=I+1:IF I=19200 THEN GOTO 770
770 I=I+1:IF I=19456 THEN GOTO 780
780 I=I+1:IF I=19712 THEN GOTO 790
790 I=I+1:IF I=19968 THEN GOTO 800
800 I=I+1:IF I=20224 THEN GOTO 810
810 I=I+1:IF I=20480 THEN GOTO 820
820 I=I+1:IF I=20736 THEN GOTO 830
830 I=I+1:IF I=20992 THEN GOTO 840
840 I=I+1:IF I=21248 THEN GOTO 850
850 I=I+1:IF I=21504 THEN GOTO 860
860 I=I+1:IF I=21760 THEN GOTO 870
870 I=I+1:IF I=22016 THEN GOTO 880
880 I=I+1:IF I=22272 THEN GOTO 890
890 I=I+1:IF I=22528 THEN GOTO 900
900 I=I+1:IF I=22784 THEN GOTO 910
910 I=I+1:IF I=23040 THEN GOTO 920
920 I=I+1:IF I=23296 THEN GOTO 930
930 I=I+1:IF I=23552 THEN GOTO 940
940 I=I+1:IF I=23808 THEN GOTO 950
950 I=I+1:IF I=24064 THEN GOTO 960
960 I=I+1:IF I=24320 THEN GOTO 970
970 I=I+1:IF I=24576 THEN GOTO 980
980 I=I+1:IF I=24832 THEN GOTO 990
990 I=I+1:IF I=25088 THEN GOTO 1000
1000 I=I+1:IF I=25344 THEN GOTO 1010
1010 I=I+1:IF I=25600 THEN GOTO 1020
1020 I=I+1:IF I=25856 THEN GOTO 1030
1030 I=I+1:IF I=26112 THEN GOTO 1040
1040 I=I+1:IF I=26368 THEN GOTO 1050
1050 I=I+1:IF I=26624 THEN GOTO 1060
1060 I=I+1:IF I=26880 THEN GOTO 1070
1070 I=I+1:IF I=27136 THEN GOTO 1080
1080 I=I+1:IF I=27392 THEN GOTO 1090
1090 I=I+1:IF I=27648 THEN GOTO 1100
1100 I=I+1:IF I=27904 THEN GOTO 1110
1110 I=I+1:IF I=28160 THEN GOTO 1120
1120 I=I+1:IF I=28416 THEN GOTO 1130
1130 I=I+1:IF I=28672 THEN GOTO 1140
1140 I=I+1:IF I=28928 THEN GOTO 1150
1150 I=I+1:IF I=29184 THEN GOTO 1160
1160 I=I+1:IF I=29440 THEN GOTO 1170
1170 I=I+1:IF I=29696 THEN GOTO 1180
1180 I=I+1:IF I=29952 THEN GOTO 1190
1190 I=I+1:IF I=30208 THEN GOTO 1200
1200 I=I+1:IF I=30464 THEN GOTO 1210
1210 I=I+1:IF I=30720 THEN GOTO 1220
1220 I=I+1:IF I=30976 THEN GOTO 1230
1230 I=I+1:IF I=31232 THEN GOTO 1240
1240 I=I+1:IF I=31488 THEN GOTO 1250
1250 I=I+1:IF I=31744 THEN GOTO 1260
1260 I=I+1:IF I=32000 THEN GOTO 1270
1270 I=I+1:IF I=32256 THEN GOTO 1280
1280 I=I+1:IF I=32512 THEN GOTO 1290
1290 I=I+1:IF I=32768 THEN GOTO 1300
1300 I=I+1:IF I=33024 THEN GOTO 1310
1310 I=I+1:IF I=33280 THEN GOTO 1320
1320 I=I+1:IF I=33536 THEN GOTO 1330
1330 I=I+1:IF I=33792 THEN GOTO 1340
1340 I=I+1:IF I=34048 THEN GOTO 1350
1350 I=I+1:IF I=34304 THEN GOTO 1360
1360 I=I+1:IF I=34560 THEN GOTO 1370
1370 I=I+1:IF I=34816 THEN GOTO 1380
1380 I=I+1:IF I=35072 THEN GOTO 1390
1390 I=I+1:IF I=35328 THEN GOTO 1400
1400 I=I+1:IF I=35584 THEN GOTO 1410
1410 I=I+1:IF I=35840 THEN GOTO 1420
1420 I=I+1:IF I=36096 THEN GOTO 1430
1430 I=I+1:IF I=36352 THEN GOTO 1440
1440 I=I+1:IF I=36608 THEN GOTO 1450
1450 I=I+1:IF I=36864 THEN GOTO 1460
1460 I=I+1:IF I=37120 THEN GOTO 1470
1470 I=I+1:IF I=37376 THEN GOTO 1480
1480 I=I+1:IF I=37632 THEN GOTO 1490
1490 I=I+1:IF I=37888 THEN GOTO 1500
1500 I=I+1:IF I=38144 THEN GOTO 1510
1510 I=I+1:IF I=38400 THEN GOTO 1520
1520 I=I+1:IF I=38656 THEN GOTO 1530
1530 I=I+1:IF I=38912 THEN GOTO 1540
1540 I=I+1:IF I=39168 THEN GOTO 1550
1550 I=I+1:IF I=39424 THEN GOTO 1560
1560 I=I+1:IF I=39680 THEN GOTO 1570
1570 I=I+1:IF I=39936 THEN GOTO 1580
1580 I=I+1:IF I=40192 THEN GOTO 1590
1590 I=I+1:IF I=40448 THEN GOTO 1600
1600 I=I+1:IF I=40704 THEN GOTO 1610
1610 I=I+1:IF I=40960 THEN GOTO 1620
1620 I=I+1:IF I=41216 THEN GOTO 1630
1630 I=I+1:IF I=41472 THEN GOTO 1640
1640 I=I+1:IF I=41728 THEN GOTO 1650
1650 I=I+1:IF I=41984 THEN GOTO 1660
1660 I=I+1:IF I=42240 THEN GOTO 1670
1670 I=I+1:IF I=42496 THEN GOTO 1680
1680 I=I+1:IF I=42752 THEN GOTO 1690
1690 I=I+1:IF I=43008 THEN GOTO 1700
1700 I=I+1:IF I=43264 THEN GOTO 1710
1710 I=I+1:IF I=43520 THEN GOTO 1720
1720 I=I+1:IF I=43776 THEN GOTO 1730
1730 I=I+1:IF I=44032 THEN GOTO 1740
1740 I=I+1:IF I=44288 THEN GOTO 1750
1750 I=I+1:IF I=44544 THEN GOTO 1760
1760 I=I+1:IF I=44800 THEN GOTO 1770
1770 I=I+1:IF I=45056 THEN GOTO 1780
1780 I=I+1:IF I=45312 THEN GOTO 1790
1790 I=I+1:IF I=45568 THEN GOTO 1800
1800 I=I+1:IF I=45824 THEN GOTO 1810
1810 I=I+1:IF I=46080 THEN GOTO 1820
1820 I=I+1:IF I=46336 THEN GOTO 1830
1830 I=I+1:IF I=46592 THEN GOTO 1840
1840 I=I+1:IF I=46848 THEN GOTO 1850
1850 I=I+1:IF I=47104 THEN GOTO 1860
1860 I=I+1:IF I=47360 THEN GOTO 1870
1870 I=I+1:IF I=47616 THEN GOTO 1880
1880 I=I+1:IF I=47872 THEN GOTO 1890
1890 I=I+1:IF I=48128 THEN GOTO 1900
1900 I=I+1:IF I=48384 THEN GOTO 1910
1910 I=I+1:IF I=48640 THEN GOTO 1920
1920 I=I+1:IF I=48896 THEN GOTO 1930
1930 I=I+1:IF I=49152 THEN GOTO 1940
1940 I=I+1:IF I=49408 THEN GOTO 1950
1950 I=I+1:IF I=49664 THEN GOTO 1960
1960 I=I+1:IF I=49920 THEN GOTO 1970
1970 I=I+1:IF I=50176 THEN GOTO 1980
1980 I=I+1:IF I=50432 THEN GOTO 1990
1990 I=I+1:IF I=50688 THEN GOTO 2000
2000 I=I+1:IF I=50944 THEN GOTO 2010
2010 I=I+1:IF I=51200 THEN GOTO 2020
2020 I=I+1:IF I=51456 THEN GOTO 2030
2030 I=I+1:IF I=51712 THEN GOTO 2040
2040 I=I+1:IF I=51968 THEN GOTO 2050
2050 I=I+1:IF I=52224 THEN GOTO 2060
2060 I=I+1:IF I=52480 THEN GOTO 2070
2070 I=I+1:IF I=52736 THEN GOTO 2080
2080 I=I+1:IF I=52992 THEN GOTO 2090
2090 I=I+1:IF I=53248 THEN GOTO 2100
2100 I=I+1:IF I=53504 THEN GOTO 2110
2110 I=I+1:IF I=53760 THEN GOTO 2120
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2130 I=I+1:IF I=54272 THEN GOTO 2140
2140 I=I+1:IF I=54528 THEN GOTO 2150
2150 I=I+1:IF I=54784 THEN GOTO 2160
2160 I=I+1:IF I=55040 THEN GOTO 2170
2170 I=I+1:IF I=55296 THEN GOTO 2180
2180 I=I+1:IF I=55552 THEN GOTO 2190
2190 I=I+1:IF I=55808 THEN GOTO 2200
2200 I=I+1:IF I=56064 THEN GOTO 2210
2210 I=I+1:IF I=56320 THEN GOTO 2220
2220 I=I+1:IF I=56576 THEN GOTO 2230
2230 I=I+1:IF I=56832 THEN GOTO 2240
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2250 I=I+1:IF I=57344 THEN GOTO 2260
2260 I=I+1:IF I=57600 THEN GOTO 2270
2270 I=I+1:IF I=57856 THEN GOTO 2280
2280 I=I+1:IF I=58112 THEN GOTO 2290
2290 I=I+1:IF I=58368 THEN GOTO 2300
2300 I=I+1:IF I=58624 THEN GOTO 2310
2310 I=I+1:IF I=58880 THEN GOTO 2320
2320 I=I+1:IF I=59136 THEN GOTO 2330
2330 I=I+1:IF I=59392 THEN GOTO 2340
2340 I=I+1:IF I=59648 THEN GOTO 2350
2350 I=I+1:IF I=59904 THEN GOTO 2360
2360 I=I+1:IF I=60160 THEN GOTO 2370
2370 I=I+1:IF I=60416 THEN GOTO 2380
2380 I=I+1:IF I=60672 THEN GOTO 2390
2390 I=I+1:IF I=60928 THEN GOTO 2400
2400 I=I+1:IF I=61184 THEN GOTO 2410
2410 I=I+1:IF I=61440 THEN GOTO 2420
2420 I=I+1:IF I=61696 THEN GOTO 2430
2430 I=I+1:IF I=61952 THEN GOTO 2440
2440 I=I+1:IF I=62208 THEN GOTO 2450
2450 I=I+1:IF I=62464 THEN GOTO 2460
2460 I=I+1:IF I=62720 THEN GOTO 2470
2470 I=I+1:IF I=62976 THEN GOTO 2480
2480 I=I+1:IF I=63232 THEN GOTO 2490
2490 I=I+1:IF I=63488 THEN GOTO 2500
2500 I=I+1:IF I=63744 THEN GOTO 2510
2510 I=I+1:IF I=64000 THEN GOTO 2520
2520 I=I+1:IF I=64256 THEN GOTO 2530
2530 I=I+1:IF I=64512 THEN GOTO 2540
2540 I=I+1:IF I=64768 THEN GOTO 2550
2550 I=I+1:IF I=65024 THEN GOTO 2560
2560 I=I+1:IF I=65280 THEN GOTO 2570
2570 I=I+1:IF I=65536 THEN GOTO 2580
2580 I=I+1:IF I=65792 THEN GOTO 2590
2590 I=I+1:IF I=66048 THEN GOTO 2600
2600 I=I+1:IF I=66304 THEN GOTO 2610
2610 I=I+1:IF I=66560 THEN GOTO 2620
2620 I=I+1:IF I=66816 THEN GOTO 2630
2630 I=I+1:IF I=67072 THEN GOTO 2640
2640 I=I+1:IF I=67328 THEN GOTO 2650
2650 I=I+1:IF I=67584 THEN GOTO 2660
2660 I=I+1:IF I=67840 THEN GOTO 2670
2670 I=I+1:IF I=68096 THEN GOTO 2680
2680 I=I+1:IF I=68352 THEN GOTO 2690
2690 I=I+1:IF I=68608 THEN GOTO 2700
2700 I=I+1:IF I=68864 THEN GOTO 2710
2710 I=I+1:IF I=69120 THEN GOTO 2720
2720 I=I+1:IF I=69376 THEN GOTO 2730
2730 I=I+1:IF I=69632 THEN GOTO 2740
2740 I=I+1:IF I=69888 THEN GOTO 2750
2750 I=I+1:IF I=70144 THEN GOTO 2760
2760 I=I+1:IF I=70400 THEN GOTO 2770
2770 I=I+1:IF I=70656 THEN GOTO 2780
2780 I=I+1:IF I=70912 THEN GOTO 2790
2790 I=I+1:IF I=71168 THEN GOTO 2800
2800 I=I+1:IF I=71424 THEN GOTO 2810
2810 I=I+1:IF I=71680 THEN GOTO 2820
2820 I=I+1:IF I=71936 THEN GOTO 2830
2830 I=I+1:IF I=72192 THEN GOTO 2840
2840 I=I+1:IF I=72448 THEN GOTO 2850
2850 I=I+1:IF I=72704 THEN GOTO 2860
2860 I=I+1:IF I=72960 THEN GOTO 2870
2870 I=I+1:IF I=73216 THEN GOTO 2880
2880 I=I+1:IF I=73472 THEN GOTO 2890
2890 I=I+1:IF I=73728 THEN GOTO 2900
2900 I=I+1:IF I=73984 THEN GOTO 2910
2910 I=I+1:IF I=74240 THEN GOTO 2920
2920 I=I+1:IF I=74496 THEN GOTO 2930
2930 I=I+1:IF I=74752 THEN GOTO 2940
2940 I=I+1:IF I=75008 THEN GOTO 2950
2950 I=I+1:IF I=75264 THEN GOTO 2960
2960 I=I+1:IF I=75520 THEN GOTO 2970
2970 I=I+1:IF I=75776 THEN GOTO 2980
2980 I=I+1:IF I=76032 THEN GOTO 2990
2990 I=I+1:IF I=76288 THEN GOTO 3000
3000 I=I+1:IF I=76544 THEN GOTO 3010
3010 I=I+1:IF I=76800 THEN GOTO 3020
3020 I=I+1:IF I=77056 THEN GOTO 3030
3030 I=I+1:IF I=77312 THEN GOTO 3040
3040 I=I+1:IF I=77568 THEN GOTO 3050
3050 I=I+1:IF I=77824 THEN GOTO 3060
3060 I=I+1:IF I=78080 THEN GOTO 3070
3070 I=I+1:IF I=78336 THEN GOTO 3080
3080 I=I+1:IF I=78592 THEN GOTO 3090
3090 I=I+1:IF I=78848 THEN GOTO 3100
3100 I=I+1:IF I=79104 THEN GOTO 3110
3110 I=I+1:IF I=79360 THEN GOTO 3120
3120 I=I+1:IF I=79616 THEN GOTO 3130
3130 I=I+1:IF I=79872 THEN GOTO 3140
3140 I=I+1:IF I=80128 THEN GOTO 3150
3150 I=I+1:IF I=80384 THEN GOTO 3160
3160 I=I+1:IF I=80640 THEN GOTO 3170
3170 I=I+1:IF I=80896 THEN GOTO 3180
3180 I=I+1:IF I=81152 THEN GOTO 3190
3190 I=I+1:IF I=81408 THEN GOTO 3200
3200 I=I+1:IF I=81664 THEN GOTO 3210
3210 I=I+1:IF I=81920 THEN GOTO 3220
3220 I=I+1:IF I=82176 THEN GOTO 3230
3230 I=I+1:IF I=82432 THEN GOTO 3240
3240 I=I+1:IF I=82688 THEN GOTO 3250
3250 I=I+1:IF I=82944 THEN GOTO 3260
3260 I=I+1:IF I=83200 THEN GOTO 3270
3270 I=I+1:IF I=83456 THEN GOTO 3280
3280 I=I+1:IF I=83712 THEN GOTO 3290
3290 I=I+1:IF I=83968 THEN GOTO 3300
3300 I=I+1:IF I=84224 THEN GOTO 3310
3310 I=I+1:IF I=84480 THEN GOTO 3320
3320 I=I+1:IF I=84736 THEN GOTO 3330
3330 I=I+1:IF I=84992 THEN GOTO 3340
3340 I=I+1:IF I=85248 THEN GOTO 3350
3350 I=I+1:IF I=85504 THEN GOTO 3360
3360 I=I+1:IF I=85760 THEN GOTO 3370
3370 I=I+1:IF I=86016 THEN GOTO 3380
3380 I=I+1:IF I=86272 THEN GOTO 3390
3390 I=I+1:IF I=86528 THEN GOTO 3400
3400 I=I+1:IF I=86784 THEN GOTO 3410
3410 I=I+1:IF I=87040 THEN GOTO 3420
3420 I=I+1:IF I=87296 THEN GOTO 3430
3430 I=I+1:IF I=87552 THEN GOTO 3440
3440 I=I+1:IF I=87808 THEN GOTO 3450
3450 I=I+1:IF I=88064 THEN GOTO 3460
3460 I=I+1:IF I=88320 THEN GOTO 3470
3470 I=I+1:IF I=88576 THEN GOTO 3480
3480 I=I+1:IF I=88832 THEN GOTO 3490
3490 I=I+1:IF I=89088 THEN GOTO 3500
3500 I=I+1:IF I=89344 THEN GOTO 3510
3510 I=I+1:IF I=89600 THEN GOTO 3520
3520 I=I+1:IF I=89856 THEN GOTO 3530
3530 I=I+1:IF I=90112 THEN GOTO 3540
3540 I=I+1:IF I=90368 THEN GOTO 3550
3550 I=I+1:IF I=90624 THEN GOTO 3560
3560 I=I+1:IF I=90880 THEN GOTO 3570
3570 I=I+1:IF I=91136 THEN GOTO 3580
3580 I=I+1:IF I=91392 THEN GOTO 3590
3590 I=I+1:IF I=91648 THEN GOTO 3600
3600 I=I+1:IF I=91904 THEN GOTO 3610
3610 I=I+1:IF I=92160 THEN GOTO 3620
3620 I=I+1:IF I=92416 THEN GOTO 3630
3630 I=I+1:IF I=92672 THEN GOTO 3640
3640 I=I+1:IF I=92928 THEN GOTO 3650
3650 I=I+1:IF I=93184 THEN GOTO 3660
3660 I=I+1:IF I=93440 THEN GOTO 3670
3670 I=I+1:IF I=93696 THEN GOTO 3680
3680 I=I+1:IF I=93952 THEN GOTO 3690
3690 I=I+1:IF I=94208 THEN GOTO 3700
3700 I=I+1:IF I=94464 THEN GOTO 3710
3710 I=I+1:IF I=94720 THEN GOTO 3720
3720 I=I+1:IF I=94976 THEN GOTO 3730
3730 I=I+1:IF I=95232 THEN GOTO 3740
3740 I=I+1:IF I=95488 THEN GOTO 3750
3750 I=I+1:IF I=95744 THEN GOTO 3760
3760 I=I+1:IF I=96000 THEN GOTO 3770
3770 I=I+1:IF I=96256 THEN GOTO 3780
3780 I=I+1:IF I=96512 THEN GOTO 3790
3790 I=I+1:IF I=96768 THEN GOTO 3800
3800 I=I+1:IF I=97024 THEN GOTO 3810
3810 I=I+1:IF I=97280 THEN GOTO 3820
3820 I=I+1:IF I=97536 THEN GOTO 3830
3830 I=I+1:IF I=97792 THEN GOTO 3840
3840 I=I+1:IF I=98048 THEN GOTO 3850
3850 I=I+1:IF I=98304 THEN GOTO 3860
3860 I=I+1:IF I=98560 THEN GOTO 3870
3870 I=I+1:IF I=98816 THEN GOTO 3880
3880 I=I+1:IF I=99072 THEN GOTO 3890
3890 I=I+1:IF I=99328 THEN GOTO 3900
3900 I=I+1:IF I=99584 THEN GOTO 3910
3910 I=I+1:IF I=99840 THEN GOTO 3920
3920 I=I+1:IF I=100096 THEN GOTO 3930
3930 I=I+1:IF I=100352 THEN GOTO 3940
3940 I=I+1:IF I=100608 THEN GOTO 3950
3950 I=I+1:IF I=100864 THEN GOTO 3960
3960 I=I+1:IF I=101120 THEN GOTO 3970
3970 I=I+1:IF I=101376 THEN GOTO 3980
3980 I=I+1:IF I=101632 THEN GOTO 3990
3990 I=I+1:IF I=101888 THEN GOTO 4000
4000 I=I+1:IF I=102144 THEN GOTO 4010
4010 I=I+1:IF I=102400 THEN GOTO 4020
4020 I=I+1:IF I=102656 THEN GOTO 4030
4030 I=I+1:IF I=102912 THEN GOTO 4040
4040 I=I+1:IF I=103168 THEN GOTO 4050
4050 I=I+1:IF I=103424 THEN GOTO 4060
4060 I=I+1:IF I=103680 THEN GOTO 4070
4070 I=I+1:IF I=103936 THEN GOTO 4080
4080 I=I+1:IF I=104192 THEN GOTO 4090
4090 I=I+1:IF I=104448 THEN GOTO 4100
4100 I=I+1:IF I=104704 THEN GOTO 4110
4110 I=I+1:IF I=104960 THEN GOTO 4120
4120 I=I+1:IF I=105216 THEN GOTO 4130
4130 I=I+1:IF I=105472 THEN GOTO 4140
4140 I=I+1:IF I=105728 THEN GOTO 4150
4150 I=I+1:IF I=105984 THEN GOTO 4160
4160 I=I+1:IF I=106240 THEN GOTO 4170
4170 I=I+1:IF I=106496 THEN GOTO 4180
4180 I=I+1:IF I=106752 THEN GOTO 4190
4190 I=I+1:IF I=107008 THEN GOTO 4200
4200 I=I+1:IF I=107264 THEN GOTO 4210
4210 I=I+1:IF I=107520 THEN GOTO 4220
4220 I=I+1:IF I=107776 THEN GOTO 4230
4230 I=I+1:IF I=108032 THEN GOTO 4240
4240 I=I+1:IF I=108288 THEN GOTO 4250
4250 I=I+1:IF I=108544 THEN GOTO 4260
4260 I=I+1:IF I=108800 THEN GOTO 4270
4270 I=I+1:IF I=109056 THEN GOTO 4280
4280 I=I+1:IF I=109312 THEN GOTO 4290
4290 I=I+1:IF I=109568 THEN GOTO 4300
4300 I=I+1:IF I=109824 THEN GOTO 431
```

ONE TWO EIGHT THE DEMO ROUTINES

```

01 1000 R01 000000
02 1010 OVR0
03 1020 POK0 C0L,C
04 1030 -MOVE C0L,C0R0+1,1F0
05 1040 C=0:1:1F C120 THEN OVR0
06 1050 G0T0 0000
    
```

```

07 1060 R01 000000
08 1070 OVR0+02
09 1080 POK0 C0L,C+MOVE C0L,C0R0+1,1F0
10 1090 C=0+1:1F 11 000 12=0:0 000 0=0:2
    THEN 0=+0:0+1:1:0:0:0 0000
11 1100 1F 0: 000 12=0:0 THEN 0=+0:0+0:1
12 1110 1F C120 THEN OVR0
13 1120 R01 0000
    
```

RAINBOW (RAINBOW.OTE)

The constant CL effect. Easily altered by FORKING the background Colour set (A, C)0 with the Colour number (C) at line 0 in the Colour table. The MOVE command is then used to move the streak of memory covering the screen in the Colour table down by one line. C is then incremented and the program loops around.

```

01 1000 R01 000000
02 1010 OVR0
03 1020 POK0 C0L,C:POK0 C0R+1,0,C
04 1030 -MOVE C0L,C0R0+1,0:0:0:0 C0R+1,1F0
05 1040 C=C+1:1F C=C20 THEN OVR0
06 1050 G0T0 0000
    
```

INWARD RAINBOW (INWARD.OTE)

The same effect as Rainbow but this time only half the screen is moved down, and the same method is used as above to Push C into the last line and move up the bottom half of the screen.

SHADED BARS (SHADEBAR.OTE)

This gives a downward moving series of shaded coloured bars. M is used to control the direction that C is altered, first rising in Luminance then declining to create the shaded effect. When C MOD 16 is equal to 8 the remainder when the colour number is divided by 16 equals 0, meaning that it's at the lowest luminance and M is -2 like shading in declining, which means this colour is dark. C is raised by 16 to start on the next bar.

```

01 1000 R01 00000000
02 1010 Y=C:0:0:1:0:0:0:0:0:0:0:0:0:0:0:0:0:0
03 1020 POK0 000,0:0:POK0 000+14,0:0:POK0 0
    00+17,0
04 1030 FOR 0=0:1 TO 0:POK0 000+0,0:0:0:0:0:0:0:0:0
    0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0
05 1040 FOR 0=0 TO 0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0
    0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0
06 1050 MOVE 000,C0R+1,1F0
07 1060 Y=Y+1:1F Y=0:1 OR Y=0:0 THEN 0=+0:1:1F0
    0:0:0
08 1070 G0T0 0000
    
```

MOVING SHADED BAR #1 (MOVBAR1.OTE)

(Status of previous page)

Once the Screen Inverting bar effect. The last colours are set up at address 000 then moved to the appropriate line in the background Colour table (C)0. As the first and last lines of BAR are set to colour 0 (Black), when the position of the bar to C0 is moved up or down by one line the same line from the previous move is deleted. If the Y position of the bar is 0 or 151 the direction, M, is made equal to -M i.e. 2 becomes -2 and -2 becomes 2 to reverse the bar's direction of movement.

```

01 1000 R01 00000000
02 1010 Y=C:0:0:1:0:0:0:0:0:0:0:0:0:0:0:0:0:0
03 1020 Y=0:1:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0
    0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0
04 1030 POK0 000,0:0:POK0 000+14,0:0:POK0 0
    00+17,0
05 1040 FOR 0=0:1 TO 0:POK0 000+0,0:0:0:0:0:0:0:0:0
    0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0
06 1050 FOR 0=0 TO 0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0
    0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0
07 1060 MOVE 000,C0R+1,1F0:MOVE 000,C0R+1
    2,1F0
08 1100 MOVE 000,C0L,000
09 1110 Y=Y+1:1F Y=0:1 OR Y=0:0 THEN 0=+0:1:1F0
    0:0:0
10 1120 Y=Y+0:1:1F Y=0:1 OR Y=0:0 THEN
    000+0:17:0:0:0
11 1130 G0T0 0000
    
```

MOVING SHADED BAR #2 (MOVBAR2.OTE)

The same as Moving bar #1 but this time with two bars. This creates a lag however, when the two bars cross and they have no priority as to which should be in front.

```

01 1000 R01 00000000
02 1010 Y=C:0:0:1:0:0:0:0:0:0:0:0:0:0:0:0:0:0
03 1020 Y=0:1:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0
    0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0
04 1030 MOVE 000+10:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0
    0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0
05 1040 POK0 000,0:0:POK0 000+14,0:0:POK0 0
    00+17,0
06 1050 POK0 000,0:0:POK0 000+14,0:0:POK0 000
    00+17,0
07 1060 FOR 0=0:1 TO 0:POK0 000+0,0:0:0:0:0:0:0:0:0
    0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0
08 1070 FOR 0=0 TO 0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0
    0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0
09 1080 FOR 0=0 TO 0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0
    0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0
10 1090 FOR 0=0 TO 0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0
    0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0
11 1100 MOVE 000,C0R+1,1F0:MOVE 000,C0R+1
    2,1F0
12 1110 MOVE 000,C0L,000
13 1120 Y=Y+1:1F Y=0:1 OR Y=0:0 THEN 0=+0:1:1F0
    0:0:0
14 1130 Y=Y+0:1:1F Y=0:1 OR Y=0:0 THEN
    000+0:17:0:0:0
15 1140 G0T0 0000
    
```

MOVING SHADED BAR #3 (MOVBAR3.OTE)

Reverses the above mentioned lag by using a Shadow Colour table (0)0, in first position both bars within this area then move the whole area of memory to C00.

RANDOM SHADED BARS (RANDOMBAR.OTE)

(Starting over!)

Displays shaded bars at random Y positions down the screen. The bars are first set up in memory at BAR then moved to C00 as required.

continued 

ONE BIG FIGHT

```

IS 100 GRAPHICS 00
FR 0000 ROM_SIMPLE_MOVE
SD 1000 7000:0000-C00-200-C00:00:00:00
SD 1020 0000:00:00
GG 0000 ROM_SETUP_MOVE
LS 0000 FOR 1=00 TO 10
MC 0000 FOR #00 TO 7:P000 000,00,00L:00L:
00L:00:NDOT 0
LT 0000 FOR #00 TO 00:00:00L:00:00:00 00
00,00:NDOT 0
FR 0000 0000:00:00L:00:00
FR 0000 NEXT 0
GG 0000 ROM_SETUP_TEXT
ZF 1000 POSITION 3,250:00 00,00:00 00 0
0000
GG 1100 POSITION 0,500:00 00,00:00
GG 1200 POSITION 00,500:00 00,00:00 WILLIAM
00
GG 1300 POSITION 5,0:00 00,00:00 0000
  
```

```

AJ 1000 ROM_SETUP_MOVE
GG 1020 7000:0000:00:00:00:00:00:00:00 000
00,00:00,00
GG 1100 MOVE 0000,000:000-0,10
GG 1170 ROM_SETUP_MOVE
SD 1100 00:00:00:00:00:00:00:00:00:00:00,1
00
ZF 1100 ROM_SETUP
GG 1200 MOVE 010:01,00:00:00 010:01,010:0
00,00
GG 1210 MOVE 000:00,00:00:00 000:00,000:
00,00
GG 1220 00:00:00:01:00 00:00 THEN 00:00
MC 1200 ROM_SETUP_MOVE
TD 1200 MOVE 000:00,00:00,10
GG 1250 MOVE 000:00-00,00:00,10
GG 1260 0000:00:00:00 00:00 THEN 00:00
GG 1270 GOTO 1100
  
```

THE SIMPLE GTE DEMO (GTEDEMO.OTE)

A simple demo which puts together several of the above effects and demonstrates their use.

TWO HUNDRED AND FIFTY SIX COLOUR PALETTE (TP000LS.OTE)

(Scroll page)

Displays the full 256 available colours by scrolling in GCR. It shows mode 040 in set up as 10 bands down the screen, one for each successive colour. Lines are then plotted across the screen in 10 vertical bands, one for each horizontal.

```

VF 0000 ROM_SETUP_MOVE_MOVE
GG 0010 7000:0000-C00-200-C00:00:00:00
LS 0020 FOR 1=00 TO 10
FR 0030 FOR #00 TO 7:P000 000,00L:00L:
00L:00:NDOT 0
LT 0040 FOR #00 TO 00:00:00L:00:00:00 00
00,00:NDOT 0
GG 0050 0000:00:00L:00:00
FR 0060 NEXT 0
GG 0070 7000:0000:00:00:00:00:00:00:00
TO 0000 MOVE 0000,000:000-0,10
MC 0080 GOTO 0000
  
```

THE 256 COLOURS DEMO (256COLOURS.OTE)

Shows available 256 colours in a 10x10 grid. The colours are arranged in 10 vertical bands, one for each horizontal.

```

GG 0000 7000:0000-C00-200-C00:00:00:00
LS 0010 FOR 1=00 TO 10
FR 0020 FOR #00 TO 7:P000 000,00L:00L:
00L:00:NDOT 0
LT 0030 FOR #00 TO 00:00:00L:00:00:00 00
00,00:NDOT 0
GG 0040 0000:00:00L:00:00
FR 0050 NEXT 0
GG 0060 7000:0000:00:00:00:00:00:00:00
TO 0000 MOVE 0000,000:000-0,10
MC 0070 GOTO 0000
  
```

```

IS 100 GRAPHICS 0
CG 1000 ROM_MOVE_256_Colours
GG 1010 COL=00
BT 1020 FOR #00 TO 001 STEP 10
GG 1030 FOR 1=0 TO 00:00:000 000+1,00L:
NEXT 1
GL 1040 COL=00L:00:NDOT 0
LA 1050 COL=00
FR 1060 FOR #00 TO 70 STEP 5
AC 1070 COLOR COL:COL:COL:001
GG 1080 FOR 1=0 TO 000:000:1,00:000000
1,00:NDOT 1
MC 1090 NEXT 0
MC 1100 GOTO 1000
  
```

GG 1000 7000:0000-C00-200-C00:00:00:00

```

IS 100 GRAPHICS 0
GG 1000 ROM_Move_256_Colours
GG 1010 COL=00
BT 1020 FOR #00 TO 001 STEP 10
GG 1030 FOR 1=0 TO 00:00:000 000+1,00L:
NEXT 1
GL 1040 COL=00L:00:NDOT 0
LA 1050 COL=00
FR 1060 FOR #00 TO 70 STEP 5
AC 1070 COLOR COL:COL:COL:001
GG 1080 FOR 1=0 TO 000:000:1,00:000000
1,00:NDOT 1
MC 1090 NEXT 0
LA 1100 00:00:00:00:00:00:00:00:00:00:00,1
00:00:00 00,00
MC 1110 GOTO 1000
  
```

MOVE 256 COLOURS #1 (MOVE256P01.OTE)

Moves the 256 colour palette and moves it down the screen with a wrap-around effect.

```

GG 0000 7000:0000-C00-200-C00:00:00:00
LS 0010 FOR 1=00 TO 10
FR 0020 FOR #00 TO 7:P000 000,00L:00L:
00L:00:NDOT 0
LT 0030 FOR #00 TO 00:00:00L:00:00:00 00
00,00:NDOT 0
GG 0040 0000:00:00L:00:00
FR 0050 NEXT 0
GG 0060 7000:0000:00:00:00:00:00:00:00
TO 0000 MOVE 0000,000:000-0,10
MC 0070 GOTO 0000
  
```

```

IS 100 GRAPHICS 0
GG 1000 ROM_MOVE_256_Colours
GG 1010 FOR #00 TO 001 STEP 10
GG 1020 COL=00:000 1=0 TO 00:00:000 000
+1,00L:00L:00L:00:NDOT 0
GG 1030 FOR 000:00:00:00:00:00L:00L:00L:00L:
00:00:00L:00:NDOT 1
FR 1040 NEXT 0
GG 1050 FOR #00 TO 70 STEP 10
DL 1060 COL=00
GG 1070 FOR 1=0 TO 00:00:000 00L:00L:00L:00L:
00:00:00:1,00:NDOT 1
CG 1080 FOR 000:00:00:00:00:00L:00L:00L:00L:
00:00:00
MC 1090 IF 1=00 THEN PLOT 1,0
GG 1100 NEXT 1
GG 1110 NEXT 0
GG 1120 FOR #00 TO 001
GG 1130 MOVE 0000:000,000:000:000+000000
00
GG 1140 NEXT 1
GG 1150 GOTO 1000
  
```

MOVE 256 COLOURS #2 (MOVE256P02.OTE)

Another 256 colour moving screen demo. In this case the top line is shown first, then copied by using MOVE to all other lines down the screen. The colours move down as before.

Overlay are three more listings that show some other techniques for achieving effects. See if you can work out how these last three work.

Overlay are three more listings that show some other techniques for achieving effects. See if you can work out how these last three work.


```

M1 100 GRAPHICS 11
M2 1000 ROW 0:LOCKDOWN,LF2,C1
M3 1000 FOR 0=0 TO 100 STEP 4
M4 1000 COLOR 21:PLUT X,20:SHAWT 2, 1P1
M5 1000 COLOR 22:PLUT X(X),20:SHAWT 3-
  21, 1P1
M6 1000 NEXT X
M7 1000 COLOR 23:TEXT 20, P2, "UNLOCKDOWN"
  " "
M8 1000 GO TO 100
M9 1000 FOR 0=0 TO 1P1
M10 1000 PORE 040+0,0C:PORE 050+0,0C:POR
  0 C 010+0,0C
M11 1000 1=0 FOR 0
M12 1000 IF 1=0 OR 1=1 THEN PORE 050+0
  ,0A:PORE 010+0,20
M13 1000 NEXT 0
M14 1000 1=1 FOR 0
M15 1000 1=1:FOR 0=0 TO 1P1:1=PORE 010
  :1P1
M16 1000 PORE 050,0A:PORE 010,1
M17 1000 ROW 0:0 1100:000 0:0 1:0:0:0:0
M18 1000 PORE 020+000,020+000, 1P1
M19 1000 PORE 020+000,020+000, 0
M20 1000 GO TO 1100

```

```

M1 100 GRAPHICS 31
M2 1000 ROW 0:MOVING GRID
M3 1000 COLOR 21
M4 1000 FOR 0=0 TO 100 STEP 4
M5 1000 PLUT X,20:SHAWT X, 1P1
M6 1000 NEXT X
M7 1000 FOR 0=0 TO 1P1
M8 1000 PORE 050+0,1A
M9 1000 IF 0=0 OR 0=1 THEN PORE 040+0,1
  4
M10 1000 NEXT 0
M11 1000 0=1:FOR 0=0 TO 1P1
M12 1000 -PORE 040,040(X), 1P1
M13 1000 PORE 040,1A
M14 1000 GO TO 1000

```

MOVING GRID (MOVEGRID.OT1)

A grid of squares comes down the screen. Should really be done by the OLI staff for maximum smoothness. The ripple effect is caused by the OLI data being moved before the OLI has had time to cover the entire screen.

```

M1 1000 PORE 050,0A:PORE 010,1
M2 1000 ROW 0:0 1100:000 0:0 1:0:0:0:0
M3 1000 PORE 020+000,020+000, 1P1
M4 1000 PORE 020+000,020+000, 0
M5 1000 GO TO 1100

```

... and finally

BOLDERSHAW EFFECT (BOLDERSHAW.OT1)

Similar to the moving background on the title screen of Bomberman 1. Again, this should be done by the OLI staff for maximum smoothness. Slight jitters between vertical scrolling lines is caused by both colour sets not being moved simultaneously - due to BASIC speed restrictions and using two MOVE commands. Try modifying the program to use just one MOVE command to construct this. The scrolling title line is an extra effect which can be skipped to speed up the background movement.

SHADED WIGGLERS (WIGGLERS.OT1)

(Next page)

Several shaded "Wigglers" move up and down the screen.

```

M1 1000 PORE 050,0A:PORE 010,1
M2 1000 ROW 0:0 1100:000 0:0 1:0:0:0:0
M3 1000 PORE 020+000,020+000, 1P1
M4 1000 PORE 020+000,020+000, 0
M5 1000 GO TO 1100

```

```

M1 1000 NEXT 0
M2 1000 PORE 040+0,0C:PORE 050+0,0C:POR
  0 C 010+0,0C
M3 1000 1=0 FOR 0
M4 1000 IF 1=0 OR 1=1 THEN PORE 050+0
  ,0A:PORE 010+0,20
M5 1000 NEXT 0
M6 1000 1=1 FOR 0
M7 1000 1=1:FOR 0=0 TO 1P1:1=PORE 010
  :1P1
M8 1000 PORE 050,0A:PORE 010,1
M9 1000 ROW 0:0 1100:000 0:0 1:0:0:0:0
M10 1000 PORE 020+000,020+000, 1P1
M11 1000 PORE 020+000,020+000, 0
M12 1000 GO TO 1100

```

A CULT FOLLOWING?

continued

Double instant Nescafe you should try filter coffee which opens up a whole world of tastes. There are also exotic coffees you can sample: two are Arab (very strong and sweet but with a lively aroma) and Irish (bit spicy, creamy, and full on sugar - very smooth and, the more you drink, the smoother it seems).

No serious programmer drinks tea (or two) for weeks and looks that special strog than ever. Keep your ankles for four days in a row. Coffee fans should also try reading the adventures of Garfield the Cat, a coffee connoisseur

who likes it when you can make his beverage strong enough to "let up and bark."

Editor's note: This article was almost guaranteed inclusion because I mentioned Arthur C. Clarke who is in the *British Science Fiction* center in the universe bar scene. I have been collecting fan books for years so if anyone has some of his more obscure stuff they wish to part with, let me know. You know, James might just have hit upon something by saying Atari owners are rather fascinated

The CLASSIC PD ZONE



A black, circular object has materialized directly in front of our shield. There are no apparent markings. It has deposited an crystalline substance over our fuel and appears to be feeding from the pump drive. Our power banks are down to 12%. Unless we do something soon, we are going to lose life support. Check the data banks for the latest Red-R files ...

ATARI USER CLASSICS

This is a collection of eight games from Atari that suggests, like *Diskin* Publications title which ran from May 1985 to November 1988, there are seven BASIC games and one machine code.

BANTA'S GROTTO is a large maze game in which you must guide Santa through his grotto collecting presents along the way. The grotto is very large and takes up a number of screens. You must collect as many presents as possible before the timer counts down to zero. Although Santa moves like he's had too much brandy, this game is quite entertaining if it is certainly challenging and reminds me of *Mean Machine* by Acorn. A good start to the disk.

Next up is **FENCE BUILDER**. The objective is to build four fences by planting the posts and adding the fence panels. Unfortunately, it's not quite as simple as that. The whole area has been subjected to radiation from the local nuclear station and your tools have become radioactive. They float across the screen and must be avoided at all costs. *Fence Builder* is a simple game which is initially enjoyable. Long term interest is suspect, due to the repetitive gameplay and annoying basic ground noise.

FRANK THE FRUIT FINDER is a platform and hidden game. You control Frank and must guide him up and down the ladders collecting fruit along the way. Frank can jump across gaps in the platforms and must complete his task before the time limit, displayed at the bottom of the screen, runs out. This game is like *Loch Hunter* without the hidden. Presentation is similar, with small graphics and slow, smooth movement. One game like this one? The sound effects and colourful graphics make for a worthy effort. Just be careful to climb down the ladders rather than walk off the platforms or Frank will lose a life. The long installation period is worth the wait.

GREEDY GUNTHER is another colourful game from the Atari User vault. You must guide Greedy Gunther around the screen as he collects bags of gold. What makes this game so enjoyable is that Greedy Gunther keeps moving. He must avoid the needles and

collect the gold without stopping. It's Pacman gone crazy!

In **HEATE CRAZY** you must obtain from the left of the screen to the right whilst avoiding various objects. This one is quite basic and looks dated. Thankfully, however, several screens is rewarded with **PAC-MATES**, an educational game which tests you on the 2-55 times tables. At the top of the screen is a horizontal row of dots with a power pill on the right. Pacman enters from the left, quickly followed by a ghost. The objective is to get Pacman to the power pill by correctly answering the multiplication questions. Get one right and Pacman moves one dot towards the power pill. Get one wrong and Pacman stays where he is. All the time the ghost is slowly closing in. If Pacman manages to reach the power pill, he turns and eats the ghost. A tenth time progresses.

DOCTOR BORN has you collecting numbers whilst avoiding bombs, skulls, monsters, etc. A wall is left behind you as you travel around the screen so you must be careful not to block yourself in. The action is fast.

The eighth and final title is **FRUITS**, a machine code slot machine. All of the usual elements are included such as spinning reels, bells, medals, bonuses, etc. With colourful graphics and addictive gameplay, *Fruits* is great fun to play!

Atari User Classics is a collection of programs which fit together perfectly. Not back the years and experience the joy of classic type-in software ... without having to spend hours typing in the listings!

CLASSIC PD ZONE RATING: 77%

SHOWDOWN

This disk features six games. First up is the title game, **SHOWDOWN**, a machine code title which takes you back to time in the wild west. Here you must compete against a gun-fighter for bags of gold.

The play area is a coral surrounded by various trees and rocks. Both players appear in the coral and must race about grabbing the bags of gold which appear randomly. You can either play against a friend or the computer. Bonus points can be gained up by catching the rabbits which dart through the coral.

Each player begins the game with nine lives. You lose a life if you are shot by your opponent. When shot you are frozen for a couple of seconds. There are four computer opponents available, ranging from the slow and methodical Sam to the nasty trigger-happy Billy. Obviously, two player mode is by far the best way to play *Showdown*.

There are bright graphics, lots of sound effects and a variety of enemy types (are there's) to played on a piece by a little guy at the bottom of the screen. *Showdown* is a quality title.

The next game on the disk is **TYRANTS OF TORMENT**, Atari User's PD version of *Blcock Patrol*. You are in control of a laser tank as it travels along. Always wrap doors on you

by
Stuart Murray

CLASSIC PD ZONE

and obstacles come at you head-on. It is this simultaneous threat from above and ahead which makes Tyrants of Tomorrow a very challenging title. The aliens must be shot and the obstacles jangled over ... on the same level! The action starts slowly but soon heats up with booming missiles coming at you.

The graphics are blocky and colourful, found in limited to the conventional explosion. The gameplay is tough as you only have one life and must be very careful from level 2 onwards. Tyrants of Tomorrow is programmed in BASIC and as such is a reasonable recreation of Moon Patrol.

ALVIN AMBUSH is a frantic version of Galaxian. It features various large enemies which split into two when hit. These smaller enemies then loam around the screen and, if hit, leave into exploding missiles.

The play area is very small, perhaps too small. The ships are bulky and the action soon becomes repetitive. On the plus side, Alvin Ambush is a machine code title and is therefore very fast and challenging. When the aliens start banging around the screen it is very easy to collide with one of them. This is your best! Ambush meets Galaxian blast. It was programmed in 1982 and looks slightly dated. Worth a few hours however.

STATION DEFENCE is a BASIC game for 1-4 players. The objective is to defend the space station which runs down the middle of the screen. Enemy rockets approach from both sides and must be destroyed before they reach the station. The graphics are small and basic with very little attention paid to presentation. Station Defence is nothing special and soon becomes tedious to play.

DIAM TROUBLE is another Atari User title they're popping up all over the place in this issue's column. In place of an array of bullets assigned to defend a large ship, you must destroy approaching missiles before they blow holes in the dam walls. Beneath you are the

right is a small town which will be flooded if the dam is destroyed.

Although the graphics are basic, the colours are bland and the sound is limited. Diam Trouble has a certain charm. It would make a great title if it was updated for the 1990s. I like this one.

The final game on Showdown is called **PATRIAL CONNECTION**. It is an enjoyable music game with puzzle elements. You must spend a substance throughout the game and guide two 'yolkers' (small intelligent life forms) to their safety zones marked '1' and '2'. You can also collect special bonuses for points. It's a tricky job. Watch out for the toxic plants - touch them and you lose a life.

Unfortunately, there are only two means to complete and then you return to the beginning. Nevertheless, what little there is of Patrial Connection is certainly worth playing.

All in all, Showdown is an enjoyable software 8-pack. The star of the show is undoubtedly Showdown itself, with supporting roles for Tyrants of Tomorrow, Diam Trouble and Patrial Connection.

CLASSIC PD ZONE RATING: 78%

SEE-YA!

The power banks are now exhausted. My support is offline and we are left with thirty minutes emergency oxygen. There is only one option open for us now...

The disks reviewed were:

- 366 - ATARI USER CLASSICS
- 364 - SHOWDOWN

The Accessory Shop

ISSUE 74

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JOURNEY INTO CYBERSPACE

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

In't that typical? As soon as the last issue of New Atari User containing my article about the costs-of-using CompuServe had gone out to subscribers, they completely changed their way of charging! It's worth noting the new volume cost, as it means lower costs for most CompuServe users.

If you read my previous article you'll realize that working out the real cost could be just a little complicated. CompuServe have now simplified matters considerably by combining many of the separate elements which were charged at different rates and billing them all at a single lower rate. Details are as follows - prices are approximate as they depend on dollar exchange rates.

FIVE HOURS "FREE"

Monthly subscription is still \$8.00. For this you now get five hours "free" access to what were Basic, Extended, Internet, and Electronic Mail services, (i.e. virtually all of CompuServe's services, as long as you don't exceed five hours connect time in a month, then that's all you pay, additional time over the hours is now billed at \$2.00 per hour (about 3p per minute, down from about 5p per minute).

If you regularly use the system for more than 5 hours a month you can elect to pay an extra \$10.00 per month and get an additional 15 hours added to your "free" allowance. If you still need additional time beyond this it's charged at just \$1.00 per hour (about 12p per minute). You'll also be receiving up a graphic phone bill, unless you're one of the lucky people able to get free connection via your

college or university.

Also, the 60 message electronic mail limit has been abolished, so now the charges based on message length and exchanges for generating messages from outside CompuServe (e.g. the Internet), Transmittal and receiving mail is now based on connect time like everything else. The old "Executive" writers and "Trainers" research databases (useful for business and will carry extra charges whenever you use them, but some real cost, too. This is much better than the old system as it's now fairly easy to keep track of how much your bill will be.

Another major change is that CompuServe's London access route has just doubled its connection speed from 14.4Kbps to 28.8Kbps, with others around the country to follow by year end, so you can now download this in half the time it took previously. Not long ago CompuServe would have charged extra for this, as they also leased speed related connect time charges (not unlike, I always thought, I've now switched to this speed using my new T34 modem, and it makes a big difference to file download times and other bandwidth hungry operations such as exploring the Internet's World Wide Web sites.

COMPETITION

All of the above have been caused by one thing - competition. Or more precisely, a certain gentleman called Bill Gates. Some time ago he announced he'd be writing up a major new on-line service called the Microsoft Network (MSN), and that he'd be handling software for accessing it into his new Windows 95 PC operating system. This scared Com-

puServe right, and they've reacted over the last year or so by dramatically lowering charges and improving services to persuade their subscribers not to defect to MSN. And, there's much more in the pipeline apparently. I must say the benefits to users have been quite spectacular, and as a regular user I'm very pleased with the changes.

Microsoft now have a real fight on their hands, as MSN is now far more expensive than CompuServe (in the UK anyway), has slower access speeds, and far fewer services - for instance there's no World Wide Web access yet. No doubt they'll try to catch up, so the battle is should become very interesting over the next year or so.

USENET AND NEWSGROUPS

After e-mail, the next most popular Internet application is probably "Usenet". This is like a much bigger, wider version of CompuServe's own forum service, as described in the last issue. It's a massive collection of bulletin boards and conference areas, each set up to cover a particular topic, and classified by subject type into a "hierarchy". There are a huge number of them - I've seen the estimate put as high as 12,000 - covering every topic imaginable, including a great number of Atari related subjects.

Anyone can post messages on these, and the postings are distributed throughout the world by a cascading chain of News Servers, with access to your local one supplied by your service provider. So, if you post a technical question on your local server about Atari disk





JOURNEY

drives it would seem that its easy navigating out onto News Servers around the world, and could potentially be read by millions of other Internet users. Anyone reading it can post a reply, which again will propagate around the world in the same way. Collections of related comments, replies, discussions, etc. on a particular subject are linked together into a "thread", and you can access a thread and follow a discussion as it evolves. Each newsgroup typically carries many threads at once, covering different aspects of its main topic.

Before you ask, I'll tell you that Usenet also includes topics of a somewhat, shall we say, local nature. However, the USENET (not the Internet) is full of paragraphs that leap out of the screen at you without pronunciation in the mass media would have you believe. Yes, there IS pornographic material on the Internet, and you'll find it if you look for it - much like any other form of pornography. The difference in that children may be tempted to look for it, and would access it without anyone questioning their actions, if their parents put a screen on a parent, then there's a simple answer - supervise your children's online activities.

Computers reduce the chance of anyone finding "unsuitable" newsgroup material by restricting the names of known potentially offensive resources from their system when possible. However, if you know the name of a resource you can still get to it even though it isn't listed. Some schools with Internet access can have "firewall" systems installed, which can totally block access to specific Internet resources deemed to be unsuitable, whatever form they take. Similar products for use on home systems are now becoming available, but don't hold your breath waiting for that solution.

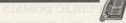
Internet newsgroups are often unmoderated,

which means that no-one polices their content, so you might come across foul language and other material which might offend amongst other perfectly acceptable material. In contrast, CompuServe forums are moderated, so any offensive material can be screened out before the public sees it. OK, it's a form of censorship, but CompuServe like to maintain a reputation close enough to it to never appear in the family run use. Generally speaking, the Internet is unmoderated.

NEWSGROUP CATEGORIES

There are two types of newsgroups, "universal" and "alternate". Universal groups are carried by all News Servers worldwide. Alternative groups, however, may be local and postings to them may or may not get passed on to other News Servers. Newsgroups are defined by a hierarchical name, consisting of various elements separated by full stops. The topic covered is defined more precisely as you move from left to right in the name. The leftmost part defines a general category, and the universal groups include the following naming conventions:

- comp - covers anything about computers
- comp - anything concerning newsgroups and Usenet itself
- sci - covers science and scientific knowledge
- soc - anything on social issues
- misc - encompasses recreational, artistic, or other creative activities
- talk - includes discussions and debates



ROUNDTOP PUBLIC DOMAIN

Lower levels of the name are less rigidly defined, but become familiar with a little experience. For example "comp.sys.ibm.pc" is a newsgroup about computing (comp), covering computer systems (sys), the IBM systems in particular (ibm), and specifically the 8-bit machines (pc).

Similarly there's "comp.sys.start.4" and "comp.sys.start.4.tech" which significantly cover XT ground and XT technical topics respectively. There's also one called "comp.sys.start.4.sources" encompassing Atari related announcements (not much to have these days), and another called "comp.sys.start.4.library" in which users argue the merits of Atari versus other systems. Atari references also crop up in other major newsgroup categories, for instance "rec.games.atari.start".

Alternative newsgroups start with "alt", and here you'll find such Atari entries as "alt.atari.language", "alt.games.lynx", and "alt.start.2000" amongst thousands of others covering all kinds of topics.

Atari users can get easy access to newsgroups through CompuServe. As with e-mail, newsgroups can be accessed via an ASCII terminal program. I've successfully searched for and retrieved Atari related newsgroup material using Plan9, an excellent communications program from Austin. After logging onto CompuServe via this, everything is done via a fairly primitive ASCII menu system plus a few keys to use commands. It's not nearly as easy as using the PC system with graphical user interface I normally use, but it does work. 8-bit users should also be able to access newsgroups in the same way, using an 8-bit ASCII terminal communications program. One of these days I'll get out my trusty old 1200X and try it.

NAU CONTACTS

My invitation to New Atari Users readers to contact me via Internet e-mail has so far been taken up by only two people. The first was John Young, who's written for NAU in the past and who's now a PhD student at Cambridge University. His mentioned several Atari related areas he'd found on the Internet, which I've included in the newsgroup compilation earlier in this article.

The second was Alan O'Brien, another NAU contributor, and I was intrigued to hear also was about to leave CompuServe and connect into the Internet via another service provider. The reason was communications costs. Alan lives in Ireland, where there are apparently no direct CompuServe network access points. He had to dial in via Ireland-Flora which pushed up his communication costs to over \$5.00 per hour, plus CompuServe's charges on top of this. He's now connected via Ireland On-Line, for a flat rate monthly charge plus local phone connection.

Alan and I've not been able to explore the Internet looking for Atari related sites that's come up with a list of World Wide Web sites which may be of interest. I've not had chance to check them out yet, but will report on them in those pages where I've taken a look.

If you have any comments to make on using your Atari with CompuServe or the Internet, for you just want to say hello please drop me a note. My e-mail address is

100256.1577@compuserve.com



ST PUBLIC DOMAIN



ROUNDUP

MAY THE FORCE BE WITH YOU

But let's hope it
doesn't take you!

This issue in ST Public Domain Roundup can take a trip to the stars and explore UFO and science fiction disks for your ST. Do you believe?

by
**Stuart
Murray**

ST PHONE HOME

If you are looking for information on UFO's then check out **THE X-FILES**. Not the TV series... the ST disk! This title features a collection of three articles covering a variety of UFO-related topics.

Mountain View, a whenever text viewer, is provided for viewing the articles on-screen. There are no print or save facilities in this shareware version so you must print the articles with a word processor. It will take you quite some time to print all three articles.

Subjects covered include time and space, UFO sightings, varieties of alien beings, interpretations of anomalous structures on the moon, UFO crashes, etc. There are also a number of personal accounts and theories, some of which border on paranoia.

One of the many highlights on X-Files is an article describing the Allen Dulles Shield, known simply as 'The Cage'. This is a device which prevents abduction by aliens. A transcript of an all-night battle against abductors is

included! There is also a very large text file giving extracts from the book 'A Survivor's Guide to Abnagaboid' by Robert Woodcock (1982). Five chapters are included and make for a very interesting read. The early chapters cover God and the Bible, with interpretation of events which could be linked to UFO's. The other chapters examine the various types of alien, UFO research centres, The Five Theory, etc. You will enjoy where reading Woodcock's theory that Bill Clinton was abducted in England and Hillary is his keeper! However, much of the rest is quite plausible to the open-minded.

John Lear's conspiracy theory is very interesting. Amongst other things, he claims that the US government has been in contact with grey aliens of the type of alien of twenty years ago and that there have been UFO cover-ups since 1938, including a 1964 meeting between the US government and three saucers. Lear concludes his article with the following statement, "The best advice I can give you is that if you see a flying saucer and are asked by its obvious dis-

play of technology and gorgeous lights of pure colour - **BEYOND BELIEF!**"

Just remember to skip out your Commander first!

The X-Files is a disk for the open-minded. Even then, you will not accept everything included. But no matter what your stance on UFO's, you will certainly find much to think about. Fact or fiction? You will have to judge for yourself. Just be careful who you discuss it with. After all, they ARE among us!



ST SCI-FI

On a lighter subject, there are many Star Trek related disks for the ST. **THE WORLD OF STAR TREK** is a collection of interviews, profiles and articles relating to the popular television series and movies.

This disk was produced to celebrate Star Trek's 25th Anniversary in 1991. There are profiles of the main characters in the original series and *The Next Generation*. There are also interviews with the actors, e.g. Leonard Nimoy, James Doohan, Patrick Stewart, Brent Spiner, etc. The many features on the disk include Star Trek facts, fan clubs, comics, merchandise etc, etc.

Also included is the Star Trek *Shelton*, featuring



screen pictures from the show - mostly digitised stills from *Next Generation* episodes.

The World of Star Trek was produced in 1990 and although the series has moved on since then the articles are still worth a read, especially those on the original series. You also get the chance to see a Star Trek in-

terview screen capture!

ENGAGE!

Another text-based disk is **STAR TREK STORIES**. This time there are the long articles.

Deep Space 9 is a transcript of a 1992 conversation

