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Issue 32 March/April 1988

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ATARI USERS MAGAZINE

Issue 32

March/April 1988

"The Magazine for the Dedicated Atari User"

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PRINTERS ... What can you use with your Atari? Plus peripherals and programs.

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Issue 31 March/April 1988

"The Magazine for the Dedicated Atari User"

ISSN No. 0912-4947

THIS CREDITS

Full "official" credits are on page 8, here are the people who made it possible.

Lee Ellingham did the editing.

Nanda Perry looked after the ads.

Phil Cardwell gave valuable Editorial Assistance.

The Regular Contributors are ...

Garry Francis
Mark Hutchinson
Mark Jones
John Davison
John Davison Jr
John Sturway
Paul Dixon

The Cover Illustration and many other illustrations are by Barry Armstrong

All other contributors for this issue are credited alongside their articles or programs. Thanks to everybody for contributing and thus helping others.

Very much inspiration for this issue? Then who did help include Chris Pitt especially Clive Hill, Ron Rip, Richie Haines, Eric Clapton's 'Yin', Jan Hammer, Pat Morrison (caption), Bruce Hensley. The members of the magazine did not help at all.

Serviced? You bet! But Atari is supposed to be so well fed's it?

The next issue of PAGE 6 could feature YOUR article or program. So, send it!

PAGE 6 is published almost entirely with Atari equipment and software. Hardware used: 1386SE, 1Mbit disk drive, 10M disk drive, A80 Interface, modem, DEC P22 printer, 046627, 204124 modem, Atari 1050/1050X disk drive, Atari 800 disk system, AtariVision II/III, Anthony and Associates, Turbo Basic, Viki-Disk, Gemini, print file and several custom routines written on the 8-bit platform. PC hardware, hardware and flow chart published on the ST.

Copy is prepared on a 1386SE using Superwrite and the same custom routines programs and data transferred to the ST via the Gemini and PC Interface. It is then proof checked and "Printed" on the former mentioned Atari ST. Printed Publisher, Printed copy is shipped out the ST via a Gemini 2 channel modem and then to the Manager Learning System.

130XE VERSUS ST

Most ST owners who have not previously owned an Atari will naturally think that their 16 bit computer is superior to the 8-bit Atari. Those who have 'upgraded' to an ST will also probably feel obliged to defend their decision and many existing 8-bit owners will feel under increasing pressure to sell up and buy an ST. But why? Is the ST really superior to the Atari XL or XE in all respects? Much depends on the software available and whilst in some areas the ST is certainly superior, in others, quite surprising, even the good old 130XE is more than a match for the ST!

One of those areas is quite surprising - word processing! Now most people will think that word processing on the ST must be infinitely superior but it just ain't the case! This issue of PAGE 6 is the first where the word processing has been done entirely on the ST and it may well be the last! The reason for going over to the ST was the advent of Word Perfect, hailed as the ultimate word processor, which can certainly do some amazing things but which in its current version, has a number of bugs and deficiencies and, unbelievably, can't do the one thing I need which is to save pure ASCII text! The two business I need from a word processor are keyboard macros and the ability to save ASCII text with no added carriage returns, line feeds or control codes. I want exactly what I type to be saved on the disk but, despite the claims, there does not appear to be one word processor on the ST which can do this and which also supports keyboard macros. On the 130XE I have of three word processors which can achieve this and which also contain 99% (or more) of the features that any average user will require. These programs are Superwrite, Paperclip and, the biggest bargain of all, TextPro which is available in the public domain. Is it not truly amazing that an Atari 8-bit public domain program can out-perform many commercial programs on one of the world's most powerful home computers?

A CONTINUING PROBLEM

This lack of software support really highlights one of the main problems

with the ST and a problem which has plagued Atari all along. Despite the wealth of software released, much of it is not up to the standard available on other machines and the ST is just not supported in the way it should be. A small round the room 'Which Computer Show' proved the point. There was hardly an ST to be seen anywhere. You could find one here and there brought in by those companies who have supported Atari for some time such as Microvink and HB Marketing but most visitors, unless they were looking hard, would have gone away completely unaware that an Atari ST can be used for serious applications. Even companies like Word Perfect Corporation and Centink Software, who both produce top business software for the ST don't have an ST on their stand!

AND THE WINNER IS ...

Back to the ST versus the XE. For my money the 130XE is the outright winner as far as word processing goes. All the features that I need in a word processor are available on the 130XE and those extra that are on the ST I don't really need. Add to that the ease of programming the 130XE and its using DOS 2.0 (there are times when GEM can be more of a headache than a help) and there is no contest. The 130XE is flexible, easier to use and, in this area at least, just as capable as the ST. Cost per word count? Yes, but these are the facts. If any ST users can come up with a compelling argument the other way I would be pleased to hear it. Better still, maybe someone could come up with some software that is as good as Superwrite or TextPro!

When you think about it, the reason why the Amstrad is so successful, is that it does exactly what people want and no more. It is certainly not as powerful a computer as the ST but it does its job and so does the 130XE. If you are thinking of dumping the XL or XE, think again! Unless there is something you really need that you know the ST can do and your 130XE can't, don't bother buying an ST. Just stick with one of the best home computers ever produced. You probably don't realize just how good it is!

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MORE FLIGHT SIMULATOR BOOKS



At last Computer's latest Flight Simulator titles have arrived in the UK. Learning To Fly with Flight Simulator is for those who have just bought their copy of FS2, while experienced pilots will enjoy *Flying On Instruments*. Those who would just like more fun can read *Flight Simulator Adventures for the ST*.

On a different note, Jet Fighter School is a unique book looking at aspects of combat flying with programs like P-43 Strike Eagle. Check them out now!

WATCH OUT FOR ZEPPELINS



More good news for Atari 8-bit owners is the formation of a new games company up in Newcastle-upon-Tyne called Zeppelin Games. The company has as one of its directors, Brian Jobling, an established and well respected Atari programmer and the company fully expect to support the Atari 8-bit as much as possible.

Managing Director is Derek Brewster,

a former contributor with *CRAIG* magazine and an experienced Spectrum and Amstrad programmer. The company will have a full in-house team of programmers and intend to put out quality programs on cassette at just £1.99. Obviously they intend to produce games over the whole range of 8-bit computers, but one of the company's first releases is for the Atari. Look out for *Speed Ace* which is an excellent motorcycle race game played either against another computer controlled rider or as a two player game on some of the world's most famous racing circuits.

The previous copy of *Speed Ace* received by *FMG* is little well worth the £1.99 price and we hope to see more Atari titles from Zeppelin as they become established. It is a brave step towards to make an Atari version one of your first releases and we hope that you support Zeppelin so that they in turn can go to have more and more Atari titles.

KEEP IT ALL TIDY

Have you ever looked at the mess underneath your computer desk? Most likely you have fallen over all those wires many times and have run out of sockets around the house! Help is at hand from Cambridge Distributors, a new marketing arm of Eltek Electrical Ltd, a leading British manufacturer of electrical connectors. Of interest to computer owners are the Multiplug range of power connectors and a TV aerial switch that allow three different types to use TV.

The standard Multiplug range includes units which allow two, four or six appliances to be connected to one 13 amp socket and is ideal for your Atari and all the peripherals attached to it. The units are available either fixed or non-fixed and prices start at £20.99.

If you use your computer heavily for business or serious work, or are worried about losing some long programs under development due to fluctuations in the mains, a Sansulflow Multiplug might be the answer. This gives four filtered outlets



from a single 13 amp socket and protects equipment against mains spikes and surges as well as eliminating mains interference on the sound channels of Hi-Fi and Video units. Prices for this range start at £21.99.

Perhaps of more interest to the majority of Atari owners who have to share a TV for their computer is the 3-2-1 aerial switch. For just £18.99 you can connect up to three input devices to your TV and choose between them at the flick of a

switch. You can therefore connect up your Atari, TV Aerial and Video and need never again fiddle about behind the TV to change the connections. You could also, if you wished, reverse the unit and demultiplex your favourite computer game on up to three TVs!

Further details of these products can be obtained from Cambridge Distributors, Newcastle, P.O. Box 5110-8LF who also sell by mail order. The telephone number is 0688 24508.

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HEAVENS ABOVE!

Dear Sir,

I read the letter in the Readers Write, issue 11, relating to a user complaining about not enough astronomy programs for Atari computers. There are a few programs available including:

Astronomy 1 from Computer Direct, 22291 N. Popper Road, Barrington, IL 60015, U.S.A. for the price of \$3.95 plus postage.

Atari Planetarium (really great!) from Computer Palace, 1478 Henry 181 N.E., Lasolo City, OR 97047 for the price of \$36.99 plus postage. This one has a 115 page instruction book. The program charts out 1200 stars, 58 constellations, Solar System, Milky's Comet and more than 500 Deep Sky

objects. Highly recommended. Computer Astronomy Network, 20 Helen St., Warren, NJ 07060, U.S.A. is a club for people interested in astronomy on computers. There is a newsletter which relates to various computers. Write for more information to Barry Malpas at the above address. I am a member of this group.

I hope that Miss Lancaster will benefit from this information and will be able to find a use for her Atari in astronomy.

Rob Lanning
Barnaby, B.C.
Canada

Many thanks for the information. Atari Planetarium is also available from Software Express in Birmingham and we have also heard from a company called Sirius Optics (0797 87649) who inform us that a series of programs are planned for the ST and are due for release towards the end of March.

DOS DILEMMA

Dear PAGE 6,

I have recently bought a copy of "Turbo-Basic" which is DOS 2.0 compatible and I would recommend that all Basic programmers should consider purchasing this software.

My problem is that all my Basic programs are in DOS 3 format and I would rather convert them with some other method than using the cassette recorder. DOS 3 has a utility for converting DOS 3 files, is there a utility available for converting DOS 3 files to DOS 2.0? Any information you give me would be gratefully accepted.

A.P. Goony
Rainham, Kent.

The full version of DOS 2.0 has a utility called COMFY2COM which will do exactly what you want. A copy is available from the PAGE 6 Advisory Shop on floppy Diskette - The XLXEE Kit for £3.95 and the disk

contains several other useful utilities. We also published a program called ABC2ESS ITT back in issue 14 for unfortunately this is now out of print.

A.D. ANIMATOR PROBLEMS

Dear PAGE 6,

In there an error in the 3-D Animator listing in issue 30, November 1987 I have typed it in using "TYPO 111" and saved it with filename as stated, everything works until I select 3 from the menu to animate the drawing. It errors to load the program then crashes with 'error 147 in line 5067'.

I am running the program on a 1300E and I have followed the instructions to the letter.

Paul Thomas
Kensal, Birmingham

If you look at page 62 of issue

Write us

PAGE 6,
P.O. Box 54,
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ST16 1DR

IF YOU CAN'T AFFORD IT, STEAL IT!

Dear Sir/Madam?

We are confused software pirates - not actually selling software but illegally copying it for our own use. The question we ask is this - how can beginners build up a software library, legally, at £20 for a dozen, game and £20+ for utilities/business software?

This was exactly our situation six years ago. We now have a library of over 400 games all obtained legally. If we had gone by the book it would have cost us approximately £4000 (allowing for budget games and business programs).

It would not surprise us if this letter did not appear in your magazine (we still think your magazine is the best to date).

The old controversy rages its head once more. You should know our view by now and unequivocally there is not enough space to repeat all the arguments. What I don't understand is why anyone actually needs 400 games, you can't play that many surely! You are not "collected" as the positive sense of the word, but many people collect philosophies of change! You obviously don't care about small companies going out of business or about the long term support of Atari by the software house. Why not just read the reviews, try and get a look at games in the shops and buy what you can afford? If you can't afford that many games then you just have to accept it. Do do you not/other things you can't afford as well?

TREE TRACING ENIGMA

Dear PAGE 6,

As an ardent Genealogist, I have just read, with great interest, the article in issue 30 by William A. Bartlett. Unfortunately, as a beginner with the Atari I have one or two questions which I hope you can answer. I am an 8088L, a 1050 Disk Drive and a 1020 printer and my questions are as follows. Can the program "Family History" be used on my computer? Is it available in the U.K. or must I apply to California for it?

I find your magazine very interesting, issue 30 being the second one I have read - hence the enclosed subscription. Keep up the good work.

Ron Bidwell
Lidgerton, Cambs.

There shouldn't be any problems

in using Family History on your system although, if the program uses graphics chips it will not support the 1020. Personal output is likely, however, as its output text as you should have no problem. The program is not, as our knowledge, available in this country so you will need to order direct from Oliver & Oliver Software. The easiest way is to obtain an International Money Order from any branch of Barclays Bank for the price of £39.95 plus £20 or so for postage. You are unlikely to have any problems on Devisi Cash Software as it is a small company run by an enthusiast but it might be nice to write first with a couple of International Reply Coupons to check the correct price and postage. Most small companies in the States are quite helpful and are quite happy to ship overseas but make sure that they ship Air Mail or you will be in for a long wait!

It, under the heading 'Two Simple Rules For Animators', and read it too carefully, you may discover that you have not followed the instructions to the letter. You have probably designed an animated sequence that is more than 22,000 characters in length which thus breaks memory limitations and thus throws your score 10% because the computer does not have enough memory to set up a QUADSPICE 8 system.

RAW DEAL FOR NEW OWNERS

Dear Sir,

Is anyone out there as confused as I am at the current handling of a cassette recorder with the 180SE and 65XE II, and many other models? I should think, bought my 800SE, complete with disk drive for £120 two years ago and have been very pleased with it. I added a 1005 printer,

for £105, and can do good graphics dumps and file programs (I even send letters to understanding friends on it). A nice little system for £225.

But what about new owners? How will they upgrade to a disk drive at this stage of the game? 1005's are disappearing, to be replaced (promise), possibly by a double-sided drive at £180, or so the rumour goes, but surely that's much too expensive for a disk drive by current standards. If we wanted proof that it's the end of the line for our 8-bits, then this must be it!

Also—could anyone out there make a little bon for about £70-100 which will allow us to connect the new cheap magazine drives to our machines? Without them we'll be forced into using ST's or Amigas.

I think I'll phone the Salesman!

Richard Martin
Acton, London

MONITOR MATHEM

Dear Sir,

I am considering purchasing an Atari ST for business/home use, but I am rather confused about which monitor to buy, if any. I could use my portable colour television to begin with. What will the quality of the graphics and text that are produced be like, and how good will this be in comparison to the Atari medium-resolution monitor colour monitor?

On the other hand, I could just about afford to buy a high resolution monochrome monitor. Will the text and graphics be significantly better? As I have access to a printer, I intend to do some word-processing spreadsheet work and do not want my eyes to suffer as they have done whilst using an Amstrad PC1612 in work.

I. J. Ashby
Dunsmuir, Bristol

If you want to do word processing on the ST you are unlikely to be satisfied with a TV which will not give sufficient definition in Medium Res used by most word processors. An Atari mono monitor gives a sharper, clearer screen than almost all of its competitors due to its 70Mc refresh rate. If you do serious word processing or use spreadsheets, I would not hesitate to recommend an Atari mono monitor. If you need colour then a monitor must be considered essential for this type of work. Atari's own colour monitor or a Philips 8010 would be ideal. I can assure you, either way, the ST display will knock spots off the Amstrad!



ARE REVIEWERS PERFECT?

Dear PAGE 8,

I have been a subscriber to your magazine for approximately two and a half years and have found it to be informative and entertaining—especially the reviews. However, it is with one of the reviews that I must take exception.

Following an extremely favourable review of Mini-Office II, both by yourself and an Atari-dedicated competitor, I acquired the software. I was particularly impressed by the claims made for "a very flexible mail-merge facility" and "an incredibly well integrated program". Unfortunately, as there were the only aspects of the software that I needed, I have not found those claims to be substantiated. The mail-merge program contains a serious bug, already admitted by

Database Software, that almost renders it useless. I refer to a spurious character that is printed in the Blue space of every field in the database, provided that the 20th space is filled by a character other than a blank, when used with either mail-merge or the label printing facility.

Furthermore, whilst the mail-merge facility allows database fields to be treated together, the label facility automatically intersperses two spaces between fields. So much for integration!

I should be interested to know the extent of testing that is undertaken by reviewers of non-game software prior to endorsing the product. Having received a second copy of the program direct from Database Software, it took me less than half an hour to establish that it produced the same error and so ran a full check on every space in all the fields of the

database to determine the frequency of the error. Unfortunately, it took a number of hours to work my way around to an acceptable solution to these and other problems relating to printer paging that I will not go into now.

Despite the foregoing criticisms of the program and the reviewer, I have no hesitation in recommending the word-processing component as simple to use and functional.

Nicholas J. Rowe
London E11

As you will no doubt appreciate, reviewing software is a very difficult task, especially if the program under question is designed for commercial use. Sometimes the reviewer may have had the software for only two or three days and he/she cannot be expected to find every

bug in the program(s). Whenever it is practical, extensive testing is carried out on all pieces of software, but time is limited and the reviewer must estimate how long it will take to assess the software and how long it will take to do the write up. This does not mean, that a reviewer is not only a test of the software's performance but is also one man's opinion. There is also the matter that if the producer of a software package cannot find a bug in what is normally extensive pre-release testing then can a reviewer be expected to find all the bugs? In the particular case of Mini-Office II the reviewer had purchased the software himself and was obviously quite happy with it. He had not discovered the bug you mention, and might never do so. His opinion will probably remain the same because the program does everything he needs.

THE QUESTION MARK AFFAIR

Allan Palmer investigates
and solves a mystery

In the Letters page of issue 30 of *PAGE 6*, a method of getting rid of the question mark prompt when using the INPUT statement in Atari BASIC was given. The example was:

```
10 DIM A$(10)
20 INPUT "ENTER SOMETHING ";INPUT #0,A$
30 TAB
```

Although this solution works, the Editor stated "don't ask me why?". Well, I believe that I have traced down the cause of this undocumented feature (or is it a bug?) in good old Atari BASIC. So, if you bear with me, I will explain the some of the inner workings of the Atari.

OPEN CHANNEL ZERO

First of all, let us take a look at the format of the INPUT statement. The command may appear as, e.g. INPUT NAMES, or INPUT #2,RECORDS. The #2 (or #100) is a channel number identifying the device from which the input is to be taken. Where the channel number is absent, #0 is assumed which is the screen editor. The channel number points to one of the Atari's eight Input Output Control Blocks (IOCBs). At this point, you may see if there are only eight channels or IOCBs, which channel does an INPUT #10 statement use? From the fact that the example quoted at the top of this article works, it appears that channel 10 is treated as channel 0.

A BASIC ERROR?

At this point I thought that all that was happening was that any channel number greater than 7 (the eight IOCBs are numbered 0 to 7) was being treated as 0. I then tried the example with INPUT #10 in place of INPUT #06. The result was Error 26, which when looked up in the back of Your Atari Computer is explained as "Bad Channel Number - The program tried to use channel 10 or a channel number larger than 7". Confusion ensued - 10 is larger than 7 and fails, but 10 would! Some further experimentation showed that channel number 50 works, but using channel 17, error 134 appears ("A GNT or INPUT statement used a channel opened for output only").

AN INSIGHT TO THE PROBLEM

At this point, I started looking through my collection of Atari-related books and magazine articles. The obvious place to find the key to this obscure mystery seemed to be one of Bill Wilkinson's "Insight: Atari" articles in *COMPUTE!* magazine. After some digging I found that I needed to read Bill's articles in

the November 1981 and January 1985 issues. Both columns describe the use of IOCBs, particularly as used from assembly language. Bill explained that when undertaking input/output in assembly language via CIO, the program should specify which channel to use by passing the relevant IOCB number (not 0) in the X-register. Each IOCB is 16 bytes long, so the X-register value is used as an offset to the start of the whole IOCB area.

HOW MUCH CAN YOU PUT IN A BYTE?

Things began to fall in place now. When an INPUT command specifies channel n, the Atari operating system is actually using 16 times n. So, channel 0 is 0, but channel 1 is 16, channel 2 is 32 ... channel 10 is 160 ... channel 15 is 240, channel 17 is 272, etc. However, on a eight-bit computer like the Atari stores values in bytes of memory where each byte consists of eight bits - the maximum value in one byte is 255, thus any value greater than 255 must occupy two bytes. I now turned to *COMPUTE!* Books' Atari BASIC Source Book compiled by Bill Wilkinson (who did?) and began to pursue the listing of the original source code for Atari BASIC included in that publication.

MULTIPLICATION IS THE NAME OF THE GAME

After studying the source code for a while I managed to identify what was happening. There are in fact two areas to consider. Firstly, when processing an INPUT command, BASIC only prints a "?" prompt if the channel number supplied is 0 (2016). Thus for channels 1 to 7 (corresponding to the remaining IOCBs), no "?" is printed when an INPUT command is processed. Secondly, the input channel number is multiplied by 16 to be passed to the CIO system to specify the relevant IOCB. Logically, the channel number is not expected to be greater than 7. Unfortunately, BASIC uses a one-byte field to pass the channel number times 16 to the CIO system to initiate an INPUT command. However, this field is validated to see if it is not greater than 7 times 16 by checking if the field is negative by using a BSL instruction. In an eight-bit byte, the setting of the most significant (left-most) bit indicates a negative value. Take a look at the binary equivalents in Table 1.

In the right hand portion of the binary equivalent column, values equivalent to channels 8 to 15 inclusive have their negative bit set and result in an Error 26 from BASIC. Channel 16 results in a binary equivalent setting the least significant bit in the left hand portion only, the right hand portion remains equivalent to zero. Consequently, BASIC can be fooled if a channel number which is a multiple of 16 is supplied in the INPUT statement because the byte being tested remains zero.

DISK BONUS

MASTER OF THE MINDFIRE by Duncan Stuart

A 100% machine code arcade game available only as a Bonus on this issue's disk

This issue we are proud to present, as a bonus on Slide 2 of the Bonus 32 disk, a superb machine code arcade game originally written for commercial release by Duncan Stuart, author of Red Star's recent blockbuster Nightmares. It is a challenging and difficult game that will test your skills to the limit. We haven't managed to get past level 3 without cheating! Can you do better?

THE GAME

The game is a 1 player arcade game played with a joystick in part 1. You control a slightly young wizard sent to a country mansion to expel the evil forces gathering there. You have been chosen from your cast of grey wizards to combat the evil since you alone control the 'Mindfire' - a living creature of magical powers. You can use it to effect by shooting small balls of fire from your staff. The Mindfire also endows you with a number of spells you can use to your advantage in the different levels of the game.

In the first level you must find the key to escape each room while being harassed by ghosts. It could be on the ground floor or on the gallery which you can reach by pushing the joystick up to activate the levitation spell. When you have found a key walk the rooms bottom left.

In the second level you can shoot the walls of armour but must avoid the spears by pulling down on the joystick to use the deflating spell. You will only breathe for only a few seconds or until you press the joystick button.

In level three you have passed through the mansion to an underground cavern. You can cross the crevices by touching a collective and pressing the joystick button to use the sky-duck spell. To get upwards you must climb the stalagmites.

Now you will shape change into a bird in order to visit one of the paralytically that have made the caves of level four into their home. You must shoot them in the body and use the wings to cause them to fall and smash a hole through the bottom of the cave. When you have made a large enough hole, you can go down through it and take on the lava monster to discover the exit to the cave.

Finally you must continuously shoot the flying creatures in level five to complete the game, after which you will return to level one to discover if you are strong enough to try again!

When you have lost a life or finished a level you must press the joystick button to continue. The START button will begin the game from the title screen and can thereafter be used to pause the game.

Master of The Mindfire is a great game which Disk Subscribers will receive automatically as a Bonus with this issue. Other readers may obtain a copy of the Bonus 32 disk, which also includes all of the programs from this issue ready to run, for £2.99 (plus 5% subscription) from PAGE 6, P.O. BOX 64, STAFFORD, ST16 1BB

Channel	Channel x 16	Binary equivalent	Binary equivalent
0	0	00000000	00000000
1	16	00000000	00000000
2	32	00000000	00100000
3	48	00000000	00110000
4	64	00000000	01000000
5	80	00000000	01010000
6	96	00000000	01100000
7	112	00000000	01110000
8	128	00000000	10000000
...
13	208	00000000	11110000
14	224	00000001	00000000
15	240	00000001	00010000
...
31	512	00000010	00000000

THE QUESTION ANSWERED

Following back to the original example then, because the channel number specified in the INPUT command is a multiple of 16, it is acceptable as a valid parameter because it is then multiplied by 16 and the least significant byte remains at non-indicating channel 0 (the screen editor). However, because the value in the channel actually specified in the INPUT command is not zero, the 'Y' prompt does not appear.

Hopefully, this convoluted investigation will explain why there is a way to get rid of the 'Y' prompt when using the INPUT command and the screen editor.

My thanks must go to Bill Williams for all the bits of information and insight (no pun intended) that he has provided to Atari enthusiasts over the years. Without the background data that he has published I am sure our understanding of the Atari would not be as great as it today. *

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THE PAGE 6
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GRAPH MAKER

Many Atari owners use their computers for some sort of business or record keeping so here is a simplicity to give all those dry figures a bit of sparkle. Graph Maker is not a super sophisticated program like the commercial BGraph but it will produce neat graphs of various figures, percentages etc. which can be stamped out on a 1029, Epson or fully Epson compatible printer.

The program gives you a choice of either a Pie Chart, usually chosen for showing percentages of a base number, a Bar Chart for showing comparative values of different objects or a Line Graph, used for showing different values over a period of time.

The main listing for Graph Maker will print out graphs on a 1029 printer, but owners of Epson or Epson compatible printers can omit lines 3000 to 3010 from Listing 1 and use Listing 2 instead. Just leave Listing 1 in memory and carry on typing Listing 2. Listing 2 can also be used as a stand alone routine for a Graphics 8 screen dump on an Epson or compatible printer.

PREPARING YOUR GRAPHS

The program has many easy to understand prompts throughout but details of each type of graph are given here for reference.

PIE CHART: This option allows you to show percentages of any number usually in a screenwise segmented circle. After the initial circle has been drawn you will be asked to input the base number. This is the total that the segments of the pie chart will be percentages of. You will then be asked for the number of fields you require which is the number of segments that the total will be divided into, so if you wanted 5 segments you would type 5.

The name and size of each field is then requested. The size should not be input as a percentage, but as the actual number it represents. Each segment is then calculated and drawn, and the name is printed next to it. After all the segments have been named and drawn you are asked for the title of the chart. You will finally be given the option of either stamping the screen to a printer, or creating another graph.

BAR CHART: You can use this option to create graphs with up to 30 bars across (the x-axis), and a wide range of scales are available on the y-axis.

After choosing the number of bars you want you are asked for the smallest number you want on the y-axis, which can be any number from 0-99. Next you are asked for the maximum, which can be any number from 1-99, as long as it is larger than the minimum number, but the difference between the two cannot be more than 95. The numbers on the y-axis are then plotted, with the scale calculated progressively then using a

Jason Peasgood presents a utility for pie charts, bar graphs and line graphs for simple home use. The program is suitable for the 1029 printer but we have added a routine for Epson compatibles

fraction of the screen as possible.

The height of each bar is then requested. You must calculate the figures according to the scale selected and you can only enter whole numbers up to the maximum chosen. After the bar chart is drawn you are asked if you want to create another graph or print the current one. If you choose to print it you will be asked for individual names for each bar, and labels for both axes.

LINE GRAPH: This can be used to create a line graph, similar to the one you see in a manager's office wall referring to sales over an amount of time, but the figures could represent anything such as the increase in a baby's weight over a given period of time for example.

You will first be asked for the number of points you want plotted, up to a maximum of 30. You are then asked for the y-axis scale and the value of the points on the x-axis, with the same scale applying as for the bar chart. The points are then plotted, according to the numbers that were entered, and joined up. When this is complete you are again asked if you want to dump this graph to a printer, or create another graph. If you choose to print it you will be asked for axis labels but you have a choice whether you want individual labels for each point or if the x-axis label is the general name. For example for a x-axis could be called 'November' at each point on the x-axis could be a separate day/date.

ROUTINES INCLUDED

General routines included in the program are a short program for printing two quickly onto a Graphics 8 screen and a routine for drawing an accurate circle. The printer dump routine is a Graphics 8 screen dump for the 1029 and starts at line 30000. Remember, if you have an Epson printer, use Listing 2 instead.

FINALLY ...

This program may not be as sophisticated as commercial products like Mail Office II or B-Graph, but it is a cheap and effective way to produce simple graphs and charts which should cope well for small every day needs like who pays what percentage of the telephone bill!

DON'T MISS THESE GREAT BACK ISSUES!

PAGE 4 back issues represent an excellent way of obtaining the widest range of your interest with articles on software news, programs to type in and reviews of software to guide you. Almost all of the content of past issues will be an excellent reference to you when it is reprinted in these year-end magazines too. Before it's too late! Dates are available for all issues, containing all the back programs from each issue ready to run, and they also include features not found in the magazine.

ISSUE 20 - GRAPHICS SPECIAL. A super special issue with a graphic theme. Draw some masterpieces with GRAPHICS WORKSHOP and explore your graphics potential with Deluxe Paint, PixLab, Colour Artists and CEO (Illustrator). An in-depth review of Printing and Graphics Art Department, the final part of Display Unit and the Adventure Column. 72 pages devoted to the ST plus a colour feature J.F.A.R.T. and ST GALLERY. And there's more! DISCOVER MORE is one of the best games to have been published in any magazine. Don't miss it!



DISK AVAILABLE - includes BONES PICTURES for Graphics Workshop

ISSUE 21 - 8 packed issues with games, TRAIN CRAFT, REVOLUTION and FURBY FT. LITTLE NELLIE, WINTER, QUICK, BUBBLES, BELLE and Scavenger Hunts. Programming ideas with Using the Imagination, Steve's Helix and THE CLIMB, DR. BUBBLES COOL. Reviews of Flight Simulator II, Microsoft's Guide to the Galaxy, and the latest Adventures. How the ST is DIFFERENT TO IBM-compatibles, Letter C reviewed and reviews of a whole lot of software.



DISK AVAILABLE. All programs ready to go.

ISSUE 22 - Another review issue will only SMARTBREET, a Virtual like type-in spreadsheet, plus our review of Paperclip which gamblers will praise over TRUCK CLUB and try to survive NERVEN DUFFY. The Guide to Steve's Guide is included and there are articles on Forums, Tape Problems and some time with some Adventures. Loads of reviews and some great new reviews for Blackboard, ST stars in 10 that can run in program space and can read reviews on Time Bands, Pro-Fortune II, MP Professional and more.



DISK AVAILABLE - DOUBLE SERIES Contains TWO versions of TRUCK CLUB and new versions of BLACKBOARD.

ISSUE 23 - Another super machine language game WINTER AND SCHOOL will run your rollers. WORDSEARCH II will challenge them with the puzzle and other listings include MELPUSALFON and the compiler BEEP and FURBY. A huge review of Ultima IV leads a comprehensive review section and Using Outlook Pages I will let you know all information contained in the ST. ST owners can discover how to get a bigger screen with colour monitor and read reviews of Immortal, Steve's Guide to adventures and Pro-Fortune amongst others. Also, it is worth adding a "1" after to past ST!



DISK AVAILABLE. Contains TWO BONES PROGRAMS!

ISSUE 24 - The biggest issue to date published! Every ST section with info about ST disks and copyrights and loads of reviews. For it, like ours there is MUSICAL MADNESS, the first game we have ever published but a super cheap but really ALIVE! DRUGS. Plus all about cloning your disk drive, another game called FLIGHT BENCH, some utilities, reviews of BAMBUT, Adventure games and lots more. You must be this issue to be hot!



DISK AVAILABLE! - Don't miss THE GARDEN MAJESTIC, the first game we have published so far!

ISSUE 25 - Another Magic! A must for 100+ parties owners with 5 great utilities including a SCREEN SCROPE. A super Adventure chess game called BOKAL, a type in BERSERKER BRAWL, a full feature art disks and more. For ST, type in BERSERKER, reviews of J.F.A.R.T. BONES and NEAN II, Files and Tips and several other utilities and articles.



DISK AVAILABLE! - ALL THREE COPYPROTECT BONES TO GO!

ISSUE 26 - DOUBLE-MAGAZINES! In one of the best new game programs we have published. In creative! Other programs include BOKAL, WINTER for machine code programming, FLICKER! PAPER to help you type, IN IT and more. Reviews of TRIVIAL PURSUIT, NYC 90, SPIES AND MORE, more more. ST users can have all about BARD BONES, J.F.A.R.T., PYPHETTER BONES, DRAGON GATE and read reviews on a whole lot more software.



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DISK AVAILABLE - Also contains the remaining title screen from our competition.

ISSUE 27 - One that review 10-14 years have been waiting a long time for - a great full feature feature - MADNESS plus an amazing story reader, STORBOOKS, that allows you to create illustrated stories. Then there's a great game from SATE, called CYBER-PIANOSOL and an ACT UP! 2 update and more. Great on commercial games with ALPINE THE BEAST FT II and read more of reviews. The ST version has a unique program, SCREEN GRABBER, which allows you to 'watch' players of commercial games to disk, plus the next part in our STROM G series and reviews of Superhero Perseus, G-GAMES II plus lots of games including Barbarians, Another logman.



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ISSUE 28 - A great follow up to Field Mapping allows you to estimate 3-D objects. The 3-D SIMULATOR, How about a puzzle with LETTER CANTLE or an arcade style shoot up from JOTTIC called DRIBBIT CHARGE! Another include an interplay link as CELESTIALER, Celestialer With Steve's and Steve's on an ongoing series. Loads of reviews including GYFFORVAL and PIR-GODDARD THORN. The ST version includes the continuing GEM series, CONSENTIONS, EXORCISM and loads of games and various reviews including GFA BONES, G-Raps, Super Probe and more.



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ISSUE 29 - Our massive issue on all the 1000+ titles available for the 1-4-86. Great loads this time with all the features a great type-in collection being called BONES IN PERSON (like a feature called FOOD FACTORY - a nice character editor and a challenging game called BOWL TRAP. A feature on 3D, more Tutorial Substitutions, a long feature on THE UNIVERSE/STORM, reviews of BARDON SWISS and THE DISCOVERY plus many more are also in this issue. ST SECURITY, a new series on ST programming begins with a look at serial and the ST review section includes BIRD BONES, BIRD PINK, TRUMP II and many more.



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This Graphics 8 screen dump may also be used as a stand alone listing or can be added to your own programs. It should work with any fully Epson compatible printer

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INFOCOM

Are Infocom lagging behind in innovation or have they got something up their sleeves?

John Sweeney takes a look at their most recent adventures and discovers a possible change in direction

Infocom continues to produce some of the best text adventures in the world. They started off 1981 well with the excellent *Bureaucracy* and *Planetfall*, both worthy of a place in any adventurer's collection. They continued with *Lurking Horror* and *Plundered Hearts*, both of which are, again, straight text adventures of the kind in which Infocom have excelled for so many years. Admittedly the four adventures are all very different, partly because of the different styles of the authors, but also because they cover a diverse range of genres — The Romantic Novel, Gothic Horror, Science Fiction, and ... um ... well, Douglas Adams' *Bureaucracy* is just Different!

Despite all being excellent games, they are all straight text adventures in the world-recognized standard Infocom style. There are no surprises in the presentation, game-play or facilities of any of these games. There has been talk for some time that Infocom may be beginning to fall behind in technical innovation and the use of the power of the 16-bit machines but this same Nord and Ibert and, hopefully by the time you read this, Beyond Zork. Nord are innovative, but in very different ways.

Let's take a look at each of these most recent adventures.

THE LURKING HORROR

The *Lurking Horror* is Infocom at its best (its old best, that is — maybe *Beyond Zork*, reviewed later, will lead us on to new even darker heights). It was written by Dave Lofling who co-authored the original *Zork* (I, II, III and *Bookender*) and also wrote *Starcross*, *Suspect* and *Spellbreaker* on his own.

With a pedigree like that you know it's going to be good! This title has chosen to write a horror story full of monsters from Lovecraft's most nightmares, complete with many descriptions of all the things which happen to you if things go wrong (which they do frequently), such as the delicious descriptions of what the monsters do to you if you die: "Something growing on your tongue thinks its pretty wonderful!". (Actually when I first mentioned that line to my wife she thought I was talking about scenes from the Romantic Novel *Plundered Hearts*.)

The adventure is set on the campus of the GUE Tech. No, it's not a coincidence that George Underwood Blandish and Grant Underwood Empire, (sorting of all the *Zork*s), have the same initials, but sad to say, there aren't any GUEs. Most of the action does in fact take place deep below the campus where, while investigating the disappearance of various members of the university, you discover that the underground passages linking the various buildings of GUE Tech lead deeper than anyone



AHEAD OR BEHIND?

suspected. You soon discover they lead to blood-soaked altars, pits with terrifying inhabitants and ancient secrets. It all seems to have something to do with the Ministry Department! Along the way you pick up a companion to help you in your troubles, a sort of pet, but I won't reveal what, just that Mr Lofling has a most gruesome mind — you decide!

The packaging is up to Infocom's usual high standard and includes a helpful manual, a Printer's Guide to GUE, your student ID Card,

and your very own personal monster, which stands very nicely to the side of an ST screen!

Since Infocom stopped classifying their adventures I don't believe they have produced one as hard as the ones they used to class as Advanced or Expert, I would class this as a good Standard Level adventure. The atmosphere is great, the puzzles are interesting, the implementation is excellent. Thoroughly recommended to all who love adventures and/or horror stories.

PLUNDERED HEARTS

Trembling, you tie the heavy sash upon. You hear its lead report over the roaring wind, yet the dark figure will approach. The gun falls from your nervous hands. "You won't kill me," he says, stepping over the weapon. "Not when I

are the only procedure you have from Juan Laford." Chevre's hair, soaked by the wind, frames the ruffled oval of his lips. Lip curling, his lips rub over your inadequately dressed body (the dumpy Chevre slings a good lip and leaving between your glowing hair. You are intensely aware of the strength of his spangly body, of the deep sea blue of his eyes. And then his mouth is on yours, lips parted, clenching, and you sink into his kiss.

His pressure you against him. "But who, my dear?" he whispers into your hair. "will protect you from me?" So starts *Plundered Heavens!*

You play the part of a beautiful and gifted Englishwoman in the late 17th Century, travelling to the West Indies to care for your ailing father. The story begins with your ship being attacked by pirates. You are carried off by a dashing pirate, Captain Nicholas Jamison - better known as the Falcon! He claims to be from your father, but can you trust him? Given worse, can you trust yourself to his presence?

After the introduction which covers your first meeting with the Falcon, you find yourself alone in a cabin on the Falcon's ship, which is anchored off the coast of the island of St. Simons. The Falcon claims to be visiting Juan Laford in an attempt to rescue your father from him. You have been locked in your cabin, supposedly for your own safety. Unfortunately these appear to be a traitor in the crew; the ship is drifting on to the reef, and if the reef don't get you then when the fire in the storm reaches the gunpowder, the subsequent explosion will. This is *SAFETY!*

If you survive all that you still have to reach the island and face further dangers such as treacherous pirates, a most obnoxious buccar, savage crocodiles, and the evil villain Laford.

Plundered Heavens! is full of atmosphere. It really does read like a romantic novel, full of adventure on the high sea. There are, as is usual in Infocom adventures, lots of little puzzles to help the atmosphere, for instance the response to a blank line is "Pirates, pirates!", and in *SAVIL* is "Ago-Nye!" The whole thing is very tongue-in-cheek, full of jokes and incorporating every name you've ever seen in a swashbuckling Douglas Fairbanks movie. Even down to such lovely detail as if you fall a couple from Laford's bedroom: "Laford pulls the sheets up to cover you both... Waves crash against the base of the cliff... You have suffered a fate worse than death!"

Experienced adventurers may find the game a little one. I don't know if I was just very lucky, but on this one I beat my previous record for an Infocom game (6 hours for *Witness*) by completing *Plundered Heavens!* in well under four hours. So, at its full price an experienced player may find it is not great value for money - if you are an experienced player looking for more of a challenge than I would recommend one of the older *Adventure* or *Escape* level Infocom games, but if you can afford *Plundered Heavens!* it is great fun to play.

It is well written, not excessively deadly - it gives you plenty of warning that the ship is about to crash or explode - and it just won't let you do stupid things such as walking off cliffs or into crocodiles. It is full of humour and interesting puzzles and a number of the problems have two solutions to reduce the chance of your getting stuck. These variations can in fact lead to two slightly different endings - you haven't completely finished until you Live Happily Ever After! Definitely a good Beginner/Standard Level Adventure.

NORD AND BERT COULDN'T MAKE HEAD OR TAIL OF IT

Now, apparently - not a lot of people when confronted with this rather offbeat game from Infocom (Nord and Bert *LOOKS* like a standard adventure, but plays rather differently!) It accepts commands and gives responses in the normal way, it has locations which you can move between, items you can examine and pick up and it has lots of problems to solve but if you just try and play it like a normal adventure you won't get anywhere.

Although you do type in the occasional normal command (*GO NORTH* or *GET BAG*) most of the problems are solved by typing in puns, clichés, spoonerisms, well-known phrases or sayings, homonyms, or other such examples of verbal trickery!

There are eight scenarios. The first seven are completely independent. Effectively you have seven separate games, each one of which uses one form of 'verbal trickery' to resolve its puzzles. When you have finally completed all these you are allowed to play the eighth scenario. Whereas, in each of the first seven, most you have worked out which particular form of verbal trickery is being used in this game, you can concentrate on that one form. In the final part (Meet the Mayor) all the different puzzle types are mixed together so that it is much harder to work out what to do next. To help you understand the game it is probably best to give you a few samples from the instruction manual.

> TAKE NOTE

The set holds the note firmly to the table.

> TAKE THE

You grasp the tea and give it a series of mighty taps but, as with breakfast, it will take more than muscles to coax the tea from the table.

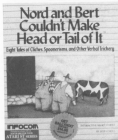
> TEA

The gulf is swallowed up into a huge ditch which then descends, leaving in its wake a steaming cup of cooling tea.

OR

> LOOK AT THE STONE LAMP

There is a beautiful Mayan oil lamp that your father smuggled



out of Central America.

> **LEON STAMP**

The ancient Mayan relic flattens out and its edges become preferred leveling a lone stamp.

or

There is a freshly-battered moldball on the ground.

> **MAKE A MOUNTAIN OUT OF THE MOLEHILL.**

There is a tremendous mounding ... the molehill crumbles away ... mighty, jagged peaks emerge from deep underground.

The first of these is a Hieronymus (two words meaning the same), the second is a Sponserium (mixing up the beginnings of words), the third is a clothes proverb) saying.

Each of the games (apart from Meet the Mayor) can be played independently, and makes quite a good way of passing a few hours with a group of friends - this is definitely one where its worth getting as much help as possible. Although you should be able to get a lot of the wordplay eventually if you stick at it, I would be amazed if anyone actually managed all of them without help. Some are obscure, a few are American, and there are a couple which are not really very good, so you have to be lucky to spot them.

Infocom obviously realized that it was rather difficult, so they have very kindly incorporated a full set of Invisi-Class into the game. At any time you may ask the HINT and get a list of the problem areas in the current scenario. You can select one of these and get a number of graded clues to help you with your problem. Sometimes just seeing the list of problem areas is sufficient to point you in the right direction.

A couple of the scenarios didn't quite seem to fit the 'verbal dexterity' description as far as I was concerned, but most of them were good fun. There are quite a few clever puzzles to solve, and some more of them depend on wordplay they are mostly humorous. Even when you aren't successful in solving the problems the game has been programmed to respond with lots more verbal jokes to all your attempts.

One word of warning. For reasons best known only to Infocom, the game refuses to load in 40-column, low-resolution mode. It insists on using 80-columns. So if you use a small TV you may not be able to read the screen very easily. All other Infocom games (to my knowledge, and with the possible (probable?) exception of Beyond Zork) work quite happily in low-resolution. Strange!

So, if you want a good 'adventure', DON'T buy this one. On the other hand if you like playing with words and are interested in a variety of amusing and frustrating challenges you will probably find Nord and Bert to be a worthwhile and unique experience.

BEYOND ZORK

So to a preview of Beyond Zork. This one CAN be made to look like a standard adventure, but provides a whole host of new facilities as well. It is set in the same 'universe' as the previous seven Zork adventures (Wastelands, Zorks I, II and III, Enchanter, Sorcerer and Spellbreaker). Your quest is to rise from a humble beginning to become an adventurer capable of facing the mythical Colossal of Quander! I'm afraid that's all I know about the story at the moment, but I have seen some of the facilities:

DEFEND allows you to assign a commonly used command (complete or partial) to a Function Key to save you having to type. **NAME** is another command to save your typing - it

allows you to give a name of your own choosing to any object in the game. **MONITOR** allows you to log the Gains of your life attributes in a window at the top of your screen, and after visiting your program (probably during a fight). There are the usual sort of Dungeons and Dragons-style attributes, Strength, Charisma, Intelligence, etc. and after some ability to progress through various parts of the game. **ZOOM** helps you with mapping. The screen will usually display a small map of the top right of the screen showing your current location, the adjacent rooms, and any exits of which you are aware. **ZOOM** allows you to see more rooms, but in less detail. **PRIORITY** tells the game what you want to see in the top window, for instance you can get it to always show the current inventory of what you are carrying. **UNDO** allows you to back out the previous command if something went wrong. **MODE** is for the purist. It gets rid of all on-screen maps, windows, monitors, etc. and makes the screen look just like an ordinary Infocom text Adventure. You can also let the game provide you with default attributes at the beginning instead of choosing them yourself.

Unfortunately, I haven't managed to get my hands on an ST copy yet - so I can't tell you yet whether or not all these new facilities make the game better or not. My guess is that it is going to make Infocom Adventures even more fun to play (if that is actually possible). I hope to be able to let you know in the near future!

Infocom appear to be on the move - it can only be good news for adventures - the next one is called Border Zone, apparently, I believe the writing is the Berlin Wall. I look forward to it.



TITLE	SL/SE	ST
The Lurking Horror	£24.99	£28.99
Plandarred Hearts	N/A	£28.99
Nord and Bert Gooble's Make Head or Tail of It Beyond Zork	N/A ??	£28.99 £29.99(?)

The GUILD of THIEVES

Magnetic Scrolls Rainbird
XL/XE with 1050 or ST
Price £19.95 / £24.95

Magnetic Scrolls started well with their *Panem* and are now rapidly establishing themselves as a major force in the world of computer adventure. Their second offering, *The Guild of Thieves*, I found even better than the first.

In its plot the *Guild of Thieves* is not in perhaps a more traditional mould than the *Panem*. Your objective is made more straightforward - find all the treasures and bring them back to your starting place. They have added a nice twist by casting you as a thief by profession, and they have broadened the game in their rapidly developing series of *Korvozia* so there is plenty of background material to flesh out their fantasy world and make it seem more realistic. Most of the information material is devoted to humorous articles about *The Guild of Thieves* and its origins, and the descriptions of the game locations add to this to provide an interesting background to the game.

I recently had a letter from Allan Palmer of *Beingspoke* (not there's a place to visit if you want some practice at solving puzzles), who complained about the linearity of games like the *Hitchhiker's Guide to the Galaxy*, where, at least for the first part of the game, you only have one route to follow and if you get stuck then there is nothing else to try. Well, *The Guild of Thieves* is the exact opposite. As long as you can reach the river bank, get the castle open and find your lamp, all of which you can do very easily in the first six moves, then you have an enormous selection of places and passages to choose from. You can visit about sixty locations (roughly half the road), by simple commands such as LOOK IN, UNDER and BEHIND, OPEN and EXAMINE! You will find over forty negotiable articles plus lots of information - make copies now - there are three hidden ezy/ezy! Furthermore, once you have found all those articles, you will also have found plenty of problems. The nice thing is that at least a dozen of them are independently solvable. This means that there are always lots of things to try and you shouldn't get really stuck for some time.

Of course there are some problems which require you to crack other ones first, and there are some which are actually insoluble (unless you happen to have located the thermocouple device which you also needed in the *Panem* and don't seem to be in this game either!). The difficulty is of course in knowing which problems are solvable and which ones aren't! Never spend too long on a problem until you are sure you have explored everywhere and at least made some attempt at every problem.

The quality and variety of the problems is excellent, ranging from simple ones which you will find your self for failing to solve immediately, right through to complex logic problems which, once you have all the information, you can solve away from the computer just by thinking about them. I especially enjoyed the problems involving the Poisonous Jumper Spikes, the 'traps' of strange Critical Bombs, the way to make the Champagne Bottle explode without killing yourself, how to get



Reviewed by John Sweeney

inside the Bank, and the Weighing Scales which sets off an alarm if you try and take the treasure off it!

The Guild of Thieves has a wide vocabulary, an excellent parser and lots of convincing responses to your attempts to survive in this dangerous world. On three or four occasions, though, I was slightly frustrated by the fact that, even when I had correctly worked out the solution to a problem, I had difficulty in getting it to understand what I wanted to do. My subjective feeling is that it is better than the *Panem* in this respect, but you may not find that there will be cases when you need to persevere with numerous attempts at phrasing before you succeed. Hopefully this will continue to improve in future adventures.

Also, on the negative side, unfortunately for the XL owner, the game was written to use the games of the ST, especially in terms of memory usage. On the ST all responses are self-contained and it is a great advantage. But on the XL, if you have the graphics on in order to see the pleasure of the locations then you will get an average response time of thirty seconds as it frantically loads overlays into memory. The game implements a useful key-ahead buffer (but watch out it's only thirty characters long) and you can switch type in the next few commands - this will mean you have to wait two minutes for it to finish responding! - I found this made the game unplayable. Fortunately you can improve this by turning off the graphics. Although you will still get the occasional ninety second response, most of the responses will now be significantly better, and although still frustrating when you see the ST working, the game now becomes playable. (N.B. If your diskette is slow

SUNARO

named before October 1987 you will find that you still get thirty second responses all the time on an XL - Magnetic Scrolls did their final testing on an XT and didn't realize that they had a bug in it which failed to reclaim memory. When I pointed this out to them at the PCW Show they kindly fixed it and sent me a new version - by the time you read this that new version should be generally available. If you have an old copy please take it back to your dealer and ask them to replace it. Another deficiency for the poor XL/XE owner is that they failed to specify in the Restore function after a Death - you have to Restart and then Restore taking over one and a half minutes on an XL - since Death, in the form of the Questkeeper, the Bers, the Gods, Colourful Flares (X), Explosions, Ice Snakes, Poisonous Spiders, Walls, Rats, Bears, and various other Death Traps abound throughout the land of Kryornia, this can be a little frustrating. Still, I suspect that in the price we are going to have to pay if we humble XL owners wish to play all the games being developed for the 8-bit machines. Just as the cassette based machine has been left behind in the development of bigger and better games, it is inevitable that the 8-bit machine will eventually fade. Full marks to Magnetic Scrolls for at least providing a version of the game for the 8-bit range!

As far as the graphics are concerned I personally don't find that they add a lot to an adventure unless they form an integral part of it (e.g. the King's Quest series) but if you like pictures with your adventures then, yes, The Guild of Thieves has excellent pictures on the ST - and does the best it can for the XL/XE. In The Guild of Thieves I found that not only did the pictures not add anything, but they actually detracted from the gameplay. For example, the most prominent items in the pictures of the Temple and the Kitchen are the Pillars and the Table. Naturally enough I tried to EXAMINE PILLARS and TABLE, but they don't actually exist in the game! By taking notes of the pictures I was actually wasting my time!

I would even go so far as to say that Infocom (yes, the Tree Only people) have more graphics in their adventures than Magnetic Scrolls do. That they never switch into a 'graphics mode' but they do, where necessary, use characters on the screen to represent graphics as an integral part of the game. Examples are the maze map in Hollywood Hijinx, the display of your current position in the Royal Puzzle in Zork III, the computer displays in Bureaucracy, and especially the Scorescope in Szentakbar where the upper half of the screen shows a map of your location, either in the harbour or chasing the sea monster, and your normal text entries in the lower part of the screen cause the upper half to scroll to show your new position. While we're on the subject of Infocom it may also be worth pointing out that the CRT TD command which other reviewers have been hailing as a wonderful new innovation in Guild of Thieves and Knight One was being used by Infocom back in 1984 in games like Suspicion.

But enough about Infocom - they have had ten years and thirty games to get their act together. For Magnetic Scrolls to be producing this kind of quality on only their second game is a remarkable achievement.

All in all, The Guild of Thieves is an excellent Adventure - a must for all ST owning adventure players (and probably XE's although I haven't seen it working on one) and well worth considering for the XL as long as you accept its slight limitations in that environment.

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MS-DOS 8.90	1.00	1.00	1.00	1.00
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MS-DOS 9.60	1.00	1.00	1.00	1.00
MS-DOS 9.70	1.00	1.00	1.00	1.00
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SpartaDOS Construction Set/ US Doubler

ICD Frontier Software
£49.95

Reviewed by John S Davison

ICD are now producing some superb products for the 8-bit user, and the two reviewed here can only enhance their reputation further. The first is SpartaDOS, a replacement for Atari DOS which can be used on any 8-bit disk system. Better still, you can use it with its companion ICD product, the US Doubler, a hardware modification to add sporting performance to your old 5.25-inch drive. They are marketed in the UK by Frontier Software, who sell them for £29.95 each or, as reviewed here, in a special combined package for a very reasonable £49.95.

SpartaDOS is an advanced Disk Operating System for use on Atari 8-bit machines. In fact, it's a whole family of DOS programs bundled together in a package known as the SpartaDOS Construction Set. Its name is derived from the way you can build a system disk containing a version of SpartaDOS appropriate to your purposes and hardware configuration.

The package includes two 5.25" disks containing all the software, a comprehensive 160 page instruction manual, plus a 36 page supplement covering SpartaDOS V1.2, the latest version. The combined package also contains the US Doubler chip set.

FREE GAMES AND DEMO'S

The first disk contains four different versions of SpartaDOS V1.1 plus its command/utility files. These may be used with any 8-bit machine having 24K or more of memory. They're not directly compatible with Atari DOS 2.0/2.5, but the powerful copy utility provided can convert files from Atari DOS to SpartaDOS format and vice-versa. The four versions include the standard DOS with and without US Doubler high speed support and two or three versions for use simply as game loaders or with AUTORUN.SYS files and cartridges.

Side 2 of the disk contains a working sample of the SpartaDOS binary file loader menu. Included with it are a set of seven really good public domain games, and three spectacular graphics demonstration programs - a nice bonus.

The second disk contains SpartaDOS V1.2 and two different flavours of V1.1. These systems will only run on XL/XE machines with 64K or more, and have a built-in Atari DAIS 2.0/2.5 handler, making them directly compatible with Atari DOS files.

V1.2 is the latest version, including support for ICD's K-Time 8 machine clock cartridge, BASIC XE, and hard disks amongst other things. The only difference between the two V1.1's is that as boot-up can give priority to any installed cartridge software, while the other gives priority to SpartaDOS. Between them, all these different versions should cover virtually any requirement - you just have to decide which one is most relevant to your needs.



Double the density ... twice the speed ... worth the price?

EXPANDABLE SYSTEM

SpartaDOS provides you with many improved facilities in a number of different areas. Firstly, it gives additional features not found in Atari DOS such as use of volume labels, sub-directories (like ST folders), time and date stamping of files, command files, batch files, and keyboard buffering. It's got 45 extra commands - some and above the equivalents of Atari DOS menu items. And if you still find SpartaDOS is missing something, the command file facility allows you to expand the system by writing your own commands.

Secondly, it improves on facilities provided in Atari DOS with such features as handling up to 8 disk drives, expanded capacity directories, locking as disk level as well as the file level, and an excellent way of saving files for copying as a batch instead of handling each one individually - a great time saver.

Thirdly, it provides support for virtually all types of disk drives in single (98K), 128K enhanced (127K), true double density (180K), and even hard disks via the Super hard disk interface (180K), and even hard disks via the Super hard disk interface (180K). When using BASIC on any XL/XE it will use the 8K of RAM under the BASIC ROM as a small RAMdisk.

Finally, it complements ICD's US Doubler hardware modification for the 1050 disk drive, giving that double density capability (180K per side) and a spectacular increase in speed.

Incredibly, even with all these additional facilities it gives you MORE free memory for the BASIC programs than Atari DOS! This winstery is achieved by holding some of the code in the memory under the OS ROM. How about that for efficiency and cost of resources!

5. DOS FUNCTIONS FROM BASIC

For the fifth in this series I have chosen a rather longer subroutine which, I hope, will be very useful. Some of you will already have a "blinker" of some sort but those who are new to Atari should find the technique interesting as it uses Basic's special I/O function XIO which is not mentioned in the Basic Reference Guide!

This routine allows access to some of the functions of the Disk Operating System from Basic so you can carry out disk file manipulations without leaving your program. It may be appended to your program during the development phase and then removed if it is no longer needed once the program is complete. If you are ever stuck with a program to save and no formatted disk available this subroutine can be ENTERED into your program and used to format a disk.

THE XIO FUNCTION

The XIO function format is:

XIO A,B,C,D,FileSpec

A is the command number. We will be using 32 (rename), 33 (delete), 35 (lock), 36 (unlock) and 394 (format). Other available commands are 5 (get record), 7 (get character), 9 (put record), 11 (put character), 12 (close), 13 (status report), 17 (show file), 18 (DEL), 31 (open) and 36 (print).

B is the device number as used in an OPEN command. In most applications it is ignored but it must be included and must have a # sign. Do not use the number of an I/O channel which is already open.

C and D are auxiliary control bytes. They are set to zero for most applications and we do not need to consider them for this routine.

FileSpec is the name of the file being opened on, or in the case of Rename the name of the old and new files with a "," separator. If it is typed in it must be in quotation marks but in the subroutine we will use a string variable for the file name.

SUBROUTINE ANALYSIS

Lines 10400 - 11470 are secondary subroutines called by the main subroutine which follows. These are adapted from the keyboard input subroutines in issue 31. The strange set of conditions in line 11480 is designed to allow input of A-Z,0-9 and also . , * and / so that all file names including wild cards can be input.

Line 11480 - Enter the subroutine here, i.e. GOTO 10 to this line. This clears the screen, then checks the value of TT15. TT15 is zero if the subroutine is being run for the first time, otherwise it will have been set to 1 in line 11499 and line 11490 is skipped to avoid an error through trying to dimension the variables a second time.

Ian Finlayson continues his series with a longer routine for disk users that can be used as shown or expanded further

Line 10400 - dimension the variables needed in the subroutine and sets a trap to line 10300 for any I/O error during execution of the subroutine (such as a wrong file name).

Line 10500 - The destination for trapped errors, provides a suitable ex-entry into the program, an error message and resetting of the trap for further errors.

Lines 11500 - 10540 get the directory from the disk and print it on the screen.

Line 10540 - asks which function you wish to carry out and goes to the subroutines at 11480 for a single character input.

Line 10540 - if C was selected (to change disks) a prompt is given to change the disk. The program then waits for a key press and returns to the start of the subroutine.

Lines 10570 - 11480 - if L or U was selected these lines are implemented otherwise the program skips to 10680. TT16 is the command number needed in the XIO function, for example, 39 for Lock and 36 for Unlock. A prompt is made for the filename and this is obtained from the subroutine at line 11420. "D:" is added to the front of the file name and the program jumps to line 11710.

Lines 11490 - 10640 - These lines carry out a similar routine for Renaming a file (Command No 31), but in this case the old filename is overwritten first and then the new name. The letter is appended to the former after a comma, so the TT16 is of the form D:\oldfile.txt, newfile.txt. The program then goes straight to the XIO function in line 11710.

Lines 10620 - 11440 are for lines (Command number 33). As this is a destructive routine a prompt for a Y input is included to make clearly certain that it is intentional, then the program skips to 11480.

Line 11650 - 10670 - This is similar to the erase routine but for Format (Command 254). Again a cautionary prompt is used.

Line 11680 - if Q is selected we quit the subroutine and return to the main program. This is the only way out of this routine subroutine.

Line 11490 - if this line is reached then the original error selected was not an active letter so the subroutine is started again, prompting the use of C,L,U,R,L,F or Q.

Line 10700 - this line is used by the Enter and Format subroutines to check for the Y response to the prompt. Any other key returns to the beginning of the subroutine.

DO YOU NEED A 16-BIT COMPUTER?

Phil Cardwell raises a few controversial points

While browsing around the 1987 PCW Show, looking at the latest batch of ST software, a startling thought crossed my mind: 'Do I need a 16-bit computer?'. This thought pruned my mind, almost converting a dedicated 8-bit fan to the way of the ST! After a great deal of deliberation I made my decision, to be revealed later, but for now I'll go over the factors that were given due consideration.

Price of a set-up was an initial factor. This works out about equal, though bargain hunters could make the 100K and a 100M disk drive a winner: hence down. The cost of a 120 ST VDM constantly being brought down as dealers fight for trade, and the 3D price increase by Atari, made this a very marginal argument. It could also prove the point that Atari want to give the 8-bit side less commitment and the ST's more support.

The 'Power without the Price' slogan brings us to the speed and power concept. There have been a lot of myths about the ST's operational speed, so here come some facts. Theoretically, the ST should execute programs between 1 and 20 times faster than an 8-bit, dependent on the application being run. Without getting too technical, speed depends on the language being used and how well that language is implemented. As an example ST LOGO runs at approximately the same speed as 8-bit LOGO. Given that most people use BASIC programmers, less clear the air in that department. With the exception of complex calculations and considerable disk input/output operations, ST Basic is no more than 2F₁₀ faster than public domain Turbo-Basic or OSS's Basic XL/3D.

BETTER GRAPHICS?

How about the theories that the ST's can run larger programs? True, but can you imagine the limitations of a 1 meg KEE? It could be done. Then there is the one about the ST's capability to display better graphics. False. Everyone thought that the demo's that were displayed on the ST's public debut, were, to say the least, fantastic. These demo's encouraged some 4000 programmers to show the Atari community that the 8-bit computers can produce graphic displays that match the quality of the ST's. Evidence of this is found in PAGE 4 Library Disk #42 - Special Demos, which contains exact replicas of the ST demo's - one is even an improved version! Also on the graphics topic, we can't forget the fanatics who are looking for the 'ultimate' games machines. To them, I have only one thing to say: I have yet to see an ST game that can satisfy me as much as games on Intarc or Phantasy Sound played a minor role in my decision. The ST's supposedly 'louder' sound chip does match POWDY, and having heard digitised music on both machines I decided to ignore this factor!

These points don't mean that anyone should rush out and purchase an 8-bit system. I am simply debating whether people can benefit from the, as yet, unworked capabilities of the ST. And even when that full potential becomes reality, how many



Not necessary!

users will need more power than can be obtained from an XE3 Business, scientific, technical users, etc., will need the extra speed and power, but can you justify the extra expense if all you do is write a couple of letters each month and keep track of your personal finances. With XE3 1024K are you writing a letter or your biography?

HOW EASY TO PROGRAM?

Down to the nitty-gritty from the would-be programmer's point of view. How easy is to program the computers? Atari BASIC is straightforward, switch on and as above, but with ST BASIC you have to learn (or should that be master?) the GEM environment, to load and use BASIC to the full. Do you need multiple pop-down menus to write a program? What about actually writing programs? Without graphics, programs can be written with relative ease on both machines. With simple graphics, it's the same case, a snap on both computers. Moving speed? The beginner would find it slightly difficult on the 8-bit, but then again, it's nearly impossible on the ST. Somehow the XL/XE won this round.

WHAT PRICE SOFTWARE?

Software was a hard battle. Do I fork out in excess of £25 for an ST title from my local WH. Smiths or do I gamble a £10 cheque with the Post Office, for a mail order 8-bit title because WH. Smiths don't think it would sell if they did stock it. Thoughts was also given to the price I would have to pay for a blank disk and disk boxes, but with 'disk man' continuing between the big distributors, I am hoping an open mind on this issue.

THE FINAL DECISION

Anyway my final decision? To stick with my faithful 800 XL. For now an 8-bit system is more than adequate. I may change my view in some when the ST is more firmly established and the majority of the 'fast track' dealers have gone, but at this moment in time, I for one do not need an excess of 512K to write a letter or keep track of my cheque book. An interesting fact more is whether I have touched an open server in the ST camp? Will they sit back and wait, knowing I'm right, or will they write in trying to add more controversy? We shall have to wait and see

March/April 1988

STAGE

The PAGE 6 ST section



by M.S. Rogers

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Mirrosoft has recently signed an agreement with **Gramercy Corporation** to distribute the next six titles in the Gramercy 'interactive fiction' line. The first four titles from Gramercy are also distributed by Mirrosoft and include the best-selling **DEFENDER OF THE CROWN** as well as **SIX: THE KING OF CHICAGO AND SIMBAD AND THE THRONE OF THE PALACE**. New titles to be released under the agreement include **THE THIRDS STORIES**, a comedy classic with audio script and a laugh-a-minute storyline, and **ROCKET RANGER** based on an American TV serial to bring action, romance, thrills and spills to your computer. Gramercy claim 'there is nothing quite like it, graphically or artistically, in the industry today'.

Activision's recent releases include **PREDATOR** based on the successful Arnold Schwarzenegger film in which you play the part of the film's hero, alone in a treacherous jungle needing every ounce of cunning to stay alive. Although starting out with plenty of firepower in the form of automatic machine guns, grenade launchers and the deadly M16s, you have to survive at the end with just your own physical strength and lightning reactions. Activision claims 'one of the art graphics, dual speed sideways scrolling and endless scenes of pure arcade action'. You can see for yourself for £19.95.

Atari has finally got its **Desktop Publishing** act together, after months of speculation, by choosing **Microsoft's** **Plot Street Publisher** as the software for its **Desktop Publishing** system. The system, now available from Atari dealers includes a Mega ST or 4, monochrome monitor, 10 or 20 Mb hard drive, Atari laser printer, **Plot Street Publisher** and 1st Word. The entire system will cost between £2000 and £3000 depending on the configuration chosen and undercuts the Macintosh by a substantial amount. An Apple Laserwriter alone will cost more than the entire Atari system!

Jeff Minter of **Llamasoft** looks to have finally stopped playing with **Colosspace II** and got down to finishing the program which is due for imminent release under the new title **TRIP-A-TROUN**. Originally intended as an upgraded version of **Colosspace I**, the program has now been completely rewritten from scratch with the result that it is almost a new concept in interactive computer graphics. **Jeff Minter** claims that **TRIP-A-TROUN** is as far away from **Colosspace I** as the ST is from the ZX81! All you need to enjoy the ultimate light synthesizer experience is a 520ST and around £40 but if you just happen to have **FIVE MEGA ST's** you can also join in the fun! The specification runs to a full A4 page so we don't have enough room to bring it all to you but if you would like to get in touch with **Llamasoft** on 05756 4478 so are sure they will give you more information.

Infocom's latest for the ST is **SHERLOCK: THE RIDDLE OF THE CROWN JEWELS** which, as you might have guessed is a detective story. Do you fancy playing **Shirlock Holmes**? Well, here he is, for in this one you play **Watson**, who has to solve the mystery of the theft of the Crown Jewels two days before the Queen's Jubilee celebrations. You must pit your wit against a clever thief with only a trail of infatigating riddles left behind to aid in your search. One such riddle is why the game is called **SHERLOCK**. . . ? If you play **Watson**, what is **Holmes** doing? Playing the fiddle? Or maybe he has just had a heavy night smoking those naughty substances that rumour has it he enjoys!

Precision Software have released the upgraded version of its successful database Superbase Personal. **SUPERBASE PROFESSIONAL** includes all of the features of its predecessor but includes full programming facilities to enable users to produce databases specifically suited to their needs. A unique forms editor is included which allows the creation of multi-page forms combining colour, lines, boxes and fields from any file for custom applications. The built-in Database Management Language allows even the non-programmer to create custom routines and even pull-down menus and personalised pop-up selection panels are available. **SUPERBASE PROFESSIONAL** costs at £249.95 and is available from your usual supplier.

Mirrosoft are taking a little more time nowadays with their releases. **Tanglewood** has set a standard which will hard to match and it seems that their programmers keep wanting to improve the games so that titles like **LEATHERNECK** and **INTERNATIONAL SOCCER** shown at last November's Atari Show are well awaited in '88. Other releases planned include **SLATHIN** which features the most sophisticated robot ever created. Slagho has the strength of a hundred men, the armour and weapons of a small tank and the intelligence of . . . your **OMEGA RUN** is a strategy game of which nothing more is known at present and there is also **FRIGHT NIGHT**, an 'Adult Only' game based on the film. This one could frighten you off the ST forever!



Microsoft's SLATHIN

And the rest . . .

Systems II have re-released **INTERNATIONAL KARATE** at a new lower price of £14.99. **Origin Systems**, via **Microprose**, also have a martial arts game, **WOLFRUN**, at £24.95 whose fighting skills are combined with cunning, ingenuity and a knowledge of magic to achieve the objective of retrieving the 'colossal orb of harmony'. **Progenix Software** have **Version 2.1** of **PROSPEROUS PORTMAN** for **GEM**, now available with three superb manuals and many enhancements at £113 plus VAT. **Mirrosoft** have a new game called **TETRIS** (actually the R is the other way round but do you know how difficult that is to explain to a typesetter?) which sounds rather weird. All about matching shapes. If you get really good, you might even get to win the competition in the park and get sent to **Rascal** Eppa game books might like to enter one of the current bargains on the ST entitled **EPYX ON ST** - it disks for £29.99 containing four games, **Championship Wrestling**, **World Games**, **Winter Games** and **Super Cycle**. A new label from **Artisoft** is **MAGIC BYTES** whose first release is **PARANOID** where you are in a world controlled completely by computers, reminiscent of **Dwell's** 1984. Also due is **VANISHED EMPIRE** a fast and furious arcade strategy game set in the world of **Conan** Discs.

PROSPERO FORTRAN

Matthew Jones takes a look at the latest version of this language

Since my review in 1986 of Prospero Fortran 77, Prospero have continued to upgrade the product, and have recently released a major new version of the compiler (now called Prospero Fortran for GEM). The compiler still complies the full ANSI standard, but now includes a number of Prospero extensions to make it even more usable (many also available in other compilers). The most significant improvement however, is that of putting the compiler into a complete programming environment – the workbench.

THE WORKBENCH

A programming session with a normal compiler is done by loading an editor, loading the file to edit, editing it, saving, exiting and loading the compiler. The compiler loads the file, compiles it, exits, then you load the linker. It loads the compiled file (the object file), links it, exits, then you load the program, test it, then go back to the beginning to edit again. Tedious, but the way everyone works. Prospero, however, now has a better way.

After loading the Workbench, you select the 'Main FOR file' from the menu (or Alt E), and load the source file. The editor is a Workbench key compatible editor with a few additions and is very easy to use, being one of the best I have found so far, though rather slow to update the screen. Make your changes, and then select 'Compile and Link' from the menu. The compiler comes into play, reading the file directly from memory. Compilation progress and errors are reported in a dialog, with an erroneous source line displayed for context and an option to Continue or Abort. After compilation (which can be separate), the linker is invoked which loads the object and library files, writing the finished program to the disk. Select the menu option for 'Run', and you can test it. When complete, you simply exit your program, the workbench re-appears, and you edit the source again to start another much speedier cycle. As a superb bonus, Prospero include a source-level debugger called Probe, which allows you to step through

your program one line at a time, each time seeing the source line, viewing and altering the variables by name – with no need to know assembly.

The whole system works very well, much better than even the best 'shell' programs like Masmcom's 'MENSU' –. The drawback of course is that you cannot use your own editor, but the Prospero editor is quite adequate. It is still possible to edit non-Fortran files – indeed with multiple file programs it is necessary to edit a linker control file. I experimented with interfacing assemblers to the Fortran, and had no problems editing the .ASM file. To make such things even easier, you can run other programs from within the workbench, so I was able to run the assembler, then link normally.

PROBLEMS

Last time I reviewed Pro-Fortran, I tried out a 16,000 line program called COFFE on it, and found that because of the strict adherence to the standard, and our sloppy programming, I could not get it to compile without major changes. I tried again this time with the latest version, and due to the extensions, was able to compile everything with under ten corrections (all of which were bugs waiting to be found). Because of the size of the source, compiling such files one by one (even using the compile from disk facility) was very slow. Some sort of batch mode (MARB) would be a perfect solution. Also due to the size (I think) I was unable to link it all, but GST Link managed to.

I also had problems when the compiler or linker found errors. 99% of the time all was okay, and the 'Continue' option worked, but every so often it crashed. I soon got into the habit of pressing ALT-S to save my source (but still leaving it in memory for editing) before starting to-compile.

THE MANUAL

The manual is very good, and comes in three ring bound volumes in an A5 box. The first volume covers the compiler installation and use, aspects about this particular implementation, and a complete language reference. While it could give more detail in certain more technical areas, it covers everything very well, and is a good example of what a manual should be like. The main dislike is the lack of further explanation to the error messages – the manual just repeats the compiler text – very helpful.

The second and third volumes cover the GEM interface in superb detail. They are not just the simple repeat of the IBM documentation, but actually explain things, not to absolute beginner level, but enough for a technical user. Because the Fortran is available for the IBM PC, it also covers GEM version 1, and is the best reference I have seen.

CONCLUSION

Despite the tendency to crash every so often, I have found Prospero Fortran for GEM to be a very enjoyable program to work with, and very powerful as a development system with the source level debugger. If you use Fortran, this is a program worth the money and worth having. I only wish I could use the workbench with other languages too! Prospero Fortran for GEM costs £113 plus VAT and is available for both Atari ST and MS-DOS machines.



MACRO ASSEMBLER V.1.1

Metacomco
£49.95

Reviewed by
Matthew Jones

Since I first reviewed the Metacomco Macro Assembler, it has not changed drastically in its basic functionality, but overall it is now streets ahead. The first version included only an editor, the GST linker, and the assembler. In the new version, the linker has not changed at all but the editor is a GEM based editor (as discussed in my C review), and the assembler is much faster in operation. What really improves the new package, however, are the included program development tools now standard in Metacomco languages: MENU - the GEM based 'shell' (for managing the programming cycle); MAKE - the large program management and maintenance utility (a true UNIX style MAKE); DEBUG - the symbolic link-loading debugger; and Komas' Resource editor - for editing GEM resource files. Also included is a GEM library to link with for access to GEM functions.

The assembler is a full macro assembler, suitable for writing large stand-alone applications or for interfacing with high-level languages. In use, it is a standard 'big system' assembler, reading a source file and outputting an object file - there is no interactive mode where you edit/assemble in memory - but for serious programming work this is acceptable. As well as small pass 68000 programs, I have used the assembler to

write special 68000 code for both the Lattice C compiler and the Progress Fortran, and have had no problems linking.

The assembler has a full range of options, and can produce full listings and cross references. It can output object code suitable for either the GST linker or the LINK68 linker (not supplied).

The manual is three quarters of an inch thick, and covers each program supplied. The editors describe the manual as 'with mistakes', but this does not include all parts, and sadly the assembler is one that lacks a manual. I have always found assembler manuals to be very unhelpful - they may tell you everything but they are very 'concise', so if you have no idea as to WHY you would want to do something, knowing how to do it does not help. Such a manual may border on 68000 code, but I would have liked more information on such subjects as 'which instructions and pseudo-ops cannot be used in order to produce position-independent code rather than relocatable'. Why can't this be included - and why not say what the difference is for those not familiar (me first). This is not unique to Metacomco though - none (if not all) assembler manuals are like this and general books do not help because they tend to say 'refer to your manual for detail'.

If you need an assembler then the one provided with this one (which all work with other languages too) make it a very good buy. The assembler is very suitable for professional use (despite a slightly arcane command line format) and I can certainly recommend it.

JACKMAKE Vogler Software £29.95

Reviewed by
Matthew Jones

A traditional 'MAKE' program is a tool for programmers of large programs to help them with the job of compilation. Basically, MAKE uses a 'makefile' to tell it about a program, and how each file of the program depends on others. After editing a number of files, MAKE looks at the makefile and then at the edited source, discovers what is out of date and re-compiles and re-links as necessary. Thus the programmer does not have to type lots of commands after editing.

JackMake is not that sort of program what it does is simply run each program in a file you prepare. While it could be used for the production of a single source program, it is not really aimed at the programmer but is perfect for performing frequently done, and possibly complicated, command sequences. You can specify a command line to give to the program if desired. If you do a list of switching between programs, such as between a spreadsheet and a graphics utility, you can use JackMake to do the tedious bit for you.

Preparing a new command list is very easy. First, select the menu option to clear the current list, then select 'Add a file' (also on a ctrl key), and this gives a modified file selector, which enables you to 'show' JackMake where the program resides. The program does not have to be in any particular folder or disk drive. After selection the command is shown in



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a window. This is then repeated for each program in the sequence. To add a command line, you must click on the command in the window, select a menu option, and then fill in a (quite small) line in a dialog. A nice feature is a button which says 'file selector'. Clicking this reveals the file selector and allows you to select a data file for the command line. Unfortunately, using this dialog on any command entered so far, so you can only use it once per command line. I would have preferred to be automatically offered a command line for each command added. The parameters are not shown in the window, and JackMake takes no consideration of the command type when running it, not clearing the screen prior to running a DOS program.

Once the list is prepared (you can save lists for review), you can choose a few aspects about its use. You can specify how many times the list will be repeated, or how it repeats forever. You can also determine whether it will show you a dialog informing you of screen it is about to take. This dialog gives three options: Stay (run the program), Skip, and Stop. If you have selected to not have the dialog and also the repeat forever option, it is still possible to interrupt the sequence with a key combination as JackMake loads the next program.

The manual, tastefully printed on re-cycled paper (with two page explanation), is not particularly comprehensible. Along with the confusion of calling itself a 'MAKE' utility and then not actually being a true 'MAKE', I had a struggle understanding quite what the purpose of the program was, or how to use it and was only enlightened once I ran the program itself. Fortunately, once you understand what it is trying to do, JackMake is good in use, so the manual is not too much of a hindrance - more a drawback to selling it.

Other niggles with the program include bad spelling and also non-standard dialogs. For instance, the 'Preference' dialog does not have OKAY and Cancel buttons - you have to click on the dialog title to exit!

Overall, this program could save you a lot of time if you often run a sequence of programs repeatedly (especially from different folders), otherwise it would appear to have no particular use. *

QUICK-LIST ST AB Software £1.99

Reviewed by
Matthew Jones.

Some time ago I reviewed Madrasa's Super Directory program. Quick-List is another program - designed to fulfil the same purpose, that of organising your disk library and allowing you to find a file easily. As Quick-List is so cheap (at only £1.99) it has to be looked at - but how does it stand up?

Quick-List does not use the whole GEM interface. It has no menus, but a third of the screen is filled with icons that are used to select the program's functions. The icons are very detailed (it monochrome mode) and understandable and the screen has a pleasing layout generally. The program has built-in help screens (no manual due to cost) to explain the icons if you need it - though using it causes the loss of your file data and it would be better without this problem. The colour screen is quite different, using different screen layouts at certain points. Its main problem is that it does not remove the screen contents on exit, leaving the desktop in a mess.

The basic operation of Quick-List is that you put your disk in drive A:, select the READ option, and the disk is read with the files listed in the larger area of the screen. You are then asked if you want to add the disk to your data file. If you say yes, then a small keypad appears on the screen and you have to use the mouse to click on buttons to give the disk a number (which should then be written on the disk). Two problems with this list: you cannot use the keyboard to type in the number and then hit Return (all programs should be

fully usable from the keyboard - not just a problem with Quick-List, my pet hate is First Wind Plus but that's beside the point). The main problem however is that you do not know what disks you have already entered, and it is quite possible to give a disk number twice, thus 'doubling up' the contents.

Having entered the files (up to 11,500 in this version), you can then have the data sorted by disk number or by name, and then they can be viewed. Quick-List is not as powerful as Super-Directory in this respect, and I feel its largest drawback of all is that it does not include the path with the filenames in the printouts available. After a sort, the files become detached from their parent folders, and this would make it a little more difficult when actually finding the file on the disk. You can also find files using a search option, which is quite flexible as it looks for your keyword anywhere in the filename, so 'DEB' would find both 'DEMO.BAS' and 'MONOMENT'. Additionally, it is possible to view the name of a file stored in the list, as well as removing them.

Another problem is that Quick-List looks for its data files on drive A: and not the current drive which makes it inconvenient for hard disk users. All directories are taken from drive A: too, which makes reading files on another type of disk (e.g. my 5.25" drive) impossible, but this is probably not a great problem.

Overall, I think that if you need a simple disk cataloguing program, then this is good value for money. With a little more work on tidying up, and a bit more functionality (not sorting and the amount of information, it would be superb value.

Several readers will not think Quick-List because it is too cheap at £1.99 but it can be obtained by Mail Order from AB Software, 186 Holmden Street, Crewe, Cheshire. Tel: (0570) 312833



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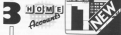


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PC Ditto turns your Atari ST into an IBM PC Clone. It works on the 520 or 1040 with either Colour or Mono screens and 3.5" or 5.25" diskettes as well as hard disks.

The documentation provided with it (on disk) lists over 800 pieces of PC software which have been certified as running under PC Ditto. I tested a few myself on my 520ST with a colour monitor and both Atari and Triangle drives and found nothing that would not work. Very impressive.

But ... everything I tried ran at around quarter the speed of a PC. The distributors, Robtek, claim that it runs at around 80% of a PC. I tried Lotus 1-2-3 (Version 2.01 - 3.1" version), IBM Display/Write Assistant (Version 1.5 - 3.1" version) and a few games - Dragoonworld, Mean 18, Calisto Island,

but you may be more interested in the fact that it works than how fast it is.

Apart from the performance there are a few other limitations. First, it won't run IBM BASIC(A). This is a common limitation with PC Clones, caused by the fact that a large part of the BASIC is in microcode in the ROM on the PC System Board and is copyrighted by IBM. I want to remember hearing that there were versions of BASIC around that could bypass that problem - if it is important to you then contact your local IBM Dealer. Secondly, PC Ditto will only run software configured for an IBM PG rather than a Clone. This of course raises the basic question of what exactly is compatibility?

No machine is 100% compatible. Instead, for instance, do not even claim compatibility - they say they can. "You

The screen is pretty good, but here is where we find a number of undocumented limitations. Printing, underlining and highlighting are not fully supported. In Medium Res Colour PC Ditto only supports 4 colours in text mode and in Mono High Res only 2. A PC Colour Screen has 8 plus intensity making 16. In order to see what I was outlining for Microsoft Commands in Display/Write Assistant I had to get it to emulate a PC Mono Screen on my ST Colour Screen - at least it did work then!

What about disk drives? Virtually all PC software these days is provided on double-sided diskettes (both 5.25" and 3.5"). PC Ditto accommodates "If you are not technically experienced and can not obtain technical assistance, we recommend that you purchase a double-sided drive. The cost of the drive will most likely be worth avoiding the technical frustrations you will experience." I wholeheartedly endorse this. Whether you choose 3.5" or 5.25" is up to you. But without a double-sided drive no amount of technical experience will enable you to load a protected program such as Lotus 1-2-3 which only comes on double-sided diskettes!

One other issue which can affect your ability to run a program under PC Ditto is the memory. My 520ST has 640K left for PC use. The documentation sets a 600K limit with 700K (but PC DOS will probably limit you to 640K anyway).

In conclusion, I would recommend that if there is some particular PC software which you want to run on your ST, you should check before buying PC Ditto that what you want will fit (load on your hardware), fit on colour or highlighting which make it readable and it runs fast enough for your needs.

For those interested in other ways of achieving IBM PC compatibility the following may be of interest. If your PC has a 3.5" drive then, as long as you format your diskettes on the PC, you can transfer the ASCII files between the machines with no problems (at least I have had none so far). You will need DOS 3.2 to format the 3.5" diskettes and if your Atari ST has only a single-sided drive you will need to use a controller such as DEVICE - DRIVER/ST5 (D2 H4) in your CONFIG.SYS to configure a single-sided drive on your PC 3.5" drive. If you want even more power and PC ability you may wish to investigate Aika Electronics Ltd (04-985-2588) - for £139 they will provide you with their Supercharger (8086 processor, 16MB RAM, etc.) to plug into the back of your ST.

PC DITTO

Can your ST really behave like a PC?
Patrick Owen tests out Robtek's new
IBM emulator which at £89.95 is a lot
cheaper than buying a second computer!

Robot and The Leather Goddesses of Photon under both PC DOS 3.2 and PC DOS 2.1. The test in Calisto Island and Dragoonworld swifled up quite quickly (half speed?), but whenever it had to display graphics it slowed down significantly, and the music on Dragoonworld came out at less than a third of the normal speed - a very strange effect. All of my other tests (eg. loading 200 records into 1-2-3 and sorting them, paging up and down in the word processor, and loading multiple commands in L.Golf) ran around 1 to 3 times slower under PC Ditto.

In case I had either faulty software or problems with my hardware I tried a friend's 1040ST with the same results and also got a new copy of PC Ditto from Robtek. The new copy did have about half a dozen bytes difference in one program file, but had no effect at all on the response times. Robtek say they have 1,000 happy users - either I am doing something wrong, or those users don't realise how fast a PC should go - I do because I have an IBM PC sitting beside my ST!

Of course speed is not necessarily critical. If you are running a program which gives multi-second responses then under PC Ditto it may well still be fast enough to use. If you want compatibility with your office machine on a casual

all the famous IBM software". IBM has a wide range of machines which are not fully compatible, e.g. a S/390 series has an intensity attribute bit so you only get 1 colour in text mode instead of 16.

IBM published a set of extremely intricate Technical Reference Manuals for the PC and PC DOS. These more than anything accounted for the success of the PC. They allowed more people than ever before to produce compatible hardware and software. In what is meant by "compatibility" is not that the machine should be 100% identical, but that it should conform to the interfaces described in the manuals.

Unfortunately technology moves on and some of the standards are now either inadequate or obsolete. IBM itself no longer sells PCs - the new range is called the Personal System 2, though it is of course PC Compatible. The main problem areas are: the keyboard, the screen, and the disk drives.

On the keyboard side PC Ditto does very well - the Atari ST has lots of keys and only a few mappings are required, these are documented on a template. Two minor problems: the backslash, hash, tilde and broken vertical bar keys are all mixed up and there is no mode feedback, i.e. no click of any kind when you successfully depress a key.

MAILSHOT Digita International £24.95

Reviewed by
Les Ellingham

There have been surprisingly few programs for the ST to produce labels or mailing sheets, in fact I can think of only one, LabelMaker (reviewed last issue) and that was written because there were no other programs available. Digita International have now, however, converted a popular Amstrad program over to the ST and Mailshot should be able to handle almost all your mailing requirements. It is also quite suitable as a mail database.

Mailshot does not use CBIM but it does use the mouse and gives you full WYSIWYG with a unique system of scrolling labels up and down the screen. Each label is entered exactly as it would be if you were typing directly onto paper but of course with the added facilities of a computer database that allows sorting or searching of records and manipulating of labels. The program comes with a manual/tutorial but the tutorial could have been a bit better. The program is, however, quite easy to use after having glanced through the manual once or twice.

Let's assume that you have a list of names and addresses that you want to use for mailing. Just click on ADD (or on the keyboard) and type in the first label. Arrow keys can be used to move about anywhere within the label and the label is terminated by hitting RETURN on the last line. Hitting RETURN again will take you on to the next label and so you keep adding as many labels as you wish. Simple. The completed set of records can now be saved, sorted or

printed. Saving the labels is straightforward and several sets of the same labels, sorted in different ways, can easily be saved.

One of the major problems with many databases is the inflexibility of sorting and you often have to plan quite carefully when setting up database fields to ensure that you can sort as required. Mailshot has a unique system of markers which make sorts infinitely flexible. If, for example, you wish to sort on a surname, many databases force you



to have a separate field for the surname or to type surnames first followed by initials. With Mailshot you simply press a function key to place a marker before you type the surname and then perform a sort on this marker. Up to four markers can be used in any label so that several different sorts or levels of sort can be made. The markers can also be inserted on labels already entered so there is no problem if they are missed out as you type and, of course, you can go through a list and put the markers in another place than allowing different types of sort. With this system it is quite possible to sort in almost any fashion you wish, a very powerful feature. Sorting is done in memory and is extremely fast.

Printing is also straightforward and

flexible and you can set up labels in a number of ways. Margins can be altered and the user can choose the number of labels across as well how many of each label to print. A message can also be added to the label before it is printed. Normally the whole file is printed at once and that is where one of the problems with the program arose. If your printer goes wrong or jams part way through a printout there does not seem to be an easy way to start printing again at a particular label. It is possible to get around this but it is not as simple as it should be.

There are several other features such as being able to add 'notes' lines to a label (which are not printed), there is automatic detection of duplicate labels and conventional searching on any line. The program stores for up to 5,000 labels per database and these can easily be broken down into 'subsets' so that different types of mailing can be performed from one set of records. This makes it possible to perform a mailing in an almost totally arbitrary fashion, which is seldom possible on conventional databases.

Mailshot is excellent value at £24.95 and will probably satisfy the labelling needs of almost every home user. An enhanced version of the program called Mailshot Plus is also available at £49.95 but the five extra features will probably not be needed by most home users. If you have a printer you already own Mailshot and you will probably find useful uses for it. Because the program is called Mailshot you might think that it can only be used for long mailing lists but it can just as easily be used for labelling disks, addressbooks, membership cards, photographs, bottles of wine, video tapes and much more. It could end up as one of the most used programs you buy!



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TURBO DIZER

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Yes, it really is called the Turbo Dizer - the name doesn't give much away, does it? Turbo Dizer (TD from henceon) is a high speed video digitiser for the ST, designed to capture video frames in monochrome from any standard video source (video camera, video recorder or even a television having a video output). Here, monochrome means it uses different shades of one colour, not that the image is in ST high resolution mode. In fact, it works only in low-res mode.

TD is supplied in a simple, foam padded cardboard box and it's obvious that money hasn't been wasted on frivolous packaging. Inside you find a rather large ST cartridge containing the frame-grabbing circuitry, a disk containing the software, and a sizeable little instruction booklet, consisting of just twelve pages of which only five are in English (the rest are in German).

The cartridge sits completely outside the ST's cartridge slot on five little rubber feet, the circuit board carrying the edge connector being extended about 1.5 inches (slat of the cartridge case) to facilitate this. The opposite end of the case carries a standard BNC bayonet connector for the video signal input.

There are no cables supplied with this unit, but suitable ones are easily obtainable from stores selling video equipment. In fact, I found I already had cables with appropriate connectors amongst the bits and bobs I've accumulated for use with my video recorder.

MONITOR MYSTERY

The ultra-slimmy manual proved to be virtually useless. It doesn't really tell you how to connect up the system, nor does it mention that the ST's monitor doesn't actually display the image you want to digitise prior to its capture! I naively assumed that the cartridge would pass the video signal straight through to the monitor screen so you could see what you were trying to capture. Not so! You need a separate means of

If you are looking for a way to get digitised images on your ST at a reasonable price check out the Turbo Dizer. John S Davison did and got some excellent results

monitoring the incoming signal. The computer monitor only shows the last frame captured, and if you haven't yet captured anything then you don't see anything. Logical, I suppose, in a perverse sort of way.

Fortunately, the Sony KV1440 combined TV/monitor I use with the ST can simultaneously take both the RGB signals from the computer (showing the captured image) and RF signals from a video recorder (showing images to be captured), with the ability to switch between them at the press of a button. If your equipment can't handle two sets of inputs then you may have to incorporate some form of external switching arrangement or use a separate TV or monitor to view the incoming signal.

The disk contains English and German language versions of the program, but has no sample digitised images or utility programs other than supplied with packages of this type and the program itself is rather basic - there are no facilities for manipulating captured images before saving, for loading and viewing previously captured images, or for such niceties as locking a disk directory or formatting disks. Nor is there any way of saving disk accessories for these functions from within the program.

SIMPLE CONTROLS

After loading, the program takes you straight to a simple control screen. This allows you to choose the colour for your captured frame (grey, red, green or blue); to set number of shades/levels for that colour (2, 4, 8, or 16); to request one of 'scalloped' patterns as well as 'solid' shades (which denotes the number of available shades); to set the format for saved files (DIGS, Newhouse, Art Director or the Mag) and to select Save, Help, Info, Save, or Quit. All of these are activated via mouse selected buttons, as the program doesn't use drop-down menus.

By using different numbers of shades you can obtain different effects in your captured frame. This can range from the 'post and whitewash' look produced from the two level selection right up to a reasonable 'photographic' quality from the 16 shades plus stippling setting.

Unlike the other colours, when using the grey option you're limited to a maximum of eight solid shades, as this is all the ST can handle at present. If you select sixteen grey shades the program uses only eight, but substitutes eight alternate COLOURS for the missing grey. As these are purely arbitrary, the effect produced is rather bizarre to say the least!



ST SECRETS

Find out how to control the graphics on your ST. Colin Cox brings you some of the secrets of programming the ST with examples in ST BASIC, C and Assembler

This issue we will take a first look at graphics on the ST. This machine is a complex beast in the field of graphics, just look at the specification - 640 x 400 in mono (2 colours), 640 x 200 with 4 colours and 128 x 200 with 16 colours. There is also an enormous palette of 512 colours to choose from and 32K of video ram! I will split my description of graphics on the ST into two parts then, hopefully, giving the features the ST boasts a good airing.

THE CUSTOM GRAPHICS CHIP

To start we need to take a look at the hardware registers of the custom graphic chip - "The Mite" - used by the ST but first we must discuss the concept of logical and physical screen bases.

The ST takes an area of 128K of ram and then converts it into a form suitable for display. The area of ram being

displayed is called the "Physical screen base" however when we give a command, for instance, to draw a line between coordinates 00,00 to 100,00 the ST must change screen memory for us to use the line. The area of memory that the ST uses is called the "Logical screen base". This can be the same as the Physical screen base but the Logical and Physical screen bases can be different, allowing us to have a picture displayed on the screen while another is drawn.

When the second picture is drawn, it can be displayed instantly which opens the door to an animation technique called "Page Flipping" where a series of slightly differing pictures are drawn, held in memory and then rapidly shown one after the other giving the illusion of movement.

THE REGISTERS

The video chip's hardware registers start at address \$FF9200 and continue

on to \$FF9200

\$FF9201 - (R/W) High byte of physical screen base address.

\$FF9202 - (R/W) Mid byte of physical screen base address.

The low bytes of the physical screen base address cannot be changed, it always is zero, which means that the ST can only display areas of ram with starting addresses which are multiples of 256.

The next three registers are quite interesting - they provide the address of the word presently being displayed. They are read only and, as they increment at such a fast rate, are excellent random number generators.

\$FF9205 - (R only) High byte of address of word currently being displayed.

\$FF9206 - (R only) Mid byte of address of word currently being displayed.

\$FF9207 - (R only) Low byte of address of word currently being displayed.

\$FF920A - (R/W) This bit controls the synchronisation of the monitor and display chip.

Bit 1 controls the screen frequency - 0 = 80Hz, 1 = 50Hz (See Dave Kerf's article in Page 6, Issue 21, entitled "A Bigger Screen"). The effect of bit 1 is to enlarge the screen area on odd/low res monitors. This bit has no use with mono monitors. Bit 0 allows the synchronisation of the monitor to be either internal or external. Internal = 0 (normal setting) means that the video chip takes care of picture sync. External = 1 means that the sync pulses come from an outside source, e.g. a video camera etc. The practical effect of selecting external sync is that you get no picture! Try (from ST Basic): DEF SINC = \$0FF920A: POKE \$0A,\$0FFD. To get your picture back you'll have to type "SINC" type POKE \$0A,\$0FFC.



3FF8240 - (16 bit R/W) Colour palette register 0
3FF8241 - (16 bit R/W) Colour palette register 1
3FF8244 - (16 bit R/W) Colour palette register 2

3FF815A - (16 bit R/W) Colour palette register 13
3FF815C - (16 bit R/W) Colour palette register 14
3FF815E - (16 bit R/W) Colour palette register 15

Each of the colour registers take a 16 bit value which specifies the intensity of the red, green and blue pairs for that colour. The form of the 16 bit word is **RRGGBB**

where the Hex digit **R** has to function as the digit **R** and **B** stand for the intensity 0-255 of that particular colour. This is where we get the specification 512 colours ($8 \times 8 \times 8$).

The case with a mono monitor can try: **DEF SEG = 0; POKE 344, 0; POKE 345, 0**

For users with colour monitors, a very powerful technique called colour rotation is available - see Steve Priller's article in issue 26 for an explanation.

Certain values relating to the screens are stored in low memory by the operating system. This is similar to the contents of shadow registers on the 8 bit Amstrad machines where values are stored in low memory and then transferred to the hardware registers every 60th of a second. A similar situation is the case on the ST.

3444C - (16 bit R/W) Graphics resolution.

This register allows the user to switch between resolutions. It works only when switching between low and medium resolution, as switching from high to low or low to high is impossible because different monitors are required. This register also allows the programmer to determine what the current screen resolution is. The values stored in this 'register' are: **80** - Low res, **8100** - Med res, **8200** - High res.

344E - (32 bit R only) Logical Screen Base address.

This 8 bit register contains the logical screen base address. I have used this in Listing 8 (ST Basic). The program demonstrates the technique of page flipping. I have used only two screens but you can use as many as you wish, providing you can find sufficient memory!

```

30 REM *****
31 REM 0
32 REM 0 ST Screen's screen
33 REM 0 BY SCREEN
34 REM 0 COLR COL
35 REM *****
36 REM 0 SCREENS part one - GET SOLID TAB - LISTING TAB
37 REM 0 BY SCREEN
38 REM 0 PAGE & ROWS(140) - ENDING
39 REM *****
40 REM
41 REM This program uses the fact that numbers stored in an integer array
42 REM are always sequential. The integer array are used to store the
43 REM Screen Definition (80x80) and used as the buffer for the background.
44 REM The address of this array are then passed to the line 4 code. The
45 REM user can then read to where the program is at any time.
46 REM *****
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1 Player Designed by Doug Kenyon, Mike Jensen, Steve Walker Price £29.95

UNIVERSAL MILITARY SIMULATOR (Patched) - A revolutionary war game in the domain and jurisdiction of the Atari ST computer. Features a detailed world map and a complete set of statistics. Includes a 'Dungeon Master' program for generating random dungeons. Includes a 'Dungeon Master' program for generating random dungeons.

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There are 14 Line A commands, all of which take the form of:

BASE

however for the 'C' and ST Basic programmer most of these commands duplicate some of the functions provided by the VDI interface. To save space, I will mention only those that add worthwhile extensions to the ST. Of the 14 Line A commands, only three are significantly different. These three commands are 'Initialise Line A', 'Draw Sprite' and 'Erase Sprite'.

As the Line A interface is essentially an aid to assembly language programmers, access from 'C' or ST Basic is not easy but I have included the necessary code to allow you to use these functions from your 'C' or ST Basic programs.

I will now discuss the three commands - but first, I must explain a Hot Spot! The Hot Spot is a point of reference on a sprite determined by the programmer. When the Draw Sprite command is given, the x and y co-ordinates refer to this point on the sprite. Let's take an example. Suppose the hot spot is defined by the programmer to be in the centre of a sprite. All subsequent Draw Sprite (x,y) commands will draw the sprite with the co-ordinates x,y at the sprite's centre.

THE LISTINGS

Listing 1 shows how to use multiple screens from ST Basic. Listing 2 contains a basic loader which allows the user to access Line A Sprite functions from ST Basic and also shows how this utility may be used. Listing 3 is 'C' source code which shows how to use Line A from 'C'. Listing 4 is the required loading for 'normal' 'C's - see my article last issue describing the need for the two listings. Finally, Listing 5 is an assembly language demonstration of how to access Line A sprites.

That's about it for this issue - next time I'll be taking a look at more features of ST graphics made as easier forms. Good luck with Line A which is a very powerful feature allowing quick and easy access to the powerful graphic features provided by the ST.

As I mentioned in the last issue, if you are having any trouble in using any of the code I have included with my articles, I can be contacted at Colin Cox, 30 Graigue Court, Poppinstown, Ballyman, Dublin 11. Give but please, please, please include a S.A.E!

DESCRIPTION OF LINE A COMMANDS

INITIALISE LINE A

Line A

opcode \$A000

Inputs None

Description: This opcode must be executed before any other Line A opcodes are given. The function of this opcode is to initialise the areas of memory used by the Line A system. If you don't execute this opcode, none of the other opcode functions correctly - you have been warned!

BUFFER SIZES FOR DIFFERENT RESOLUTIONS:

High res 74 bytes, Medium res 134 bytes, Low res 265 bytes

SPRITE DEFINITION BLOCK

Word 0: X-Offset to Hot Spot (from top left corner)

Word 1: Y-Offset to Hot Spot (from top left corner)

Word 2-3

Word 4: Background colour

Word 5: Foreground colour

Words 6 to 16: hold the actual definition of the sprite as held, along with a mask. The mask is an area slightly larger than the sprite within which the sprite resides. If you wish to see this effect at work, move the mouse pointer over a black area of the screen. What you are seeing is the white mask with a black arrow inside it.

Word 17: Mask line 0

Word 18: Definition line 0

Word 19: Mask line 1

Word 20: Definition line 1

.....

Word 35: Mask line 15

Word 36: Definition line 15

DRAW SPRITE

Line A

opcode \$A001

Input: Address of a Sprite Definition

Block in A0

Address of a buffer in A2

X-Position of sprite in D0

Y-Position of sprite in D1

(A0,A1,D0,D1 are 68000 registers)
Description: This command draws a 16 x 16 pixel sprite at the screen location contained in D0 and D1. The actual definition of the sprite is held in a 'Sprite Definition Block', who's layout I have described below. The size of the block is always 74 bytes long. The buffer's size is dependent on the resolution you are working in. It's function is to retain the image under the sprite, so that when the Erase Sprite function is called, the background can be restored, thus erasing the sprite.

ERASE SPRITE

Line A

opcode \$A002

Input: Address of buffer in A2

Description: This command restores the area under a sprite drawn with the Draw Sprite command.



DEFENDER OF THE CROWN

Is Mindscape's 'Interactive fiction' as good as they claim?
John Sweeney checks it out

Defender of the Crown is billed as a "Computer Interactive Movie". The box claims it is a "unique blend of role playing and strategy combined with exciting arcade-style sequences". First impressions are certainly excellent.

Without any doubt the graphics are superb, and as the game progresses and new pictures are displayed one is always notably impressed by them. There is also lots of stirring music which is of a very high standard.

The main screen of the game is a map of England in 1149. This is divided into 18 territories which can provide you with income for your treasury and vessels for your army. You and two other Saxon Lords hold three of the northern territories. Three Normans hold three of the southern territories. On each turn you may choose from a number of options, such as spending money on soldiers, knights, siege catapults or castles for newly conquered territories, holding a feast, sending an embassy to an adjacent territory, building a town, sending an embassy to an adjacent territory. Further sub menus provide you with such options as examining the various territories and lands or moving men between garrisons and armies. All this is achieved with the mouse, as indeed is everything in the game (the box refers to a joystick option - but it doesn't appear to exist). The computer monitors your moves and takes the turn for the other five Lords as you try and defeat the Normans (invades and make England safe again under your rule).

You and the other Lords each have three characteristics measured: Leadership, Swordsmanship, and Jousting Ability. These affect your chances in most stages of the game, and are in turn affected by how well you do. For example, Leadership goes down if you lose a cast, but if it is high can have a significant effect on the outcome of a battle.

As described so far the game is a fairly complicated strategic war game with the computer playing the part of games master and rolling lots of 'dice' behind

the scenes, however, certain actions by either you or one of the computer players result in 'arcade style sequences'. There are four of these - Jousting, Raiding, Catapult Sieges, and Battles.

When jousting, you must aim at your opponent's shield as he gallops towards you and press the button exactly when you hear a clang. Raiding requires you to win two sword fights during which you can move your character left or



right and thrust or parry. With Catapult Sieges your main objective is to break down as much of the wall as possible in 7 attempts - or fire you just press the button when you think the catapult is wound down far enough. Finally, in the Battles you select options such as Defensive Hold or Overlook Enemy while soldiers stand and wave swords at each other in the middle of the screen.

Apart from various random events (sending a few other pictures and messages to appear, and your ability to aid Robin Hood by help three times that's about it. Unfortunately, most of the arcade sections are, in my opinion, somewhat lacking. The only one which comes close to being an arcade game is the Raiding, but the options are too limited to make it worthwhile. Indeed, the only strategy which I or my sons had any success with at all was to hit the Threat button as fast as possible.

Also, since you have seen the fairly limited range of pictures that make up the game, you very quickly get extremely bored with the loading time -

waiting, right seconds to view a picture you have already seen and which is completely superfluous to the game is not my idea of "fast forwarding action".

The loading is extremely difficult (I still haven't got anywhere near mastering it), and the built in delays make it, as far as I am concerned, unplayable - you get about two seconds to aim and hit, then you've got three seconds waiting for the next attempt while it shows you two pictures you have seen before and then has to reload the loading scene. Even worse, if you fall you are out of the town and have to wait for a few turns before you can call another, or if you accidentally hit the opponent's horse you are banished from your fortress and have to restart the game if you want to practice jousting. I took the advice given in the instructions and tried to spend a game practicing jousting - on average I got two seconds practice every two minutes! What a waste of time!

Why, oh, why did they not provide either an option to turn off the pictures you have already seen or to practice jousting without interruption - or preferably both? The game is also lacking in any form of Pause or Save, or even the ability to save the main file (no matter how good it is I don't want to lose it yet again - and I can't save the volume done as I won't be able to hear the clang in the jousting!).

The ability to suppress the numerous pictures which it means on loading just to accompany a two line message or a sound effect MIGHT have made the game playable, but even then I don't believe it is actually a very good game. The "blend" of different types of game just doesn't work well. None of the components is fully satisfying in its own right but together they tend to detract from each other rather than help each other. The result of your success in the strategic game depends on the numerous pictures which it means on loading but is affected by random events. As such it doesn't make a very good strategy game, the 'arcade' parts are too limited, and the 'role-playing' element is practically non-existent.

By all means marvel at the graphics if you get the chance, but unless you don't mind it being a little shallow, and you have lots of patience, you might want to look elsewhere for your "fast forwarding action" and "arcade battles".

Defender of the Crown is published by Mindscape and distributed by Abacus at £29.95.

FROSTBYTE

Microvalve/Tynesoft
\$14.95

Reviewed by
John Davison *for*

Deep within the caverns of the planet Combia a furious struggle for freedom is being lost. Kreevors from all over the planet are being captured by the ghoulish monevros who inhabit the planet caverns.

Your job in Frostbyte is to take on the task of rescuing the captured Kreevors from their cages, which are spaced well apart from one another in the underground caverns. You move also once imprisoned, but you managed to escape, and upon leaving your cage come across a form of gas which can be used to destroy some of the 'ghouls'.

On your travels through the caverns and passages you will come across three different sorts of coloured 'monevros' which will enable your Kreevor to either move faster, jump higher, or fall further.

These monevros will last indefinitely as until you pick up and use another monevros with a different effect. Also you will come across many different varieties of colourful monevros, some which will kill and some which won't, some which can be killed and some which can't.



Graphically the game is very bold and colourful, although in some places the use of differing kinds of different colours to make darker shades etc. has been overdone a little. The sound is quite good, and the twenty or so seconds of sampled music on the loading screen would be near enough perfect if it were not for the fact that it stops half way through a phrase. The sprites in the

game, from your 'Slime' like Kreevor to the hundreds of different ghouls, are all very colourful, and in most cases very smoothly animated. My only real complaints about the game are the difficulties which I had in getting it to load. To start with it would not load on my 1 meg drive, so I had to change the cables around to make my half meg drive Disk A. Secondly, when loading on the half meg it was rather temperamental and more often than not would 'boast' out on first try. It usually loaded on the second or third attempt, though.

Overall Frostbyte is a fairly reasonable platform type game which is priced relatively cheaply, however I did find that after playing it for a while it became a pain boring. This was because successive screens do not necessarily increase steadily in difficulty. Some are very easy and others are extremely hard. Difficult screens early on may cause loss of lives, making later screens more of a problem as you don't have spare lives to experiment with. Frostbyte should appeal to arcade adventure fans, even if it doesn't break any new ground in originality.

BANK-IT

Aaronfay Marketing
\$12.95

Reviewed by
Ron Stewart

When any new computer comes on the market, there quickly follows a glut of those easy to program games that usually end up in the public domain. The ST seemed to avoid this area of the software market, mainly, I think, because of the time it took the average programmer to come to terms with sixteen bit computers. Some of these games are only now appearing on the market. I must hasten to add that I don't decay these products. Many of them, like BANK-IT reviewed here, are very credible, it only wish that the programmers had been a bit more adventurous.

BANK-IT is a mixture of fruit machine and poker game. The machine, which is totally mouse controlled, is equipped with five reels and hold and chance buttons. At the bottom of the

screen are twelve poker hand selectors. You have twelve coins and each go is split into three spins of the reels. Each of the twelve poker hands is allocated a score and your aim is to assess a high score.



Game play is fairly simple. Pressing start spins the reels and once they have stopped spinning you can decide what sort of hand you want to go for, five cherries for instance, or maybe five pomegranates. Pressing the hold buttons stops these reels from spinning when you press start again. Once you've spun the reels three times the machine decides on how many nudges you can have. Finally when you have nudged as far as you can you select one of the hand

buttons. The machine will then total your score.

The machine may give you a chance to gamble on your score. Pressing the chance button may double your score if the light stops on Yes or it could halve it if it stops on No. More points can be added if you manage to get five of a kind or if you manage to light the numbers same at the top of the screen. The hands have to be chosen carefully to get the highest points total. Four cherries for example will give you twenty points whereas if you select the five together hand, you get thirty-five points. There is a high score table which will save your high scores to the game disk.

The graphics in this game are very well executed. I especially liked the LED read outs for the credits and score. The spinning reels are particularly well done. A game of this type does not give much scope for the sound so don't expect anything flash. Bank-It is a good game for the younger computer user, it is easy to learn and play. Anyone else will probably see it of a pretty quickly, it is, however, one of those games that is pulled down off the shelf once in a while just to see if you can beat your last high score.

LAS VEGAS

Amco
£9.95

*Reviewed by
John Davidson for*

Las Vegas, as you can probably tell by the name, is a gambling game. The aim of Las Vegas is to break the bank at the casino by working through the Slot Machines, on to a game of 'Higher-or-Lower' and finally on to play Blackjack with the chance to break the bank.

The first section, the Slot Machine, resembles the screen from one of the modern gambling machines. The three reels are in the centre of the screen with the start, gamble and hold buttons below. Across the top of the screen in large letters are the words 'Las Vegas'. Each letter must be lit up before you can move onto the 'Higher-or-Lower' game. All of the buttons on the machine are

pressed by positioning the mouse pointer over the button and pressing the left button.



Once you have made it to the 'Higher-or-Lower' screen, you are presented with five cards face down in the centre of the screen. Below these are five buttons, a 'deal' button, 'higher', 'lower' and finally the 'change' button which enables you to change the first card dealt. You must then guess whether the next card in the sequence is higher or lower than that just dealt. If

you succeed in getting all five cards correct you can either collect your winnings and return to the Slot Machine, or gamble. If you gamble and win you are given a number of chances to reach \$100 and therefore win the 'Higher-or-Lower' game. If you do actually manage to win \$100 or more, you can move onto the Blackjack screen (which I have not actually managed yet!).

The Blackjack game is controlled in a similar way to the previous two sections, and if these are anything to go by, I would imagine that it is going to be pretty hard to beat the computer.

'Las Vegas', although not very original, is a reasonably fun and addictive game with some bold and brightly coloured graphics. The sound is not really that good, apart from when you collect your winnings, when the double of falling coins sounds surprisingly realistic. Overall, the game is quite good and worth the asking price.

WINTER OLYMPIAD '88

Microvalue/Tynesoft
£19.95

*Reviewed by
Ron Stewart*

Winter is upon us and we are in the middle of the skiing season. This year also happens to be Olympic year and the winter games are being held in Calgary, Canada. With this in mind, Tynesoft have released Winter Olympiad '88.

Included on the two game disks are five events. These are the downhill, ski jumping, slalom, bobsled and the two man bobs. I mention five because other computers would appear to be getting six events. ST owners miss out on the speed skating. The two disks also check a mark so it would be difficult to see how they could have got another event on. You will even have to use another disk if you want to keep high scores.

On loading you can select up to six people to participate. They can each compete for a different country and the computer keeps track of the events with a medals table. You can also select to compete in all the events or any combination of the five.

The downhill is probably my favourite event of the five. The screen displays a large well animated skier from

behind. On the way down the slope you will have to avoid the numerous pine trees as well as jumping logs and rocks. Getting to the bottom is no easy task and a lot of practice is required. Because the skier is directly in front of you and can obstruct your vision the view



through his goggles is also shown at the bottom of the screen. A nice effect if you can handle both views at the same time, otherwise you will have to bob and weave a bit. The skier can be speeded up and slowed down by using the joystick. This means that once you have got the hang of the event there you can attempt to get faster and faster times.

The ski jump starts with your skier walking out to the top of the jump and wrapping his skis on. He then proceeds down the jump and takes to the air. Your task is to ensure he jumps at the correct time and then control him while he is airborne. A good display will get you style points.

Slalom sees you standing in and out of

the gates. The skier is very responsive and once again practice is required just to make it to the bottom. Control is unusual in that you can straighten the skier by pressing the joystick buttons.

The bobsled takes you through some beautiful scenery on your way to the firing range. The joystick has to be wiggled left and right, but not in the winking fashion of other games of this type. Shooting takes a fair degree of joystick control and timing. You will have to judge the fire line so to waiting to get in a good shot or to take the time penalty if you miss.

The most disappointing event in the series is the bob sled. The start is good when the driver and brakeman, with your joystick wiggling assistance, run to get the bob going, but from there on things go downhill (sorry, but it had to come eventually!). The graphics are the poorest of all the events and the gameplay is not very exciting.

Winter Olympiad begs comparison with Winter Games. Of the two I would prefer the Tynesoft product. Although it has less events it is easier to play and has some of the joystick handling characteristics of the older game.

Graphically the Tynesoft game comes out in front as well, if only because the larger characters are a little easier to see.

If you don't possess a winter sports game and feel the need then I would suggest you go for Winter Olympiad.

When you load Tanglewood you are presented with a control panel dotted with switches and dials surrounding a large black window which fills about three-quarters of the screen. If you use the mouse to click on one of the numbered switches on the left of the screen the window immediately fills with a colourful bird's eye view of a strange land.

The land of Tanglewood is enormous. Roads and rivers criss-cross a variety of colourful landscapes and allow you to explore around 5,000 squares of the 12,000 sq m which forms the grid screen which your five robots, or, to be more accurate, your Mining Mobiles can travel. The roads and rivers lead to a variety of terrain such as lakes, swamps, forests and gardens – not to mention the Purple Cabbage Maze!

The variety of terrain is one of the main challenges of the game – some of the mobiles are capable of travelling on all the terrain. The limitations of your mobiles are further complicated by the fact that they are all very second-hand equipment, bought cheaply by your uncle who wants you to recover some vital documents for him. They are either lacking in programs or equipment, or liable to break down at a crucial moment.

It is very easy to start playing. Just pick a mobile and start to round the rock or river with the mouse. You will discover lots of interesting places such as T'Nglin (the local inhabitants) houses and trading posts, motor transmissions, subways, telephone boxes, and, hopefully, a few useful items. One warning here, you MUST keep the mouse on when exploring new areas or you will never find anything. A ping indicates a find. If you stop where you heard the ping then the item you have found will appear in a small window near the bottom of the screen. The game is completely mouse driven. Pointing at switches on the screen, pressing mouse buttons, and moving the mouse allows you to hear the explanation of GET, EXAMINE, USE, DROP, SAVE, RESTORE, etc. You can also access the lists of programs and data which provide each mobile with its own special abilities, e.g. Number Three could use his Anti-Gravity Data to enter the swamp, if only the Gravity Reducer hasn't been lost in a lake during an earthquake!

The graphics are so good that just exploring the main map and learning how all the mobiles work is great fun and would have provided a more than adequate adventure in its own right, but there is, of course to Tanglewood. A number of the locations you attempt to

TANGLEWOOD

Microdeal
£19.95

Reviewed by
John Sweeney



enter will ask you to confirm R-P transfer. Once you accept this you will find yourself in a maze. There are three quite different types of maze, each providing an excellent set of puzzles to solve.

The Mines is a 'platform game'. You get a sideways view of a small area which scrolls smoothly as your mobile (visible in the centre of the screen) moves along the runnels and up and down ladders and ropes, and presumably up and down the elevators as well if only you could get them working! The problem of mapping the mines is exacerbated by the fact that your heavy second-hand mobiles won't work properly. Number Three won't go down ladders, Number Two won't climb up ropes, and Number One has lost his mining data completely and won't even go in! Working out how to map the mines and get the three mobiles to co-operate to reach the final treasure is practically a fully-fledged arcade game in its own right.

In the Forest, Under-water, the Swamp, etc. you get a completely different view. You see as what the mobile can see ahead of itself, and you move by using an arrow to indicate TURN LEFT, TURN RIGHT, TURN AROUND, or MOVE FORWARDS. Because of the severe limitations of your equipment all you can tell is the kind of terrain you are in and which directions have exits, i.e. this is the visual equivalent of 'You are in a maze of twisty passages all leading the same'. You are not allowed to drop items to mark locations, and even worse, the MOVE FORWARDS arrow, as well as moving movements CAN also, with no indication, cause a change of the

direction in which your mobile is facing as he enters a new location! (Mapping notes of these is a nightmare!)

Somewhere deep in the Opposition Control Centre is the document you need to enter to win the game. Again the view is different, now you are looking down the corridors of a three-dimensional maze. You can see walls and turnings ahead of you and also the Yellow and Red spots which mark elevators. These mazes provide many challenges: the elevators won't all work for you and some are only one-way; the mazes are enormous – covering well over 500 locations and when you get to the highest security area, your mobile's visual scanners start malfunctioning!

Apart from the sheer problem of mapping the whole of Tanglewood, the game also has some excellent logical puzzles for you to solve, ranging from understanding the alien culture of the T'Nglin to finding a way into the Walled Garden area, to add to the Arcady feel of the game, there is the problem of the enemy mobiles which zap you, and the fact that you are racing against time. Don't be put off by that if you aren't into arcade games – you will soon discover how to avoid the enemy – and there's always SAVE RESTORE! – and it is possible to finish the adventure in less than half the allotted time, so it is not too much of a feat once you have solved all the puzzles.

As in most programs of this size there are a few minor bugs – watch out for the following size occurrences and you should be able to avoid problems:

Apart from Scores Crystal all other items are unique. If you find a second one of anything it's probably best to go back to your last SAVE position. (If you find a T'Nglin Communications Protocol decoder deep in the mines then you should return to the game from the beginning – fortunately this appears to be extremely rare, neither I nor the writer of the program can reproduce the bug!). If the screen ever appears to be jumbled, or lots of things appear where they shouldn't be or you lose the mouse pointer, then you should reload the game and go back to your last RESTORE. You should be able to repair both holes – if your equipment vanishes after one hole then RESTORE and try again.

Tanglewood really is quite an amazing game, with tremendous scope and lots of variety. Peter Lyon's graphics are impressive, and Ian Murray-Watson's program will keep you guessing. I thoroughly enjoyed it. I'm sure you will. Let's hope for lots more of the same.

MICRO-LEAGUE WRESTLING MLSA/Microprose £19.95

Reviewed by
Ron Stewart

The American company MicroLeague, who gave us sports fans the superb 'MicroLeague Baseball' have entered the sports market again. This time they have released 'MicroLeague Wrestling'. The Americans have a tendency to assume that if someone is a champion in their country they are a world champion. ML Wrestling is endorsed by the World Wrestling Federation and its famous 'World Champion' Hulk Hogan. Believe me, this is very much an American product!

Initially you are given a choice of opponents. Hulk Hogan can wrestle either Randy 'Macho Man' Savage or Paul 'Mr. Wonderful' Orndorff. You are then treated to a ringside interview with both the wrestlers. This is conducted by a TV anchorman and each interview is supposed to come out differently, trouble is all three wrestlers make Frank Brown look like John Galtip!

Once the match, the top of the screen is given over to an area which contains digitized pictures of the action. On either side of the picture are eleven

possible holds or moves for each wrestler. The game play consists basically of selecting a move for your wrestler with the computer or a friend selecting the move for your opponent. The computer then decides whose move actually took place and you are then treated to a picture of the action. This gives a semi-automated appearance to the play, rather like the old fashioned flick cards or the 'What the Butler Saw' machines at the sea side. Each successful



move increases your power and inflicts damage on your opponent. Both the power and damage levels are shown on the screen.

While all this is going on a ring side commentary is being kept up by two TV announcers. This, like the interview at the beginning is just text on screen stuff. Neither of them are Ken Walcott and if you haven't been to the States it will not mean a lot.

Back to the boss. There are eleven moves to choose from. Five of them are considered basic, four are major and there is also a super move and a defensive block. Your wrestler

obviously has a better percentage chance of making a basic move than a major move. The problem is that basic moves do not inflict much damage on your opponent. Once you have racked up a bit of damage and power then you can try your super move. Each wrestler has one of these defensive moves. If successful, and the percentages are heavily against it, you will inflict serious damage or even get a pin or knockout. Your chances of being successful in a hold can be gauged by the relative dominance meter on the screen. You can also try a bit of sustains. If you are lagging behind and the end of the bout is in sight then choosing can be your only way to get a win. For instance, Orndorff's manager will try to hit the Bulls over the head with his steel. Beware, because actions like this can get you disqualified.

An unusual program then. It is more of a strategy game than a technical wiggling contest. The screen display is unique. Seeing your moves enacted by the actual wrestlers is fun. The problem is that the game relies heavily on personalities and unless you know the American wrestling scene the game loses that little something. The sound does not come up to par. Appliance from the crowd is just the usual static like noise. Not a sign of digital speech anywhere.

MicroLeague Wrestling would appear to have limited appeal unless you are an avid wrestling fan.

KARTING GRAND PRIX Amco £9.95

Reviewed by
John Davidson jr

Karting Grand Prix from Amco is part of this company's 'budget' range of software, priced as just under ten pounds. The quality of this particular title is so poor that I find it difficult to think of any positive points about the game.

The loading screen is quite good, showing a picture of a few karts on a track, but this is the most impressive thing in the whole game. Once it has loaded you are presented with a menu where you can select track conditions, number of players, speaker size, and your computer. You can then select

which track you want to start on.

The screen then loads in and the sounds-effects start. Just a long monotonous drone, which is supposed to sound like the roaring engines of the karts. The graphics are also dull and flat, being a bird's eye view of the whole track. The sprites (if you can call them that) are terrible and the animations is stymied, being probably the worst to disgrace the ST's screen in a commercial title.

The control of these small jerky blocks is equally depressing, as it is virtually impossible to get the hang of. Left and right move the kart and pushing forward causes the kart to accelerate. However when you stop pushing forwards to turn around a corner, the kart stops almost immediately! This stopping and starting is also painful to the ears as the monotonous drone only sounds when you are moving.

The various options mentioned earlier do actually have some effect on the control of your kart. The controls are so difficult to handle though that you don't notice that you accelerate faster with a larger speaker size, but have a longer top speed.

At first glance you may think that 'Karting Grand Prix' is an attempt to copy the arcade game 'Super Sprint' (which incidentally has recently been released by Electronic Dreams Software), however, once you have played it you will see that this game is absolutely nowhere near as playable or graphically and audibly as spectacular as Super Sprint. DO NOT be fooled by the screen shots on the back of the box if you see this in your local software store. Take a look at the game in action if you can. Games of such poor quality do the ST no justice whatsoever, but unfortunately there seems to be a great number being released.

SCREAMING WINGS
Red Rat Software
\$19.95

*Reviewed by
John Davidson jr*

Screaming Wings from Red Rat is another game to be converted across to the ST from the eight bit machine's. The game is basically a vertically scrolling shoot 'em up, loosely based on the arcade machine "F4U", however the ST version has been brought up to date. Instead of old World War Two planes, you now fly in a "XST Strike Fighter", which, in the instruction booklet, looks remarkably similar to an F16 strike fighter.

The game loads with a fairly good picture of a jet fighter flying towards you with the Red Rat and the Screaming Wings logo behind it. Accompanying this picture is a digitized tune which although fairly good quality, is a little monotonous being just a heavy guitar sound repeating itself over and over.

Once the game has loaded you are shown as many enemy planes as possible,

and to pick up various features (such as shields) for your plane along the way. Shields only last for a short time, but enable you to fly anywhere without being shot out of the sky. A "boom" plane can also be activated which flies along with you and shoots wherever you do. This particular feature is very useful



when there are a lot of enemy aircraft about. A bomb enables you to destroy all enemy fighters on the screen by hitting the space bar, and finally you can pick up a "rapid fire" icon.

Upon completing a level you must first destroy the large enemy bomber by shooting it many times, before landing at the airfield. Having landed, another digitized voice says "Good shooting" and greeted by a cheerful voice telling you

that "Red Rat software proudly presents..." followed by a distorted voice sounding like somebody yelling "Screaming Wings" with a mouth full of corn flakes. Pressing the fire button on the joystick causes the game logo to disappear and the computer screens something totally unrecognizable, which no matter how many times I hear it I can't work out what it says!

The graphics in "Screaming Wings" are clear and colorful, as are the sprites which are reasonably well animated. The background shows the sea and the islands above which the action takes place and scrolls by extremely smoothly. It's nice to see one of the cheaper British titles with scrolling that doesn't make your eyes hurt.

The aim of the game is merely to you are rewarded for the number of planes you have shot down. When you are finally killed the familiar "Game Over" comes up on the screen, and a squawky voice yells "Game over man... game over!". If your score was good enough, you can put your name in the high score table, but before doing this, the gap with the corn flake problem comes back and says something unrecognizable again!

Overall it's not a bad little game which is reasonably playable.

FORMULA 1 GRAND PRIX
Microvalue/Tynesoft
\$19.95

*Reviewed by
Ron Stewart*

Digitized strains of Fleetwood Mac's "The Chain" welcome you to "Formula 1 Grand Prix", a Pole Position clone with added frills.

After the opening titles comes the menu. Options on the screen include the choice of track, car and number of laps. You can also, if you wish, start in mid a full season using all the tracks. There are six tracks available, from the French Paul Ricard circuit with its long, fast straights to the twisty Detroit street circuit. Each circuit has different background scenery, Silverstone, though, only has very low clouds!

You are given a choice of five cars. They all have different characteristics but are all supposed to be competitive. The Williams is fast, whilst the Lotus

handles well but is slow. My favourite car for best all round performance is the Benetton. The selection screen shows the cars in colorful profile. Obviously you will need to choose your car with care if you are going after lap records, it's no use trying to get the fast Ferrari around the tight Monaco streets, better here to choose the Lotus. Finally, you



can choose the number of laps you wish to race over, either one, three or five.

Using the timed practice option you can test to see which car performs well on which circuit. If your timed practice lap is within two seconds of the lap record you will get pole position in any subsequent race on that course. Racing is very similar to Pole Position. The car

is moved about the track using the joystick. Pushing it forward accelerates the car, upward decelerates. Pressing the fire button will move your car through its six (constant) 'fuel' gears. Most of the time you'll only be using fifth or sixth. Points are awarded for distance driven, and the number of cars overtaken, and deducted if you are overtaken. As well as the score, the engine revs, time and selected gear are shown at the top of the screen. If you are nearing the rev limit of your car the rev counter will flash, too much will blow the engine. Do this too many times in his too many other cars and you will be disqualified for dangerous driving.

I have only one complaint and that is that the motion is shown by flashing the track. The strobing effect is quite annoying and after prolonged playing I usually ended up with a headache. I would have preferred some form of wheel movement.

As a basic racing game this one would be my choice over Pole Position. There are more complex simulations coming but Formula 1 Grand Prix is a game and not a simulation and as a game it comes out quite well.



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SWITCH IT!

Les Ellingham checks the cost of keeping two monitors hooked up

When the ST first appeared, many users bought a mono monitor and used an existing colour monitor or also bought one of the Atari colour monitors. Other users went the other way purchasing a mono monitor later but whatever the combination there was one great bugbear which was that you had to continually unplug and plug in each monitor as required. As well as being quite tedious it hardly did the monitor socket on the ST any good.

This situation continued for an unbelievably long time with only a couple of 'home made' switching devices available at high cost, but now there are several monitor switches readily available to enable you to leave both monitors hooked up and change between the two at the flick of a switch or push of a button. We have had two of these on test for a couple of months.

THE LOW COST SWITCH

The first is made by Lindy Computer and is available from Premier Software at a cost of £19.95. It consists of a small black box 3" by 2" and 1" high which can be fairly unobtrusively tucked away behind your ST. In fact this is probably the only place for it as the cable supplied is only 3' long! The cables from your mono and colour monitors plug into the opposite side of the box to the front cable and a small switch mounted on top allows you to switch between monitors. Note that, as with other switches or when unplugging the monitor cable, the ST will reboot when monitors are switched.

THE PUSH ALTERNATIVE

If you are willing to pay out a bit more for the luxury of a monitor switch then you might like to try the Monitor Master available from Shackwell for £71.80. This is, altogether a much more sophisticated unit although it does exactly the same job as the Lindy switchbox. The box is in matching ST grey and measures 4" by 3" and is 1 1/2" high. It is designed to sit either beside your ST or alongside the monitor and has a fairly generous and quite substantial cable some 2 feet long! It is also mounted on four rubber feet to protect your furniture. All cables are connected at the back of the unit and switching is achieved by a push button on the front. When pushed in the colour monitor is engaged and when pushed again the mono monitor is used. The ST will reboot as stated earlier.

A COMMON PROBLEM

Both switches work well but strangely both have the same 'bug' which means that you cannot leave your colour monitor switched on at the same time as the mono monitor. Well, you can, but both switches continue to feed a signal to the colour monitor when the mono is engaged resulting in a most annoying



The Lindy switch from Premier Software



The more expensive Monitor Master

beeping being emitted from the speaker of the colour monitor. I cannot understand why all lines could not be switched. Both units probably use the same switch inside and the manufacturer seems to have taken the cheap and easy way out, as it is of no concern nowadays.

WHICH ONE?

They both work well and either can be recommended provided that you don't mind switching off the colour monitor whilst using the mono. I personally prefer the Monitor Master because it is more flexible due to the longer cable and more stylish overall, but you may not consider that worth an extra £51.

These units can probably be obtained from your local dealer. If not Premier Software can be contacted at P.O. Box 111, Marquane, N. Yorks, NG2 0HE. Tel. 0429 47940 and Shackwell at Unit 8, Airst Close, White Horse Business Park, Trowbridge, Wilt. Tel. 01294 5562

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TYPING IT IN

DISK USERS:

1. Type in Listing 1, using **TYPE** to check it, and **SAVE** the listing to disk.
2. Type in Listing 2, using **TYPE**, and **SAVE** it. The character set is not important.
3. Make sure that the disk you have saved the listings on is in Drive 1 and then **RUN** Listing 1. This will create a character set on your disk called **CHARK1**.
4. To play the game **RUN** Listing 1 which will automatically load the character set. Listing 1 is now no longer required but the file **CHARK1** must always be on the same disk as Listing 1.

CASSETTE USERS:

The program was originally written for disk but we have made a number of modifications to allow cassette users to enjoy the program.

1. Type in Listing 1, using **TYPE** to check it, but leave out lines 17000, 17040, 17050, 17060, 17080, 17090 and 17095. It is a good idea to **SAVE** it this point for safety but do not delete the listing from memory.
2. With Listing 1 only in memory, type in Listing 2.
3. Type in Listing 1, again with the main listing still in memory.
4. **SAVE** the entire listing. It is a good idea to **SAVE** a second copy at this point as the listing is very long.
5. To play the game just **LOAD** and **RUN** in the normal way.

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01 FOR NEXT I=1 TO 26:PRINT CHR$(I);:NEXT I
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Garry Francis gives his opinion of one of the most talked about adventures of recent times – after having finished the game

Over the past few years, the Adventure column has gradually grown longer and longer and longer until reaching the four page epic of the last few issues. Coinciding with this issue, I moved to cut down the length of each article, but from now on onwards, I'll try to come into at three Adventures in each issue. This means that I won't spend as much time on research, the Editor gets more flexibility in magazine layout and you, the readers, get more time in each issue.

Let me know what you think of the 'cut down' format and, as always, suggestions for future columns are more than welcome. My address is at the end of this article.

Now, as promised last issue, let's take a look at *The Pawn*.

THE PAWN

I first heard of *The Pawn* about two years ago when our illustrious Editor told me about a great new Adventure for the ST that had unbelievable graphics (I think he was just trying to go gaga like by in ST). Computer & Video Games reviewed *The Pawn* in April 1986. The article was chock full of superlatives and the accompanying review gave it full marks. I could hardly wait for the 8-bit version to be released.

As *The Pawn* became available for more and more machines, the computer press gave it more reviews and glowing comments. Imagine my disappointment when I did eventually buy the game and found it to be a bit of a dog! What had happened? How had the computer community been so thoroughly fooled?

When I re-read all the reviews, I realised that some reviewers had been hoodwinked by general denunciations from the staff of *Magnetic Scrolls*. They had obviously been shown how 'clever' the program was without being shown all its shortcomings – not to mention its bugs! Of all the reviews I read, only one of the reviewers had actually completed the game! The others had wavered about the consistency and hadn't even noted any puzzles! This is disgraceful. The real issue was (in my opinion) the greatest marketing sin since the Adventure history.

I said there was only one reviewer who had actually finished the game. That happened to be Page 6's own John Severity. He is the best and finest review of the lot (and even then, I think he's a bit generous, so if you're thinking of buying *The Pawn*, make sure you read John's review first. It's in Page 6 Issue 28 July/August 1987. Also please note that 8-bit owners MUST have a 1050 drive or compatible as the disk is in inflated density.

I played *The Pawn* on an 800K1, so on an ST. The graphics are good, but not great. I've seen much better. They tend to use monochrome colour schemes of subtle subtle shading effects, but in a lot of ways you can't even tell what the picture is supposed to be! So what's the point of subtle shading?

All except a few pictures at the beginning load from side B of the disk, hence the disk that is flipped twice every time a new

The PAWN

picture is displayed. This becomes so irritating, that I always played with the graphics off unless I discovered some new territory. The graphics aren't necessary to solve the game. On the positive side, the scrolling is superb. It is so smooth and easily controlled that not even an ST could do better.

The plot is derived by a philosophy student – and it shows. (If you've ever known a philosophy student, you'll know what I mean.) Most reviewers comment on the game's sense of humour. It does have a few very funny spots, but the "sense of humour" is more because of the bizarre and unrealistic events – something like *Murky Purlon*. Some of it is just plain old bad taste (such as the gratuitous violence, use of alcohol, matricians and Saramita). It is also heavily influenced by religion and politics, but you'd expect that of a philosophy student. Overall, the game feels 'intentional', but I'm sure that will disappear in *Magnetic Scrolls'* future releases.

The area where *The Pawn* receives my greatest criticism is the parser. An Adventure parser falls within the area of Artificial Intelligence known as Natural Language Processing. A Natural Language Processor essentially consists of three phases – lexical analysis, syntactic analysis and semantic analysis. In simple terms, lexical analysis is where the input string typed by the user is broken down into separate words and checked to make sure they are in the program's vocabulary. Syntactic analysis is where the program makes sure that the words are arranged in a grammatically valid way. Semantic analysis makes sure that the combination of words makes sense. Then and only then should the program act upon the user's input.

The Pawn's lexical analysis is reasonably good except that the range of verbs is a bit limited. The syntactic analysis suffers by allowing some extremely complex constructs to the detriment of the simple and more commonly used constructs. The player's efforts to communicate with the program sometimes turn into a frustrating session of trial and error.

The game's biggest shortcoming however is the semantic analysis and the resultant command processing. It often produces nonsense replies, grammatical errors, misleading statements, logical inconsistencies and downright mumbles. In other words, it's full of bugs! So beware!

HINTS

When playing *The Pawn*, there are a few general hints I can offer to make the game as painless as possible. Firstly,

Garry Francis' ADVENTURE HINTS

The PAWN

remember that you have five senses. EXAMINE, FEEL, SMELL, TASTE and LISTEN to every object you find and every room in room descriptions. You will usually get a suitable response which bears little or no relevance to the game. It is in the odd occasions that it DOES bear some relevance that you will be thankful for this advice. Also try LOOK IN, LOOK UNDER, SEARCH, READ, PUSH and PULL when they seem appropriate.

All of the characters about all the other characters. This is the best way to build up a picture of a character's personality, but also helps you to determine who can or cannot be trusted. Any other conversation is pretty limited. The program tries to be clever when conversing with characters, but usually ends up making a fool of itself.

Kronos will appear very early in the game and give you a small task at the end. Don't leave it at that. Read him and probe him and ask all sorts of questions, but whatever you do, don't let him leave (as I said) and he's also given you a major task. You cannot finish the game otherwise.

Save the game before giving objects away, for if your generosity does not achieve the effect you desire, the object is gone forever.

You cannot use the blue key twice! Think about it. Which one gives you the most points?

As John Sweeney pointed out in his review, the game does not appear to have a clear conclusion. It simply finishes out. The aim is to achieve the full 500 points which are awarded as follows (the descriptions are intentionally vague and in no particular order):

Getting the menu	5	Getting the boiler paper	10
Entering the workshop	5	Fooling the alchemists	10
Making the plant happy	5	Naming Jerry Lee Lewis	10
Completing Kronos' first task	5	Completing Kronos' second task	15
Reaching the narrow track	5	Opening the rope	15
Getting the pouch	5	Defeating the snowman	15
Getting the coin	5	Reaching the ledge	15
Getting the black potion	5	Satisfying the pastor	15
Moving the boulder	10	Getting rid of the alchemists	20
Stopping the Gaur from laughing	10	Entering Kronos' workshop	20
Completing the Gaur's task	10	Humiliating Kronos	25
Getting the blue key	10	Voting for the right candidate	30
Reaching the narrow room	10	Completing the Devil's task	30
Reaching the rockface	10	Completing the Devil's task	30
		Total	500

Well, that just about wraps it up for The Pawn (except for the dozens of bugs). If you're still having trouble, refer to the index files accompanying this column. Please note that they are a lot more explicit than usual because of the game's difficulty.

NEXT ISSUE

Next issue I'll be covering Lapis Philosophorum, Stranded and (depending on space) may be one or two others as well. See you then.

Garry Francis, 34 Barings Road, Harlowood, N.S.W. 2006, Australia

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1. CHARACTER	2. ITEM	3. OBJECT	4. ACTION
5. ADJECTIVE	6. NOUN	7. VERB	8. ADVERB
9. PREPOSITION	10. CONJUNCTION	11. INTERJECTION	12. PARTICLE
13. ARTICLE	14. PRONOUN	15. NUMERAL	16. ALPHABET
17. SYMBOL	18. SIGN	19. MARK	20. CHARACTER
21. LETTER	22. DIGIT	23. CHARACTER	24. SYMBOL
25. MARK	26. CHARACTER	27. SYMBOL	28. SIGN
29. SIGN	30. MARK	31. CHARACTER	32. SYMBOL
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EXPANDING YOUR ATARI

In this first article of a new series Mark Fowles takes a general look at the various ways you can expand your Atari 400/800, XL or XE

If you are at all interested in the hardware side of computing you will, no doubt have looked through the multitude of computer interfaces, expansion modules and gadgets available at local computer stores. If I were to ask you which computer is the best for adding on these bits and pieces, which would you say? The BBC? Spectrum? Commodore?

Wrong on all counts! The Atari beats them all hands down with its Parallel Bus Interface (the rear port connector is an 80-pin DIN), a cartridge port which can also be used for expansion, two (or in some cases four) joystick ports, which can be reprogrammed as outputs or inputs, and a serial port.

Why then, if the Atari is so great for expansions, are there such a small number of Atari add-ons and why are those that are available so expensive? Well, there are several reasons behind this. Many of the other computers lack the features already in the Atari and need those extra add-ons to even compete, but a more significant reason is that Atari Inc. has always taken years to release any hardware details to the public and, as a result, there are hardly any expansions made for the Atari. The manufacturers can charge higher prices as there is little competition.

DO IT YOURSELF

For those owners who want to add something to their Atari, help is now at hand in the shape of this series of articles, which will teach you how to build your own add-ons at a fraction of the cost of ready-made units in the shops. This first article will take an overall look at the various expansion possibilities and later articles will go on to discuss specific projects.

If you are seriously considering expanding your Atari you will need several essential tools. These are a low power soldering iron suitable for electronics, some solder, wirecutters and metal tweezers or snipe-nose pliers. A multimeter and/or a

logic probe is also invaluable. For those of you who don't have a logic probe an extremely simple circuit is provided in Figure 1. This will when connected tell you if the point probe is touching at logic level 0 (i.e. +5V), or logic 1 (i.e. 0V). These are the two basic voltages within the circuitry of most computers, except for power supplies and video circuits which do not concern us anyway. Hence for interworking we will be using TTL (transistor-transistor logic)-chips as these handle the correct levels.

Let's now take a look at each of the ports available to us.

THE JOYSTICK PORTS

These are the most widely known expansion ports on the Atari. The connections of these ports are shown in Figure 2. Pins 1-4 and 5 are normally at a 0V level, and these are connected by a switch to the wheel the joystick is pushed in a direction — see Figure 3. With the push-to-make switches you can easily make an arcade-type joystick.

The PIA (or joystick) bits provide the input to one (or two in 400/800 models) 8255 PIA chips) read by the computer. The PIA (Peripheral Interface Adapter) can re-configure these lines to be either input (as normal) or output depending on the 'direction control register' in the chip. We can control this quite simply. Figure 4 shows the bit use of the control register.

The important bits are 2 and 3. Bit 2 you have probably written across before to POKE 4095 with 32 or 60 to switch the console motor on and off. Bit 2 controls the use of the data register. If bit 2 is high (set to 1) then any data written to the data register goes to the output and data on the inputs can be read from the data register. If bit 2 is low (set to 0) then the data register gives access to the port direction control register. For each bit (which represents an input/output line), the level determines the direction. If we put a 0 in bit 5 then line 5 will



Figure 1 - Logic Probe



Figure 2 - Joystick Ports



Figure 3 - Joystick Circuit

be an output. Conversely putting a 1 in a bit makes it an input. Bit 2 is then set back to 1 so that data can be read and written to the data registers. Lucky 400/800 owners have two sets of these and can have 16 controllable lines. In the 400/800SL and 100XE the second PIA is used for memory control and installation.

If we wish to use the port as an output we will need to build a driver circuit as the outputs can only handle a small load.

Figure 5 shows some typical driver circuits for various loads.

The limitation of the joystick ports is that they only have 10 lines for digital data, if we include the two trigger lines which are always inputs. We can therefore only have expansion using a limited number of connections. We could drive the lines to act as a serial interface for us, but this is a lot of work, mostly in writing the software, although it can be very effective.

Some sort of program must, however, be loaded in to operate any joystick port drivers interface and as this program resides somewhere in memory, may be written over or ignored by other programs. As a result, you cannot guarantee that your interface will work with all commercial software (despite the claims of certain manufacturers), and obviously you cannot use joysticks as well!

The joystick ports are also designed to accept light-pen input. These connect into port 2 (or 4 on the 400/800). Unlike other computers, the light pen circuitry can be really simple as all we need is a light sensitive switch to connect the trigger line to 0V when the electron beam of the television screen passes it. As the beam scans the screen rapidly we need a fairly fast device. Many designs have been produced before so I shall refrain from yet another light pen circuit unless there is a demand for one. The light pen X and Y screen positions are provided by the *Amstrad* in memory locations 564 and 565.

The potentiometer inputs A and B are normally used for the public controllers if you have any, however they can be used to read the position of other variable resistors (potentiometers), see Figure 6. This could be useful in many applications such as position sensing in robots, graphic input devices, paddles, etc.

The values are read from the following locations:

- Port 1 - POT. A - 10760 (H0200)
 - POT. B - 53781
 Port 2 - POT. A - 10762
 - POT. B - 53783 (H0203)

The 400/800 computers have yet another four inputs (5594-5597).

We can use smaller value potentiometers if we connect a capacitor from the potentiometer input line to 0V. This slows down the charging of the internal conversion capacitor, making the computer think the resistance of the external potentiometer is larger. This is a case of trial and error for individual potentiometers and is only useful if you **MUST** use one with a smaller value.

If the reading of the pot inputs is being done in machine code we may require some other locations:

- ALLPOT - 10768 (H0208) gives the status of the converters, 1 bit representing 1 convert. A bit set to 1 means that the value of that input is valid.
 POT000 - 53779 (H020F) starts the conversion process on the inputs.

Also of interest is bit 2 of location 53779 (H020F) which when set to 1 enables fast scanning of the inputs. This fast

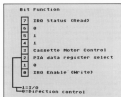


Figure 4 - PIA Control Register

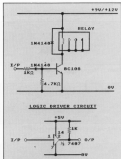


Figure 5 - Output Driver Circuits



Figure 6 - Potentiometer Connections

scanning is in 2 TV scan lines (128mS) but is not as accurate as the normal scan.

A final note on the joystick ports - the +5V supply is not intended for heavy loads or lots of circuits. Anything more than a few logic gates should have its own power supply.

MONITOR OUTPUT (XL, XE models only)

This provides the computer video output to a monitor. Note that TTL monitors will NOT work! The pin connections are shown in Figure 7.

The audio output is around 0.75V peak-peak which is a little too high for Hi-Fi 'AUX' inputs which want around 150mV p.p. We can step down the voltage using a potential divider - see Figure 8. Now you should be able to have Hi-Fi sound from your Atari! Check the input levels to your Hi-Fi first though, R1 may need to be larger if the input level is less than 150mV.



Figure 7 - Monitor Output (XL, XE only)

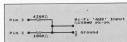


Figure 8 - Hi-Fi input from monitor output



Figure 9 - The Serial Port

THE SERIAL PORT

This is pretty difficult to use unless you intend using a computer at the other end to decode the signals and send the appropriate reply codes. As you can daisy chain a number of devices, each data message has a device address attached and the destination must acknowledge each frame from the computer. Personally I would not advise expanding via the serial port as it is too complex and not particularly fast. Also any driving software must handle the device by the standard I/O calls. For the interested, the pin connections are in Figure 9 and a good description of the operation can be found in the 400/800 reference manual available from Atari.

THE CARTRIDGE PORT

Although predominantly used for ROM cartridges, the cartridge port is an extremely useful expansion port giving us a 16K block of memory for registers and I/O. The pin assignment is shown in Figure 10 and includes:

- * Address lines A0 to A12 (8K coverage)
- * Data Bus (D0 to D7)
- * R/W - Read/Write
- * S0 - Right slot ROM select line. (B000 - BFFFF)
- * S1 - Left slot ROM select line. (A000 - BFFFF)
- * RD4 - Right ROM present (+5V if in)
- * RD1 - Left ROM present (+5V if in)
- * ST - System clock
- * CE/INT - ROM Bank Control select line driven by any R/W in B0000 to BFFFF. Used to select 1 of 2 ROMs in the area selected. (Supercartridges).

We can fit 12K of ROM into a cartridge and select between two banks of 6K in the available space (B0000 to BFFFF). The only difference with using the cartridge port is that you must use cassette or disk based languages as the cartridge expansion will occupy the cartridge area, hence the Assembler/Editor cartridge cannot be used! We can however write our programs before and connect them to Basic/DATA statements for loading by the default Basic.

To connect to this port you will need a 15 way double sided edge card of 0.1 inch spacing contacts to plug into the slot. This could then be connected to a card frame for further expansion. Alternatively for a chosen application with a small number of components a 'cartridge' could be made on a double-sided PCB.

To interface to the cartridge port we must, in most cases, make use of the right hand slot (i.e. B0000 to BFFFF) as the left hand slot (A0000 to BFFFF) is occupied by Basic. If we are using a purpose written machine code boot program, however, we could use either or both halves.

THE PARALLEL BUS INTERFACE (XL, XE only)

One of the greatest mysteries of the recent range of Atari computers is the rare expansion port. Hardly anyone seems to know how to use it, and there have been a small number of slightly confusing articles. Admittedly, manage to confuse the

use of the port. We shall now see history straight (I hope).

The port presents us with the full address bus of the computer A0 to A15, allowing observation of any memory location -- see Figure 10. The data bus is also present. Read/Write and the system clock are provided too. Where this port really starts to differ is in the extra useful lines ...

- CAS** - Column Address Strobe, output for RAM addressing.
- RAS** - Row Address Strobe, output for the same.
- AUDIO** - Audio input allowing you to have sound feeding through your T.V./monitor speaker.
- RESET** - Output, to reset any expansions on power-up etc.
- REFRESH** - Refresh timing output.
- MFD** - Math Pack Disable Input. Disables Floating point ROM (80800 to 8DFFF) for parallel bus interfaces.
- BIU** - Interrupt request input.
- READY** - Ready input. Used for slow memory devices.
- EXTDSH** - External decoder output for FBI devices. If you want to use the expansions for valuable devices such as disk drives then you need this.
- EXTSEL** - Input to disable internal RAM, to allow input. This is VERY useful ...

Note that there is **NO** way of disabling the operating system from the port. Some recent expansion units claim to be expandable to allow multiple Operating Systems via the rear port, however these will need internal modification of the host computer thus invalidating your guarantee.

There are two ways of using the parallel bus interface. Firstly, as Atari intended, it may be used as a device. This could then be handled by the standard calls such as LIST "P" etc. However this requires a ZK device handler ROM to overlay the floating point ROM. It might just be a little over the top if we want a simple I/O port and don't really want to spend time programming ZK ROM's and writing device handlers! Secondly, you can use it, as it probably will be used in nearly all cases, as a powerful expansion port.

1985 owners may well be getting worried by now. Where is the massive expansion port I am talking about? Apparently Atari were not too happy that very few products had been released to use the rear port on the 800/805XL, so they simplified it to a 'cartridge port expander'. Not one of the cleverest moves for, as in the cartridge port, you cannot use a cartridge and a rear port expansion! So the 1985L owners, the same rules apply as for the cartridge port.

COMING NEXT

That's the overview of the expansion possibilities. I hope that it has whetted your appetite. Next issue I'll be revealing the details of the 1985L cartridge port expander (the equivalent of the rear expansion port) as well as the 800/805L rear expansion bus (Atari's biggest secret). Also I'll be showing how to use the rear expansion port to connect to a multitude of projects.

WARNING! Unless you are absolutely sure you know what you are doing it is possible to damage your computer when attaching any expansion circuits. Neither the author nor PAGE 4 can accept any responsibility for any damage resulting from any previous understandings as the result of suggestions made in this series.

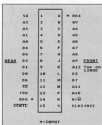


Figure 10 - The Cartridge Port

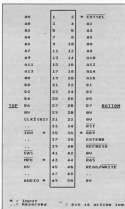


Figure 11 - The Rear Expansion Port (800, 805XL)

10-PRINT XLENT Software £14.95

For many years 1029 printer owners have been crying out for a useful utility to use with their 'neglected' peripheral. Support for it now comes from XLENT software, in what they describe as "THE ULTIMATE UTILITY FOR THE 1029 PRINTER". 10-Print comes as a double-sided disk, with several fonts and accessory programs and a small, but interesting, manual. The disk itself had a minor 'defect' in the fact that it only has DOS 2.0 and not the more commonly used DOS 2.5.

A NEW DEVICE HANDLER

On loading, 10-Print installs a device, Q, into the handler address table, and then loads the rest of the program into page 24 of memory. The big downfall of this is that when DOS is called, DUP.SYS automatically rewrites the Q handler and the only way of getting it back is to re-boot. As 10-Print appears to only occupy 1K of memory, I cannot understand why the author couldn't have bumped up BHEMLO a little, to accommodate both DOS and the Q handler. A solution to this fault can be obtained by using the CUSTOM.BAS program that is on the disk. This gives the user the chance to relocate the program anywhere in memory.

IN USE

To the user who just wants a hard copy of a program listing, 10-Print operates in exactly the same way as the LIST "P" command, except that you use Q instead. The normal printer output using this manner is 80 characters per line, but by using LIST "Q1" the printer line is 38 characters per line, as is a default GRAPHICS 0 screen. The devices Q2 and Q3 also exist, these modes print in the same way as Q1 and Q3 except that characters are 8 lines high, so as to reproduce characters as shown on screen, but these modes take two passes to complete each line and to take twice as long to complete the listing. The actual output to the printer deserves a good comment as 10-Print does not use the 1029's built in character set, but the one that the computer is using at the time of printing!

Programs using the Q handler can be easily written in BASIC, as the handler is compatible with all the usual OPEN, PRINT # and PUT # commands, and P can also be OPEN on a different channel, enabling the printer's standard line to be mixed with the characters set that the computer is currently using. This is a fantastic feature, that will allow you, by simple software control, to print in any style of font that is currently resident in memory.

Spacing and the number of characters per line can be altered by FORCING a memory location, CHRWID and NUMCHRS respectively, though Q2 and Q3 will always print 38 characters per line. This gives access to narrower characters and with a special font that fits into 4 columns per character, it will allow 120 characters per line. Although some readability is lost by doing this, it is ideal for applications such as printing a lot of text on labels or for database/spreadsheet output.

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084 THIS IS A TEST
085 THIS IS A TEST
086 THIS IS A TEST
087 THIS IS A TEST
088 THIS IS A TEST
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092 THIS IS A TEST
093 THIS IS A TEST
094 THIS IS A TEST
095 THIS IS A TEST
096 THIS IS A TEST
097 THIS IS A TEST
098 THIS IS A TEST
099 THIS IS A TEST
100 THIS IS A TEST

```

Reviewed by Phil Cardwell

APPLICATIONS

10-Print appears to be a stand alone utility for the 1029, in the way of providing better quality listings, but as it is an AUTOMATIC SYS file, there can't be used with a word processor that also auto-logs! After a short consultation with the manual, I discovered that if a word processor file is printed to disk, as it would appear on paper with indentations, margins etc., there is a program called FILIPRINT on the disk which allows WP files to be printed. The program does not work properly as it is and requires some 'creative' programming, which the vast majority of users should get round with ease. Once it has been set to the users requirements, FILIPRINT will automatically select different fonts to be printed within the document currently being processed, providing that you have embedded 3 special font selection codes within your text.

Another program on the disk, TYPESET, gives limited compatibility with TYPESETTER files. Limited because it only alters part of a TYPESETTER file to be printed. Advanced programmers should be able to come up with a routine to print the whole file.

By studying the BASIC programs included on the disk, practically anyone can be capable of writing a routine to suit their problem. People who follow this advice will notice that the GRAPHICS 0 screen dump and TYPESET programs, don't even need the Q handler to be resident in memory!

CONCLUSIONS

10-Print, despite the occasional minor 'bug', is a very flexible and powerful utility, which many 1029 owners should have installed before any programming session. It's main value lies in it's capabilities to produce listings that contain control, graphic and inverse characters, but it is extremely useful for enhancing the appearance of any text based output.

It may not be the 'ultimate 1029 utility' but it is possibly the only one that can control for the side and is well worth considering, if you want to improve the appearance of different levels of textual output on your 1029.

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BUBBLE BUBBLE

There are many occasions when it would be useful to be able to sort data into either numerical or alphabetical order. Some examples are Telephone Directories, Book Record lists, software lists etc. Many such files are held on disk and these are of particular interest as they can be easily manipulated. This article will deal with sorting a file into either alphabetical or reverse alphabetical order.

There are two main ways of performing sorts of this kind on disk files (which are usually text files). One is to do operations on the file itself, reading it in a couple of lines at a time say, performing an operation, writing the results to another file, and repeating the procedure over and over but this involves a lot of disk operations. One alternative would be to use a RAMDISK, where the text files could be stored. This increases the speed considerably and, obviously, eliminates disk operation but, despite this, the method is cumbersome and clumsy involving multiple opening and closing of files and only allowing sequential indexing of data.

SORT IN MEMORY FOR SPEED

The method I will use involves copying the source file into memory, in this case into an array, and sorting the data in the array. Finally, the resultant sorted array can be saved to an object file.

Before going on I had better explain some terms before I lose anyone. The source file is the original unsorted file which you wish to sort and the object file will be the file AFTER it has been sorted. A text file is a file which consists of characters usually produced by a word processor or text editor etc. and which can be loaded using either the INPUT or GET commands, depending on the format.

The source file need not be a word-processor file. If you are, for example, writing a software list program, you may save your file directly to disk using either PUT or PRINT. These files can just as easily be sorted using the methods I describe below.

SORTING WORD PROCESSED TEXT

Firstly, we must read the file into the array. The program required is shown in Listing 1. Line 18 dimensions the array FILES to hold 10000 characters. This may not be enough or it may be too much for your needs or allow it as you like. 10000 is, however, a good round number to be getting on with. The source text file may have been saved with either PRINT or PUT. The program deals with this, and reads the data into the string FILES. This may take a while. The program is fairly unique in that it can sort just part of a text file so that lines forming part of a document can be sorted. This facility is often missing from many commercial word processors.

It is important that you mark the beginning and end of the data that you wish to be sorted. Mark the beginning with a 'T'

Gordon Cameron presents a tutorial on bubble sorting with a unique program that allows you to sort lists within word processing files

symbol followed by RETURN on a separate line. Mark the end of the data with the 'up arrow' symbol, again on a line by itself. The data in between these two markers will be the data that is manipulated and sorted. Anything before is stored as GARET% and anything after GAREND%. This facility is provided as many word processors (eg. Superscript, Mini Office II) add their own control characters to the beginning and/or end of your actual text. Using this method we retain these special codes but they are obviously not to be sorted. They are retained to the object file at the end of the session, so that the object file will load back in to the word processor.

This feature is very valuable as it means you can use a word processor to enter data, the program here to sort the data, and the word processor thereafter to inspect and adjust again if necessary. The above feature is also useful if you only want to use PART of a file. Simply position the markers round the part you want sorted, and the program will handle the rest. Again, you can alter the sizes of GARET% and GAREND% at will.

The text to be sorted is stored sequentially in the array, with each screen line of the file occupying 80 spaces in the array. Note this limitation which means that data longer than 40 characters cannot be sorted by this program. Once we have the data from the file in memory we can access any line at will but how do we sort this data?

DIFFERENT TYPES OF SORT

There are several sorting algorithms but the most common are the Bubble sort, Shell sort and the Quick sort. For this article I will look at the easiest of the three, the Bubble sort.

The best way to explain the sort is by way of a simple example. Only 6 'lines' of data will be used but the method can obviously be extended to much larger files. Listing 2 will sort your data. This program should be used in conjunction with the loader given in Listing 1.

The data in our example is a list of software sites as follows

- Line 1 - Kennedy Approach
- Line 2 - Power
- Line 3 - Star Builders
- Line 4 - Phoenix
- Line 5 - Shannon Games
- Line 6 - Devolution

```

01 1000 000 000 *****
02 1000 000 0 *****
03 1000 000 0 *****
04 1000 000 0 *****
05 1000 000 0 *****
06 1000 000 0 *****
07 1000 000 0 *****
08 1000 000 0 *****
09 1000 000 0 *****
10 1000 000 0 *****
11 1000 000 0 *****
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13 1000 000 0 *****
14 1000 000 0 *****
15 1000 000 0 *****
16 1000 000 0 *****
17 1000 000 0 *****
18 1000 000 0 *****
19 1000 000 0 *****
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89 1000 000 0 *****
90 1000 000 0 *****
91 1000 000 0 *****
92 1000 000 0 *****
93 1000 000 0 *****
94 1000 000 0 *****
95 1000 000 0 *****
96 1000 000 0 *****
97 1000 000 0 *****
98 1000 000 0 *****
99 1000 000 0 *****

```

The bubble sort works through the list checking if the first line of data is greater than (in this case, "higher up" in the alphabet) the next line. If it is, it swaps them otherwise it goes on to the next item. If a reverse alphabetical sort is required then we simply check if the first item is LESS than the second and again swap them if so.

This wrapping continues down the "list" of lines and when the end is reached the last line will be correct (i.e. the last line will contain the "greatest" or highest in the alphabet text sequence). The procedure is then repeated with each line being checked outwards the last line as it is correct. This is repeated continually until all the values are correctly placed. Note that the first line is contained in FILE(1), the second in FILE(2), the third in FILE(3), 1,200 and so on in each line in the list must consist of a maximum of 40 characters only.

The Asat can work out with its built-in functions whether, for example, "Phantom" > "Summer Games" or not, so you don't have to bother with this. Your Asat does this part for you. Using the above algorithm the data transforms in the following way:

Pass 1.1

Is Kennedy Approach (line 1) > Penn (line 2)?
No, so don't swap

Continued overleaf

```

01 1 000 *****
02 2 000 *****
03 3 000 *****
04 4 000 *****
05 5 000 *****
06 6 000 *****
07 7 000 *****
08 8 000 *****
09 9 000 *****
10 10 000 *****
11 11 000 *****
12 12 000 *****
13 13 000 *****
14 14 000 *****
15 15 000 *****
16 16 000 *****
17 17 000 *****
18 18 000 *****
19 19 000 *****
20 20 000 *****
21 21 000 *****
22 22 000 *****
23 23 000 *****
24 24 000 *****
25 25 000 *****
26 26 000 *****
27 27 000 *****
28 28 000 *****
29 29 000 *****
30 30 000 *****
31 31 000 *****
32 32 000 *****
33 33 000 *****
34 34 000 *****
35 35 000 *****
36 36 000 *****
37 37 000 *****
38 38 000 *****
39 39 000 *****
40 40 000 *****
41 41 000 *****
42 42 000 *****
43 43 000 *****
44 44 000 *****
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48 48 000 *****
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67 67 000 *****
68 68 000 *****
69 69 000 *****
70 70 000 *****
71 71 000 *****
72 72 000 *****
73 73 000 *****
74 74 000 *****
75 75 000 *****
76 76 000 *****
77 77 000 *****
78 78 000 *****
79 79 000 *****
80 80 000 *****
81 81 000 *****
82 82 000 *****
83 83 000 *****
84 84 000 *****
85 85 000 *****
86 86 000 *****
87 87 000 *****
88 88 000 *****
89 89 000 *****
90 90 000 *****
91 91 000 *****
92 92 000 *****
93 93 000 *****
94 94 000 *****
95 95 000 *****
96 96 000 *****
97 97 000 *****
98 98 000 *****
99 99 000 *****

```

Pass 1, 2

In Passes (line 2) = Star Raiders (line 3)
No, so continue

Pass 1, 3

In Star Raiders (line 3) > Phantom (line 4)
YES! So swap. Phantom which was line 4 now becomes line 3
and Star Raiders becomes line 4

This continues with Star Raiders being compared with Summer Games - no swap occurs. Summer Games is greater than Devathion so a swap occurs and the list after the first pass is as follows:

BEFORE		AFTER
Line 1	Kennedy Approach	Line 1
Line 2	Phantom	Line 2
Line 3	Star Raiders	Line 3
Line 4	Devathion	Line 4
Line 5	Summer Games	Line 5

Note that Summer Games has taken its proper position at the bottom of the list, as it is the "highest in the alphabet" so in the next pass, we don't need to check this line with the previous one as we KNOW that it is correct. Whereas before we had to make 5 comparisons (1 with 2, 2 with 3, 3 with 4, 4 with 5 and 5 with 6), next time we need only make 4 comparisons as we don't need to compare with the last line.

In the next pass, only one swap occurs, that of Devathion with Star Raiders. In pass 3 there is again only one swap - Devathion with Phantom and in pass 4 only one swap again - Devathion with Phantom. In pass 5, Devathion is swapped with Kennedy Approach and this yields the final sorted sequence:

AT START		END
Line 5	Devathion	Line 1
Line 1	Kennedy Approach	Line 2
Line 2	Phantom	Line 3
Line 4	Star Raiders	Line 4
Line 5	Summer Games	Line 5

And that's the bubble sort for you!

SIMPLE BUT EFFECTIVE

The Bubble sort is very simple, but it can be very effective, however there are drawbacks. Notice that, although Summer Games reached its location almost at once, Devathion took 5 swaps and all 5 Passes and therefore reached its destination very slowly. This demonstrates a possible disadvantage of the Bubble Sort - although only one item can out of place, it took many swaps to get it to its destination. Imagine the list being hundreds of lines long with, say, 'AAA' right at the bottom and all other lines in sorted order. What a waste! If there were 500 lines, it would take 499 passes and swaps just to get this line to its correct position!

Although an extreme example, this demonstrates the shortcomings of the bubble sort algorithm but there are alternatives. In a later article I will show you the Shell sort. Bye for now!

EASY PLAYER MISSILE GRAPHICS

This issue we have a listing showing how easy it is to move Player Missiles using the Turbo Basic commands MOVE and MOVE. Just type in the listing using TURBO BASIC and RUN it. When you lose a heap, type in any message up to 26 characters long.

The program uses fairly standard Player Missile Graphics which have been explained in several other articles so I will only run through the commands used which are unique to TURBO BASIC.

Line 100: This line places zeroes in the player missile area. I used 20000 by trial and error to find an area of 2K which was not being used and therefore full of zeroes.

Lines 200-210: This moves the character data from the character set in ROM to the player 0 area. The data at the end of the program is in ATASCII character codes, you have to subtract 32 from this because the first character stored in the set is SPACE (ATASCII 32).

Line 240: Moves player 0 down.

Line 250: This takes the bottom byte and moves it to the top, which allows the player to scroll around the screen.

Lines 340-350: This uses REPEAT-UNTIL loops to move player 1 from left to right.

Lines 440-450: I have used WHILE-WEND loops to show the difference to REPEAT-UNTIL. In this case either can be used, but normally one of these would suit the job better.

Lines 520-530: Get the characters typed in and place them in player 3. I have used an IF-ELSE-ENDIF to show how this can be used.

PROC MOVE: This is an endless loop with all the movements for all four players together. These are the only lines you need to actually move the players depending on which direction you want to go.

I hope this listing will give you the courage to use Player Missiles in your Turbo BASIC programs, without having to worry about machine code.

by Roy Goring

TURBO BASIC

```
00 1 0000 *****
00 2 0000 0
00 3 0000 0 PLAYED-RECORDS 0000 0
00 4 0000 0
00 5 0000 0
00 6 0000 0
00 7 0000 0
00 8 0000 0
00 9 0000 *****
00 10 0000 *****
00 11 0000 *****
00 12 0000 *****
00 13 0000 *****
00 14 0000 *****
00 15 0000 *****
00 16 0000 *****
00 17 0000 *****
00 18 0000 *****
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00 95 0000 *****
00 96 0000 *****
00 97 0000 *****
00 98 0000 *****
00 99 0000 *****
00 100 0000 *****
```

CAN YOU WRITE TURBO PROGRAMS?

Don't forget we will pay \$20 for an example of Turbo programming. The listing must be short enough to fit on one page and must use the features that are unique to Turbo Basic. You will have more success in getting your listing accepted if you choose an area of programming which has not already been covered. Send your contributions on disk to the Editorial address on page 5.

WHAT IS TURBO BASIC?

Turbo Basic is a powerful BASIC language for the Atari originally published in the German magazine Happy Computing who retain the copyright but have released the program to the public domain. It adds over 60 new commands to Atari Basic, runs three to five times as fast, yet is totally compatible with existing Atari Basic programs. It comes with a compiler that will compile any Atari Basic or Turbo Basic program to run at machine language speed.

You should be able to get a copy from any source of Public Domain software such as your local user group or the PAGE & Accessory Shop.

THE SOFTWARE REVIEWS



Exotic - not so good



Adventure



watch out for loot



Nights on Earth



Darkish happening



Shame! Start-up with MiraxForce



ENJOY YOUR NIGHTMARES

NIGHTMARES

Microseries abound in this latest release from Red Rat. Originally billed along with "Lairis Devil", NIGHTMARES has reportedly since been withdrawn from the main off-shoot party's list of "unavailable" software - perhaps their conscience was keeping them awake at night?

It's a shoot 'em up by nature, but just for a change there aren't any space-age zap-mobles, Photon missiles or Alien Motherhips to worry about. This time you assume the role of a brave Ferris (not a typo) and as you might have guessed, the line of evil-kind lies entirely in your skilful hands. Someone has taken a lot of care and effort to write a fantastic plot, which doesn't add a great deal to the game but makes for some excellent reading while you're waiting for it to load in!

It seems that evil society needs protecting from the encroaching darkness that threatens to engulf the land. How unfortunate that the Ferris King - Lord

Mastered - is away on business and unable to drive the evil forces back to hell and hence rekindle the magical radiator that keeps the Ferris perpetually young and happy! Only you can save the day by collecting radiant insects called Airfins and destroying the frightening army of hideous Demons, European spinning 'Gnomes', Rumbling 'Wormholes' and the ugly 'Monoids'. No piece of cake! Although armed with a magic horn and arrow plus an intermittent supply of Lightning bolts, the monsters are continually in pursuit with only one intent - to sap your precious storage reserves! They inevitably succeed too! If you manage to collect the specified quota of Airfins, rescue all of the stray Ferris and eliminate a sufficient number of nasties, you must then search for an exit door taking you through to the next in the series of fifteen action-packed levels.

As for visual effects, you will be hard put to find a better variety of monsters than in NIGHTMARES, they really are

a terrific bunch of nasties! You won't have to search the screen for a minuscule blob like in so many other arcade games - this lot are VERY conspicuous filling up as much as half of the available screen height! The attention to detail is superb, and each level features its own fantastically swirling background scenery. Music and sound effects are very good too, providing the decisive leads to an outstanding overall impression. One word of warning: NIGHTMARES becomes very challenging, especially on the higher levels, so if you haven't got an auto-fire joystick I would suggest that you acquire one before hand!

Games of the shoot 'em up genre can be boring at the best of times if not counteracted in a competent manner, but Red Rat have found the magic formula to produce an entertaining package of the highest quality. Be sure to show your appreciation!

Paul Dixon

Published by Red Rat, £7.95 on cassette - £9.95 on disk - 1 player with joystick

MAY THE FORCE BE WITH YOU

MIRAX FORCE

Tynesoft describe MIRAX FORCE as 'The Ultimate Shoot 'em up', and while it is basically an another addition to the long list of 'Lairis' style scrolling space-rap games, this one certainly looks like giving the competition a fair run for their money.

There's not anything very original about the plot, it's just another story of flying your space craft - the Queen's over the Alien Motherhips. You'll be sure much of it sounds familiar. The game is presented in a 3D style. As soon as you begins to play, allowing you access to the following level of play. Now the bulk of scenes, where the Alien ships, the forest black, and the... (The text is partially obscured by a blue stamp that says "Editor's Choice").) half your mission... (The text is partially obscured by a blue stamp that says "Editor's Choice").) can be very difficult to manage. Assuming this is not the only problem - indestructible planets, buildings and shadowed objects protruding from the surface of the Mothership must also be negotiated. Once again, an auto-fire joystick is highly recommended!

An initial glimpse of the awe strike page acts as a brief graphical taste of what is to follow. The display scrolls horizontally over several screens, smoothly and in the direction of your choice at fast or slow speed as desired. Some amazingly intricate designs form a bird's-eye view of the Mothership, and colours are chosen as best as each time you play. Occasionally the screen shifts slightly but it's a small price to pay for the interesting effect created most of the time. All in all the game is a great example of the Aard's graphical capabilities. Congratulations Tynesoft, you've exceeded them at last!

Sound effects are pretty standard, but an added bonus is digitised speech created with the assistance of 3-bit Synthesizer Keyfax package. This will hopefully tell the myth that quality electronic speech is sacred to the IT fraternity! An extremely clear voice announces 'The battle begins', 'Mirax Force' and 'Game over'. It possibly says other things as well, but unfortunately I didn't get far enough into

the game to find out! MIRAX FORCE suffers from the same drawback as other space-rap games - it's not as all easy to progress very far without a great deal of practice. This does mean however, that the game would seem to offer limited appeal, and at least the possibility of some extra speech should hopefully provide an added incentive to persistence!

My only gripe concerns the brief instructions printed inside the box - not only are they riddled with misspellings and incorrect grammar, the loading instructions are wrong too! Still, on the whole this is a fine class effort from Tynesoft, who seem to have topped their previously standards considerably in recent months. It won't be everyone's cup of tea, but if you're looking for a challenging and fast-paced scrolling space-rapper, you need look no further than MIRAX FORCE.

Paul Dixon

Published by Tynesoft, £7.95 on cassette - £9.95 on disk - 1 player with joystick

YOU LITTLE DEVIL!

LITTLE DEVIL

You may recall that **LITTLE DEVIL** was one of two Red Rat titles grabbing the headlines last issue following the absurd decision by a certain British distributor, along with others, not to stock it, supposedly to prevent gullible Americans being harmed by its alleged adult content (PS). If just crates in the publishing field are anything to judge by, this should (hopefully) ensure Red Rat of a best-seller, as Joe Public spurs on uncertainty to experience what he is supposed not to see. This isn't by a particularly difficult task, as Red Rat can supply the game directly.

What's all the commotion about then? Well, sure it disappoints you folks but **LITTLE DEVIL** is about as worthy of an 'X' rating as an episode of 'Rainbow'. Don't let this put you off though. The game is in fact an excellent implementation of the platform variety, the objective being to collect items from each screen so as to progress onto further

levels where the adversaries have multiplied. These items just happen to be lost souls floating in a limbo existence in the bowels of Hades. It's up to you, as the Little Devil himself, to free the souls and then advance onto further levels, taking you nearer and nearer to Castle Despair where King Mardraak's imprisoned daughter - Princess Linara - anxiously awaits her gallant rescuer!

There would appear to be only four different screens in the game, but this shortcoming is more than compensated for by the impressive design-work, lending the facility to each one, and the fact that controlling the Little Devil's jumps around each screen in the time limit allowed (twenty-five seconds) is certainly not a feat to be taken lightly! It starts off fairly easy but after level one, extra static obstacles are added increasing the challenge immensely. Running out of time or breaking with a guardian ghoulster causes the Devil to forfeit a life (a

Hades!), so to make your quest a little less impossible, a number of life-prolonging facilities are available. For instance, the time limit can be reset several times, and 'Arkanoid' style floating symbols can be captured to provide extra bonus points and reset the timer for short periods. Additional lives and lives are automatically obtained upon completion of certain stages of the game.

I haven't mentioned the sound - this should be enough to tell you that it isn't exactly one of Red Rat's finest efforts in this respect, the music being a somewhat unconvincing rendition of Scott Joplin's 'Elie Symphonique' - but overall **LITTLE DEVIL** can definitely claim to be another fine and much welcome addition to the range, one that will keep platform enthusiasts coming back for more to try and improve their standings in the highscore table, thus ensuring a super value for money purchase.

Paul Dixon

Published by Red Rat, £7.95 on cassette - (9.95 on disk - 1 player with joystick)

DRIVING YOU CRAZY!

TALLADEGA

If you were to have read all of the instructions accompanying this latest offering in MIL's 'Top Ten' series, you'd be forgiven for thinking that it could possibly be the ultimate 3-D race game. In fact, it is a Commodore dating back to 1984 and I'm afraid it's probably the very worst race game currently available!

Graphically, **TALLADEGA** bears more than a passing resemblance to 'Pole Position', although on closer inspection it is inferior in design, colouring and animation. For example, the grass is grey!, your car always remains static - even when cornering - and the greatest movement of vehicles can be somewhat unpredictable. Sound is fairly mediocre, consisting of rums, beeps and an unimpressive theme tune, but on the whole the effect is reasonably acceptable and if it were not for the constraints to follow, I wouldn't hesitate to recommend the game.

You have a choice of racing on the 'Tri-Oval' or a random circuit, although the random one seems to be virtually identical every time (Bug #1). There's

only the qualifying lap, which you are supposedly aiming to complete in as little time as possible in order to gain a favourable position on the starting grid. However, if you do go as fast as possible the race will suddenly terminate at a certain stage with the erroneous message 'Lap time exceeds 100.0 seconds' (Bug #2). Going slowly is the only safe way to ensure an interrupted completion! Regardless of what place you eventually manage to obtain on the grid, the race proper then commences with you in third slot, Richard Petty in second and someone called '1 M. Post' in Pole position (Bug #3). Richard Petty immediately overtakes 1 M. Post and stays in first or second place for the remainder of the race.

Opposing cars don't always appear from the horizon or behind - sometimes they simply materialise out of thin air, often just a short distance in front, causing an accident and again, termination of the race (Bug #4). The top speed is 250mph, although 280mph can be achieved with Turbo-boost, and other

'unavailable' speeds between these two have frequently been experienced! (Bug #5). It is also possible to disappear so as to conserve fuel - one of **TALLADEGA**'s more commendable features. Fuel levels and tyre wear are indicated above the main play area, so that you may judge when a pit stop is necessary. Here's a novelty - when you enter the pits, all of the other cars stop dead in their tracks and time stands still! (Bug #6).

Also symbolised are various status flags, and the name of the driver immediately ahead of you. Since it's impossible to drop any further back than second position - even when stationary - this never displays anything other than Richard Petty or 'Player is in 1st place!' (Bug #7).

There are just a selection of the many problems plaguing **TALLADEGA**. Without doubt it's the most bug-ridden commercial game I've been unfortunate enough to experience for a long time.

Paul Dixon

Published by Maynard International Ltd, £1.99 on cassette - 1 player with joystick

A NOVEL WAY TO GET A BUZZ!

AMAUROTE

Amurote is another game from the same Mastertronic label that brought Atari users 'The Last War' and 'Spillboard', so my expectations were understandably high.

The cassette story unfolds on about how you, as an officer in the Royal Army of Amurote, have the task of clearing all 25 districts of the city. The city has become infested by killer insects, and the population has taken flight. The army, after a bloody struggle, was forced to withdraw, and so it is up to you, as the last remaining unpaired officer, to take on the concrete single-handed.

Once the program has eventually loaded, you are greeted by the credits, which are displayed on the view-screen of your Archon-4 armoured car.

Accompanied by a stirring piece of music. The top 80%, or so of the TV is taken up by the view-screen, with the keyboard taken up by the control panel/keyboard of your instruments. This is very detailed, and quite difficult to make out at first. It consists of numerical readouts detailing your cash left, %, damage to district. No. of bombs remaining, %, damage to the city as a whole, and damage to your craft. There are two additional instruments.

The Scauses, which allow you to 'zoom in' on the different insects and bombs, and the Saphorbomb indicator, which flashes when you are carrying the Saphorbomb (famously enough).

You start the game proper by selecting which of the 25 districts of the city you wish to visit first. The objective is to clear each of these sectors of all the insects, so it makes little difference which you start with. There are different types of insect - Scorp fly around the city on the look out for food and intruders (i.e. you), and then report your position back to the Queen. Bees are the most common and plentiful, and are sent out by the Queen to nab you. Once close to you, they are hard to shake off.

Your craft is armed initially with 30 bouncing bombs which are effective against these insects. Conventional bombs don't work against the Queen herself so you have to make an order for a Saphorbomb. Pressing the Option key automatically freezes the game and displays a menu of options. You have the choice of entering a Saphorbomb, replenishing your stock of ordinary

bombs, repairing the Archon-4 or being transported to a different position. All of these use up your cash. You start with £5 million which may seem like a lot, but I can assure you it is depleted very rapidly!

After selecting the sector, you are greeted by a 3-D view of the area, with your Archon-4 sitting in the middle. Your viewpoint is above, and at a 45 degree angle to the action. The surroundings are detailed and have a very futuristic feel to them, with strange geometrical shapes abounding. Nudging your joystick moves your craft in the appropriate direction. Not only does it resemble a spider in looks, it also moves like one on its, albeit 41, plastic-egg legs. In the background, atmospheric chamber music plays. The animation is quite impressive and the view reminiscent of the Knight Lore. After 5 games of play, the screen doesn't scroll, but tips when you near the edge.

Scorp or later, you are likely to come across one of the insects, probably a Drone. These get towards you, and once spotted, you have a ball of a time trying to lose them, so you decide to let by or shoot with one of your incredible bouncing bombs. You push the joystick towards the right and press the fire button, only to see the bomb sag and come the top of the insect and off the screen! You then have to aim until the bomb hits something (a building usually) before you can fire again. By that time, the insect has probably caught up with you, and is tightly trailing your charge. This is one of the major games I have. It is incredibly difficult to hit the thing you are aiming for, as the bomb takes so age moving, by which time the target has moved miles from the spot you were aiming for!

After playing for a while you can develop a technique to track down Drones using the Scauses, but it is by no means easy, usually requiring firing from one screen, blind, onto another. After a time, you will no doubt be ready to take on the Queen herself. First you must order a Saphorbomb, which is dropped at a random location. (By the way, the incidental music which accompanies the radio screen and the zone select screen is excellent). After locating and collecting this, you are ready to find and destroy the Queen. Note that the Saphorbomb is primed and armed when picked up, which

means that you cannot use the normal bouncing bombs on scorp, or beaver. Arrows on the screen lead you to the Queen, which you must hit with your bomb. This may be tricky, as by this time she is probably onto your plan and has arranged a 'welcome party' of drones. It's a good idea to clear these before even picking up the Saphorbomb. Assuming you manage to destroy the Queen, wiping out the remaining insects in the sector is relatively easy, as they are no longer under her command and thus... all that remains is to do the same in all the other 24 districts... and you've already used 1 million - but, well!

Despite my criticisms, I enjoyed this game. The graphics are excellent, as is the animation, although it does slow down slightly with a few drones on screen. The presentation is superb, from the professional 'look' to the many extra touches, such as the Radio and the Zone selection screen, to the atmospheric music which accompanies the title & Radio screens etc.

The music during the game is good, but a bit repetitive. I found the movement a bit sluggish and quiet, making manoeuvres difficult at the best of times. The thing, as I've mentioned, is another one point. It's too difficult to hit when you want to hit, as you have to be on exactly the same line, and the right charge away - when you fire. Having said that, with practice, it is possible to fool the drone and escape them. The Repair and Rescue options are also very useful (and well used). The game does play slowly, but then again, it is heavily a strategy game with good graphics. It will take patience and a good deal of skill and time to complete, trying to keep city and district damage low, whilst keeping an eye on available funds!

Despite my reservations, I kept on coming back for more (a glutton for punishment), which indicates good playability, perhaps the most important factor. In summary, great graphics, good sound, excellent music and presentation. A very professional product on the whole and well worth the £2.99 price tag it carries. At this price, it's a steal and I wholeheartedly recommend it. Keep up the good work, Mastertronic!

Gordon Cameron

Mark Hutchinson's



NUMBERS

This issue I thought I might explain some mathematical manipulations that have been used in previous columns. It is all very simple so you will not need to look in at your local college for an "O" level maths course!

If you did not already know, the computer contains a section of memory that you can either read or write to called random access memory (RAM) and memory that cannot be written to, called read only memory (ROM).

STORING NUMBERS IN MEMORY

RAM can be pictured as a series of little boxes, or registers, each containing a number from 0 to 255. Each number gives the computer a piece of information. As you may know from past articles, memory is made up of millions of little switches (bits) in blocks of eight (this is why your machine is termed 8-bit). Each switch has two conditions, either on or off. Mathematically, any combination of eight bits with two states means two to the power of eight = 256 (8 to 256).

Supposing we want to store numbers greater than 255? For this we must use two memory locations. One is termed the low byte and stores the numbers 0 to 255, equivalent to the units (0 to 9) in decimal. The second is the high byte and stores the multiples of 256's, equivalent to the tens in decimal. What if we want to store 256? This can be stored just in the low byte, as can any number from 0 to 255 but if we had 256 we would store it as 1 in the high byte and clear the low byte to zero.

As an example, I will put a number in random = 97944. This needs to be split into multiples of 256 so first I find the high byte by dividing this number by 256. The result is 234. Any remainder will be less than 256 and will be stored in the low byte. To find the remainder I multiply 234 by 256 and subtract it from 97944. In this case the remainder is zero. If you want to include this in your own programs then it will be as follows.

```
10 NUMBER = 97944
20 HIGHBYTE = NUMBER / 256
30 LOWBYTE = NUMBER - 256 * HIGHBYTE
```

I should point out here that mathematical equations are worked out in a certain order irrespective of how they appear in

FIRST STEPS

a program line. In order of priority they are:

Brackets
of, e.g. a third of six
division
multiplication
addition
subtraction

In line 30, therefore, the HIGHBYTE is multiplied by 256 before it is subtracted from NUMBER.

WHY STORE NUMBERS?

Why do we need to use all this at all? Well, within the RAM are certain locations called POINTERS. A pointer is a signpost. It contains a number which will point to another location in memory. So what is the point of that I hear you yell? Well, let's have an example. Location 796 is just such a pointer. It holds a number that, when multiplied by 256 will send the computer to a location where all the characters are stored. By sheer coincidence, this number just happens to be 234. Now, suppose we stored number character set at 57956. By changing the number stored in location 796 we can send the computer to 57956 for a different character set. This number is, of course, 57956/256 (226 exactly).

Now for your homework and a bit of magic. Set up your computer in a GRAPHICS I screen and print something out it using PRINT #0;"TEXT" (or ##;"TEXT" for short). As usual, you will see that the characters are in upper case, to clear the screen, Print POKE 178,236 and press RETURN. Now try printing to the screen and see what happens.

OTHER EXAMPLES

Another often used example is to lower the top of RAM to protect memory. Location 106 holds a number which relates to the amount of RAM available. This number must be multiplied by 256. Each unit is called a "PAGE" of memory and four pages = 1K of RAM (4 times 256 = 1024 = 1K).

Let us pretend that we wish to protect 4K of memory (the protected size must be in multiples of 256). First we must find out how many pages are available by PEEKing location 106, then subtract 35 (the number of 256's in 4K) from this total and FORKING the new number into the location, i.e.

```
10 PAGE = PEEK(106)
20 NEWPAGE = PAGE - 35
30 POKE 106,NEWPAGE
```

An easier way to do this is by

```
10 POKE 106, PEEK(106) - 35
```

Make sure that you reset the RAM chip before a graphics roll; this will ensure that the new details for the display list are properly stored.

USING OFFSETS

In a previous article, I explained about the KICK and gave some details about offsets. Rather than POKE to several different locations, having to remember each one, why not take one as a base and POKE to the base plus an offset. For example, we know that the character set starts at \$7344. To change the full character set by POKEing each individual location would take 1024 lines of POKE LOCATION, DATA. The easiest way would be to take \$7344 as a base and add one each time then POKE in the DATA. This is called incrementing. To do this properly, the offset or increment would have to start off as zero, not 1, otherwise the first POKE would be at \$7345. We could change the base to \$7343 and start the offset at 1, but when you looked up this location each time it would not make immediate sense (it is a floating point logarithm routine!).

Unfortunately, the character set is in ROM and we cannot change it. We can store a new character set in RAM though. It only needs the pointer to be changed to indicate this new location and your characters automatically change. Listing 1 is a small routine to do just that.

Some points to note. I used a location suitable for this demo. I used a flag of 1 to make sure the program finished without an error. This is not strictly necessary but it does save the annoyance of inputting too much data. Also, lines 100 and 110 could be combined as line 100 (the computer automatically keeps track of the data to be read), but I did this for clarity. Notice how the space character has been changed. Even if you cannot see the characters, type POKE \$76,224 and press RETURN to get the old set back. Try new DATA and run it again.

That is all for this time. Since I have given you some hints on graphics modes and how to store them, why not read the next thrilling installment and find out how to draw some pictures?

Don't forget that you can write with any problems. Include a S.A.S. if you want a reply. Write to Mark Hutchinson, 1 Hollymount, Etrivie, Finagly, Belfast, BT18 9GL.

Listing 1

```

00 00000000 Set BASE at a new position.
01 00 00000000
02 10 00000000
03 20 00000000
04 30 00000000
05 40 00000000
06 50 00000000
07 60 00000000
08 70 00000000
09 80 00000000
10 90 00000000
11 00 00000000
12 10 00000000
13 20 00000000
14 30 00000000
15 40 00000000
16 50 00000000
17 60 00000000
18 70 00000000
19 80 00000000
20 90 00000000
21 00 00000000
22 10 00000000
23 20 00000000
24 30 00000000
25 40 00000000
26 50 00000000
27 60 00000000
28 70 00000000
29 80 00000000
30 90 00000000
31 00 00000000
32 10 00000000
33 20 00000000
34 30 00000000
35 40 00000000
36 50 00000000
37 60 00000000
38 70 00000000
39 80 00000000
40 90 00000000
41 00 00000000
42 10 00000000
43 20 00000000
44 30 00000000
45 40 00000000
46 50 00000000
47 60 00000000
48 70 00000000
49 80 00000000
50 90 00000000
51 00 00000000
52 10 00000000
53 20 00000000
54 30 00000000
55 40 00000000
56 50 00000000
57 60 00000000
58 70 00000000
59 80 00000000
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65 40 00000000
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67 60 00000000
68 70 00000000
69 80 00000000
70 90 00000000
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105 40 00000000
106 50 00000000
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108 70 00000000
109 80 00000000
110 90 00000000
111 00 00000000
112 10 00000000
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114 30 00000000
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178 70 00000000
179 80 00000000
180 90 00000000
181 00 00000000
182 10 00000000
183 20 00000000
184 30 00000000
185 40 00000000
186 50 00000000
187 60 00000000
188 70 00000000
189 80 00000000
190 90 00000000
191 00 00000000
192 10 00000000
193 20 00000000
194 30 00000000
195 40 00000000
196 50 00000000
197 60 00000000
198 70 00000000
199 80 00000000
200 90 00000000

```

UPDATE

MIDBASE (ISSUE 30) Reader Peter Boulter tells us he has discovered a small bug when the drive is set to 0 or 2 and option 7 is chosen from the menu. The program goes into an endless loop between lines 18970 and 18978. The fix was to replace GOTO 18970 in line 18970 with GOTO 18978.

RETURNING C FOR CASSETTE (ISSUE 11) Unfortunately line 1140 was missing from the listing which can only be accounted for by Phil's typing abilities! The missing line is:

```
QQ 1000 DATA 1,21,8,2,181,1,21,10,6,0,7,0
```

ROMSLUTRAP (ISSUE 14) The program will not run on 400-800 models as listing due to a bug in the OS on these computers. The last time this obscure bug caught up with us was in 'TRAILBLAZERS' in issue 35. 400-800 owners must change line 60 to:

```
EQ 60 POKE 106,PEEK(106)-10:CS=PEEK(106)+2:CSBASE=CS*256:GOSUB 1300
```

FONT FACTORY (ISSUE 31) Correct errors must make the following changes to be able to load and save properly. Delete lines 2750, 2940, 2950, 2960, 2970, 2980 and amend line 4610 as follows:

```
RD 4610 IF P&R(1)= "C" THEN DVS="C":POKE 752,PLS-P&R:PFS-P&R:RETURN
```

MORE PROGRAMS WANTED

Don't be shy! Some of you have written some very good programs which are just sitting at home doing nothing. Dig them out and send them in a PAGE if the good Mr. Editor will be forced!

We want games of all kinds, arcade, simulation, two players, logic games or any other kind of game you can think of. We want utilities, home production-type, business programs, programming examples and more. In fact we want any kind of program that shows off your talent.

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Please send programs on disk (or cassette if you don't have a disk drive) together with supporting documentation (also on disk or cassette if possible). Feel free to give us a floppy disk if you are not sure but disk can store programs or write them from scratch. It could be well worth it. Write us.

PHIL CARPVELL
PAGE 4, P.O. BOX 24,
STAFFORD
ST16 1JW

RESOURCE FILE

The Resource File is a service provided by PAGE 4 to help Atari owners (hardware and XT) find sources of information, help and supply. An entry in this feature does not necessarily imply any endorsement by PAGE 4 and readers are advised to check the references to ensure that the information is still current. We would ask any readers who find information to be inaccurate or out of date to let us know so that an entry may be amended or deleted.

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