

PAGE 6

ATARI USERS MAGAZINE

Issue 33 May/June 1988
£1.20

ST

Programming GEM

SPECTRUM 512
MASTERPLAN
GUNSHIP
Möbius
Dungeonmaster
Many reviews

XL/XE

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Issue 33 May/June 1988

PAGE 6
P.O. Box 84,
Stafford,
ST16 1EH,
ENGLAND

Tel. 0783 218928

'The magazine for the
Dedicated Atari User'

PAGE 6 is published
bi-monthly on the last
Thursday of the month
prior to cover date

Editor & Publisher
Les Ellingham

Advertising
Nicola Parry

Newstrade Distribution
Seymour
68 781 4444

Printed by
Stephens & George
8488 9351

Typeset by
Hewitt's Typographics
0783 37708

SUBMISSIONS

PAGE 6 welcomes and encourages readers to submit articles, programed, reviewed, published. Programs must be submitted on disk or cassette, articles should wherever possible be submitted as one file on disk. We seek to encourage your participation and do not have strict rules for submissions. If something interests you, write a program or article to us and submit it. Appropriate payment will be made for all published programs and articles.

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Adventure HITS
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ON PARTICIPATION

Issue 31 May/June 1989

"The Magazine for the Dedicated Atari User"

ISSN No. 0942-4967

THE CREDITS

Full "official" credits are on page 6, here are the people who made it possible.

Les Ellingham did the Editing

Manda Parry looked after the ads

Phil Gardwell gave valuable Editorial Assistance

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Markus Jones
John Davison
John Davison Jr
John Bewsey
Paul Nixon

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

When the going gets hard a few phrases can suddenly make all the world's a difference. Among those that applied this way for this issue were: *Melle Plézet, Mikalopé Blaz, Little Love Affairs, Wonder For The Wind and September Storm, I'd love you like you love me, that's all it is!* Tell me when, the first person to refer to the *Editor saying job and which address will give me Address or CD's of their choice and if absolutely free!*

Reviews? You bet! But Atari is supposed to pay so well isn't it!

The next issue of PAGE 6 would feature TOS/BIH articles or programs, So, send it!

PAGE 6 is put together almost entirely with staff equipment and software. Hardware used: IBM PC, 286/486 drive, 803 data drive, 4MB memory, modem, A/D-0433 printer, J19537, 100.124 monitor, Atari 8020 hard disk drive, Item 8.0 software, Micrograph Studio, Editware and Scanograph, Video Basic, Vide-Link, Screen, Plus 100, my personal communications software on the 4-1/2, 5.25 and 8" formats, Thunder and Flash Drive Copiers on the 5 1/4".

Copy is produced on a 1065 using Epubwrite and various communications programs and then transferred to the ST (with the Editor and PC) interface. It is then proof checked and finished on the layout desktop with Page Stream Publisher. Finished copies are sent from the ST via Rascal 1 (which makes uplinks and links, but uses a Modem/Linecard interface

A funny thing happened when PAGE 6 went onto the newsstands. We gained five or six times as many readers but, surprisingly, got much less involvement than we used to. Sure we got plenty of letters of all kinds but the response to such things as the Readers Awards nowhere near reflects our increased readership. Why is this?

We really have to go back to the early days of PAGE 6 when it was quite difficult to get response from readers in the form of articles and programs or even letters. At the time there was a great fear among ordinary users of writing to the 'big' magazines because many of them had very strict standards for submissions and tended to dismiss anything that wasn't of the top contractual quality. PAGE 6 worked very hard in the early days to encourage users to submit programs and so gradually broke down those barriers with the result that many readers who had had their work thrown out by other magazines became regular contributors to PAGE 6. And these were not sub-standard contributions either, some of the best Atari program listings to have been published in the U.K. have appeared in PAGE 6 and several of these had been rejected by the 'big' magazines, not because they had no special knowledge but precisely because of the opposite. As a subscription only magazine we built up a good close relationship with our readers and they knew that they need not be afraid of participating in the magazine, whether by submitting articles and programs or by writing to our Readers Polls or by responding to things they had read. This appears to have changed now. We still have our regular contributors but nowhere near so many 'casual' contributors who tend to Reader Polls and the like. Why is this?

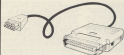
I feel that, in many readers' minds we have now become one of those 'big' magazines that you feel that you can't contact which is a great pity because it simply isn't the case. Our new readers may not realize the philosophy behind PAGE 6 while the older readers may feel that we have moved away from them. Nothing has really changed as far as we are concerned except that there is a lot more work and worry when deadlines have to be met. The underlying philosophy of PAGE 6 stays

the same. From the beginning we set out to encourage the exchange of information and ideas between Atari users so that we could all benefit from the experience and discoveries of others. Sharing new knowledge and opinions was one of the most exciting parts of getting into computing and it still should be. Don't be afraid of being part of PAGE 6, get in there and participate. I want the magazine to continue to be part of the Atari community and not just yet another general magazine brought out by a publisher that cares about little more than the profit margin.

I cannot leave this issue without mentioning to the editorial list issue about the merits of the 1065 and ST. Contrary to many opinions received PAGE 6 is not anti ST and never will be. We support Atari as a whole, but occasionally controversial comments have to be made. Two things brought about last issue's comments. The first was that I, along with many others, had been misled into believing that the ST could do anything. It probably can, but the software that I used for a specific task only appears to exist on the Atari XL/XE. Lots of you convinced that nobody came up with a suggestion for some suitable software! So late that task the XL is better. I don't regret having an ST because I can use the ST for many more things and I still have the 1065X, but supposing someone had got rid of their XL/XE system and then found that the ST didn't do what they wanted? This brings me round to the second contributory matter. We have a large mailing list for our Accessory Shop and I have been astonished at the number of letters received from people who want to be removed because they have sold their ST! Already? That's most rarely by people who also thought that the ST would do something which, for them, it doesn't do. Supposing they had sold their XL/XE system to buy that ST, they would then have nothing. Surely it is better to keep what you are happy with than end up with nothing? I recommend that you buy an ST if it will do what you want but if you are happy with the XL/XE why be persuaded that it is not good enough when it is? Of course if you own another machine entirely you should ditch it straight away!

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ICD BUYS OUT OSS

ATLANTIS APOLOGY

Atlantis Software Ltd. received a small misdeed on the instructions for their latest Atari release, League Challenge, just after it was shipped out and have asked us to pass on their apologies to frustrated purchasers. The tape says that you should hold down the OPTION and START keys while booting the game but in fact all you need to do is hold down the START key.

League Challenge was Atlantis Software's biggest seller on other machines with copies into the top seller charts on several formats. The BBC revision is still selling well almost a year after its release.

COMPUMART SUCCESS

Compumart, the company that started selling blank disks and then went on to become one of the most respected mail order suppliers selling Atari hardware, have proved that the right approach brings success as they move into brand a new office and warehouse site just two and a half years after commencing to trade. What really really underlines their success is that they are actually buying the property which comprises 6000 square feet of space.

Managing Director, Steve Blake said "The new warehouse is so big it will allow us to combine our expansion, including our service and customer liaison departments. We can also hold much larger stocks and therefore usually guarantee same day dispatch on all our products." Compumart have gained their reputation by giving a very fast turnaround and by a policy of ensuring that customers problems are dealt with as quickly as possible, often with replacement hardware shipped out the same day on the promise of the return of a faulty unit. Keeping up the best service when conditions become cramped is not easy which is why Compumart decided to take the plunge with their very own spacious warehouse.

You can now find Compumart at Jubilee Drive, Loughborough where their new telephone number is 0508 618444

OSS were one of the founder companies to produce serious software and support for the Atari. Founder of the company was Bill Wilkinson, one of the programmers responsible for developing the Atari Basic (first) as standard to all Atari machines. Atari Basic was quite different to other Basic and contained many unique features still not found on other machines. With this background Bill Wilkinson formed OSS and began to release a series of top class products for the 8-bit Atari including language enhancements such as BASIC XL and BASIC XE as well as new languages like ACTION! OSS were also responsible for one of the most respected Assemblers available for the Atari, MAC/85.

OSS were always a small company passionately involved in Atari, with Bill Wilkinson writing a regular column for Computart magazine which became essential reading for all serious Atari users. A year or so ago the company began to find it more difficult to maintain sales with a such a small dedicated product range and there were doubts about their future. They managed to hang on for a while but market pressures eventually brought about their demise.

The loss of old friends in the Atari world is always sad but sometimes changes can bring benefits. OSS products were never officially released in this country with the result that they were always expensive but ICD have now taken over the OSS product range and, as a result of their UK distribution

agreement with Frontier Software, OSS software will now be released in this country at substantially reduced prices. Most of the OSS range will be available including ACTION!, a super line language which sweeps the Atari world to become the most popular alternative to BASIC. MAC/85 is a powerful macro assembler and editor for programmers who are serious about assembly language and comes on ROM cartridge.

Enhancements to the original Atari Basic include BASIC XL and BASIC XE, two programs which add over 45 new commands to Basic yet remain totally compatible. There are also Toolkits for Action!, Mac/85 and BASIC XL which are available here for the first time along with a new word processor called The Writer's Tool.

Frontier software are delighted to be able to make these products available in the UK. Their Marketing Manager, Martin Walsh, said "The OSS range has proved to be one of the most popular and advanced in the Atari 8 bit market and we are very happy to make the range available in the UK."

The products will be available through usual dealers as well as direct from Frontier Software. The full range and prices is Action! Cartridge £49.95, Action! Toolkit Disk £39.95, Mac/85 Cartridge £49.95, Mac/85 Toolkit Disk £19.95, BASIC XL Cartridge £39.95, BASIC XL Toolkit Disk £19.95, BASIC XE Cartridge £49.95 and Writer's Tool £49.95.

SOFTWARE EXPRESS EXPANSION

Software Express, the Birmingham based retailer and distributor, are looking for the one with the immediate opening of a new shop. No, they are not opening on the Costa Del Sol but lucky Atari owners in the West Country will now be able to find a dedicated Atari shop in an area of the country which has been seriously neglected by Atari owners. The new shop is in Plymouth, Devon and will carry the total Software Express full range of Atari hardware and software for both 8-bit and ST machines.

Managing Director Mike Jones said "I

have just been down to the West Country and there is definitely a huge interest in Atari in the area, but no shop that offer support. We are a new Software Express Atari Centre in Plymouth as being a great success offering a service to both local residents and tourists alike." Next time you are on your holidays, don't forget to look up the shop which is at 9 River Street, Plymouth and will be open from 8 am to 1.30 pm Monday to Saturday but is closed all day Wednesday. The telephone number is 0521 265276.

MAJOR NEW COMPANY TO SUPPORT ATARI

Mandarin Software is a major new software house launched by the European Group to market the very best computer games over a variety of formats which will include both the Atari 8-bit and ST. The company intends to set up a series of joint ventures with some of the UK's leading software programmers whose experienced programming teams provide the very best in software and Mandarin provide the marketing muscle to ensure that the software will receive proper exposure in the market.

The first major coup for Mandarin is the acquisition of Time & Magic, the adventure trilogy from Level 9, which was previously distributed by Kateshot. Level 9 are delighted with the new arrangements as Peter Austin of Level 9 programming, combined with Mandarin's knowledge of the market place, their abilities in printing and

packaging and their understanding of the need to get products out on time will be an unbeatable combination.

Mandarin have backing of £1 million from European and so don't have to be concerned with pushing out inferior product. In order to maintain cash flow, they intend to seek out the very best to become "synonymous with quality, providing the Rolls Royce of software games."

Time and Magic has already been released for both the Atari XLOLE and ST and their latest release for the Atari ST is *Incognito* from Bubble Bus which has been rewritten with totally new graphics plus digitized sound and special effects as well as clever animated sprites.

A major release schedule is promised for the summer as Mandarin continue discussions with several software companies including those who support both Atari 8-bit and ST computers.

ATARI USER SHOW GROWS

Organisers Database Exhibitions continue to be well pleased with the success of the Atari User Shows and have now moved the venue to the newly refurbished West Hall of Alexandra Palace in London.

The shows takes place from April 22nd to 24th and is expected to be bigger and better than ever with several new product launches. By the time this issue of PAGE 5 reaches the newsstands the event may well be over but is expected to draw capacity crowds.

MORE SNOOKER

Blue Editions have re-released one of the classic Atari snooker games at a new budget price. *Three Davis Snooker*, one of the first snooker games to have the computer as an intelligent opponent, is now available on Cassette for £1.99 or Disk at £4.99. Steve will play as well as the budget price so you may find this one a real challenge.

THE HUNT IS ON

Grand Slam Entertainment tell us that *The Hunt for Red October* will be converted to the XL-XE during the summer. This simulation has received rave reviews on other machines so we look forward eagerly to an exciting new program from yet another software house who is keeping the Atari 8-bit range in vial.

Meanwhile, Brian Jelling of Zappala Games has promised that the follow up to *Speed Ace*, which has an excellent review in this issue, will make the game look tame! Watch this space and if the software is good, buy it!

ANALOG MAGAZINE GOES DOWN

ANALOG, one of the founder American magazines for the Atari has hit the dust as an independent magazine after several months of turmoil in the States about its state of health.

ANALOG started life in much the same way as PAGE 5 but because of the huge installed base of Atari 8-bit machines in the States, estimated at 1,800,000, quickly became very successful along with a similar, but totally independent, magazine called ANTEC.

Each magazine developed its own style and ANALOG enjoyed enormous success until the downturn in computer interest towards the end of 1984 when advertising revenues began to drop as many companies went broke. A battle between the two established magazines to prove who was the number one magazine didn't help and when the ST was launched ANALOG felt it had to follow the lead of others and launch a separate magazine called ST LOG. ST LOG always seemed much harder to read than other ST magazines and towards the end of last year ANALOG itself became hard to read. When subscribers failed to receive their copies, something was wrong.

We understand that the ANALOG and ST LOG titles have now been

acquired by a large West Coast publisher LFP Inc. Lee Papp and Clayton Williams from ANALOG will retain editorial control and say that the magazine will change very little except for new paper and added colour. There is talk that each magazine will revert to bi-monthly with ANALOG one month and ST LOG the next. Subscribers have been promised indefinite subscriptions with an extra 3 month courtesy as a gesture of goodwill. Unfortunately, it seems that the break in publication has split the death of interest in this country and it is unlikely that companies such as Software Express who imported the magazine in the past will continue to do so.

EXPANDING YOUR ATARI

We couldn't squeeze the second part of the series from Mark Powell into this issue. Next time, prevent!

REVIEWER WANTED

Someone with working knowledge of GFA Basic required to review various GFA connected products. If you can write, drop a line to the Editor.

VARIABLE MYSTERIES

Dear Sir,

Can anyone explain the "advantage" in program listings of designating ordinary variables by putting an 'N' in front of them, as for example in the recent WHIST listing.

Apart from creating a computer mystique and bamboozling the novice, what possible use can such extraneous 'N's be? In the WHIST program this adds well over 1,000 unnecessary characters which might have been better employed in REM statements. The obvious remedy is to leave out all of the N's since they serve no useful purpose but this would invalidate the TYPO codes when entering the program. WHIST is extremely long and tedious to type, the standard abbreviations help, the interactive N's don't. Programmers, please note!

K. Cracker
Kendal, Cumbria

All, but there is a valid reason for using all these variables instead of numbers. Atari Basic uses a system of numbering variables which can be very efficient memory wise and also use floating point for actual numbers which can be very significant. Every time a number is used in a program it takes up six bytes in memory whereas a variable, once declared, uses only one byte. What happens is this. Whenever you use a variable for the first time in a program Atari Basic allocates it a number in a special table called the Variable Name Table. The numbers actually start at 128 or 67, for instance, the first variable you type is A = 1 it will be allocated the number 128 when stored in memory. Each subsequent variable will then be numbered accordingly. The variable could have been A%PARAMETER = 1 or an even longer name. The first time these are used the full

number of bytes for the variable and number are used which would be F for A=1 and 15 for ALPHABET = F that every time the variable is used from then on it will take up only one byte. Here's why. Whenever you use a variable in a program the Atari checks the Variable Name Table to see if that variable has been used. If it has it uses the number from the table rather than what you actually type and this can end up saving a lot of memory. Numbers typed in will always take six bytes to use which is so as a variable is the number you require. If you type N1 = 1 then whenever you need to use the number 1 in your program you use N1 instead and you will save five bytes each time. As you type in the WHIST program these variables are used about 1,000 times so you can see that, despite the fact that you have a little more typing to do, around 5k in memory is saved. WHIST, being a very long program probably wouldn't fit in one memory without using these variables. Some of these "weird" programming practices do have a genuine use!

WHY IS IT WRONG?

Dear PAGE 6,

I typed in TYPO 1, but when I tried to run it I kept getting an error message reading ERROR 5 - at line 110. I have repeatedly typed the line but still to no avail. In the listing (incorrect or am I doing something wrong?)

N. Lloyd
Cirencester

This is one of the most confusing errors for beginners. Although the computer tells you the error is on line 110 what it really means is that the program is at line 100 when it encounters an error. The error will be in a line that the statement in line 110 are referring to. Error 3 is a

table error. If you look at line 110 you will see a READ command. This is READING the DATA statements, that appear later in the program, into memory and the error message is trying to tell you it has found a number that is greater than 255. So check the DATA statements carefully and you will find the problem.

TWENTY PLAYERS?

Dear PAGE 6,

I am the proud owner of an 800K1 and 1050 disk drive and would like to ask you for some help. As you are no doubt aware, most games for the Atari are for 2, 2 or 4 players but what I need to know is whether there is a game in existence in which up to 20 players can play? The reason for this is that I run a youth club and feel it would be a challenge to put the Atari to good use and involve a number of young people. Can anyone write a game that would satisfy my need?

Neil Hill
Mansfield

We can get you nearly half way there with a game called Classic Crusades available from the PAGE 6 library but it is a strategy game that may not be suited for computers. Twenty players really is pushing it! The only sort of game that we can think of that may be suitable is a trivia or quiz game that could be adapted. There are several in the public domain that might be suitable and if any reader wants to have a go at writing or adapting it we'd gladly pay it on. You've got no chance with a commercial game, you would probably be the only person to buy it!

Write to:

PAGE 6,
P.O. Box 34,
STAFFORD
ST1 0DE

BEGINNERS PROBLEMS

Dear PAGE 6,

Why is it that although PAGE 6 says for all Atari computers I cannot load any of the games listed in the magazine.

I have tried again and again but all that I get at the end of each typed in program is Error line whatever and that is all. Nothing I do seems to work. I've got an Atari 650E which takes any 5.25 tapes and I have little problems loading them. As soon as I try to record on the tape deck the program I wish to be typed, I type in CLEAR and all seems well at first but as soon as I start typing the program it comes up error again. Am I doing something wrong, if so what?

Ruth White,
Coventry, Warwick

Lots of people are still getting started with their Atari and when you've got me one to help it can be really frustrating. I don't know what sort of manual you got with the 650E but you should check it all the way through when you get problems, it probably contains the answer but it may not be easy to follow. What you must do is type in a program to just check on your computer and start typing each line one after the other. Start with the obvious program you can find because you will make mistakes as first. When you have completed the program, put it type in your cassette deck and press the RECORD and PLAY buttons together. Type without any line numbers, CLEAR and then press RETURN. The computer will beep twice to let you know it is going to save something. Press RETURN again and your program will be saved. Next time you want to use the program check on your computer and type CLEAR, pressing RETURN twice.

FRUSTRATION

Dear PwCell's,

In response to your reply to the Vienna Printer (Issue 32), I am in the possession of the Heidelberg Construction Kit which I have trouble loading. I have gone back to the shop where I bought it three times. As a last resort I write to Database for advice but there has been no reply since January. What is the help and backup from the software companies?

If they won't even acknowledge their own faults, good luck to the printer that may get Heidelberg Construction Kit to load straight away!

Jillie Bennett,
Birmingham

I agree that, in general, the software companies could do a lot more in the way of customer

support. As far as I know, Database claim now that maybe they were killed off by people pirating their software?

QUICK ARITHMETIC

Dear PAGE's,

I would like to find a way of doing arithmetic quickly i.e. the short loop of the *Manifester* set calculator. I am sure there is a wide audience of mental crutchmen who crave the same. Could you suggest your technical writers to come up with the answer. PAGE 4 will go down to history, surely!

D.P. Allen
Camberley, Surrey

Give to all you technical readers. Joe Piskayev's

interview in this issue might give you a clue of one way to solve the problem but if anyone with a multi degree would like to write an article about the use of matrix in programming I will certainly consider it, provided, that is, that I can understand it!

MINI OFFICE DEFENCE

Dear PAGE's,

I too experienced the same 21st character problem when using the mail merge feature of Mini Office II (issues Issue 31). I wrote to Database who immediately replaced my disk free of charge and it now works fine. The 'fix' for extra space between data fields is rare (although I agree that a fix is needed), just define a

print code string as the printer landscape code (8 on my Star) and put one or two between the field numbers. Mini Office III is the program I use most on my Atari and although it has its limitations I am very pleased with it.

Your editorial praises the SE for word processing and I agree except for two things. First the SE has a severe case of 'WYSIWYG' (what you see is not what you get) and second, as 8-bit word processors I know of support variable spaced characters and full justification which my printer can produce. I have never used an ST but understand that, like the *Manifester* (which I have used) you get both with variable software. Now if someone could do this with the 8-bit ...

Chris Road,
Milton Keynes

THE INSIDE STORY

Dear Fellow's,

Recently I was reading through some back copies of PAGE's, and was struck by the contrast between them, and the last 32 page, where perfect, colourful issues. Was it only three years ago that the Editor was appealing for articles to be sent, because he was running out? And was it only that long ago when he turned down an offer to be Editor of a rival magazine? What reasons were behind the couple of lines leading the previous issue was nearly the last one?

There must be a good story here. Why not write an article giving the history of PAGE's? How did you start? More important, why did you start? There are many questions that need answers. How did you get contributors at first? Do you still have a job? Is the magazine now full time? What is Harvey King Tim? Does he really exist? How did the first copies sell without any subscribers? Why

do you have that spilling happy in your mind at the moment? Is John Davison Jr. really 3 years old? What did you spend your first million on? Has it changed your life? How do you put the magazine together every two months? Reading the small print suggests the hardware, and software, (with a Kermit anyway!) but how about 'A Month in The Life Of A Publishing Magazine' article?

Please don't split the 8-bit and ST sections of the magazine. It may be tempting, especially if each section continues to grow as they have recently, but I for one enjoy reading about the ST even though I have not bought one. As the magazine grows, it would be preferable to move to a monthly publication.

Keep in mind the simple Atari computer users. I use my computer only with commercial software and although I welcome reviews of art, word processors, databases and utilities, I

sometimes wonder what I would use them for. To know which is the best font-editing, hand transfer utility since Kermit is great, but what is a font? What is Kermit? Even when I find out that Kermit would allow me to transfer data between two computers, I still have no idea why I should want it. Could I transfer an 8-bit game to the ST? I doubt it.

Many thanks for a terrific magazine, it is nice to know there are other Atari users out there!

J.R. Scathill
Pinner, Middlesex

Write a long letter to print that I have included to because it makes a number of useful points, especially about the 'simple' Atari user, and besides it is a refreshing change to be able to smile at a readers device! Unlike many other long time users I can still understand that you can give enjoyment out of your Atari without becoming a

straw programmer and long may it be so. *A Month in the Life of a Publishing Magazine!* Night be dreaming, if I have a publishing magazine I could not live! Maybe one day I'll write it up but in the meantime you might like to know that one of the time is taken up by typing up till 2 a.m. doing copywriting and page up and often you run out of time because there are only seven days in the week! I know Harvey King Tim still exists because he keeps writing to me and I keep failing to reply. Sorry, Harvey! The first million was spent on cups of coffee to keep me awake and, believe me that much drink does change your life! You never asked John Davison Jr how old he is but I know that his dad is only 18! It's nice that you can recognise an ageing hippy when you see one but that says just as much about your ego as mine! And, by the way, Kermit really is a frog!

Crystal Crisis

BY MARTIN CLINE

While on your way home from a spot of Galactic polifarming you notice that your fuel gauge is flashing EMPTY — EMPTY. Checking a copy of your local G.S. (Galactic Survey) map you find a nearby planet which carries the Crystal fuel needed to get you home. With your tank on low on your fuel, you will need to do a spot of mining. The mining compound is guarded however by a rather large gun. Can you get around the mine before your ship is spotted and destroyed?

When you run the game the title screen will give you details of the plot while the character set is being reloaded. When the words 'Where Jorastik is Carastim' appear you are ready to go. When the screen has been drawn you will see your spaceship on the left-hand side with your ever faithful Robot underneath ready for you to guide him around the mine to recover enough Crystals to allow you to reach your home planet. The number of Crystals required to escape this Level is displayed in the top right-hand corner where you will also see a gun which has been installed to prevent the theft of the Crystals. Similar to yourself you see that there is a small pile of boulders between you and the gun. The mine owners are, however, very patient and the gun is rather special, it will remove the pile of boulders one by one! The more Crystals you have the less patient they become and so the faster they fire the gun.

As you move around the mine, boulders can obstruct your passage. These can be removed by the activation of the Robot's coloured Laser. (Fire button) but beware fire is gravity on this planet and if there is a boulder above it will fall. Should the Robot be underneath he will be an Ex-Robot! You can collect the Crystals, again by pressing the fire button, one after another — as many as you want and when you need to leave just return to the space directly under your ship to blast off and live to fight another day. Have fun!

WRITE YOUR OWN GAME

The character set was entered using the excellent Post Display utility in Issue 50 so you could change the characters if you wanted. It would be very easy to design your own screen for this game using 'C' for the sides and outer walls, a '0' for the boulders and (Inv-CTRL, E) for the Crystals as shown in Lines 400 to 800. The following variables may be altered to change the way the game plays.

GD is the delay before the gun fires

TD is the delay before the Boulder falls.

The array AA holds the column row position at which a Crystal is placed.

Any variable with a C or R in it is a screen position variable for something e.g. HC, MR are the start position for the Robot. Line 65 decides how many Crystals are required to leave that level.

Mining for fuel on a distant planet

Can you survive?

```

40 10 REM *****
41 15 REM *
42 20 REM * CRYSTAL CRISIS *
43 25 REM *
44 30 REM *
45 35 REM *
46 40 REM *
47 45 REM *
48 50 REM *
49 55 REM *
50 60 REM *
51 65 REM *
52 70 REM *
53 75 REM *
54 80 REM *
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56 90 REM *
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232 970 REM *
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235 985 REM *
236 990 REM *
237 995 REM *

```


THE LATEST AND



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- **Typosmith under the microscope** - we talk to the company who created Olympiad '81.

All major listings in this issue are accompanied by checkouts to help overcome typing mistakes.

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PAGE 6 AWARDS

BEST ARTICLE PROGRAM IN PAGE 6

MJDBASE

Runners up: *First Steps and Solid Modeling*

BEST ATARI 8-BIT ARCADE GAME

DRUID

Runners up: *Arkaxoid and Gauntlet*

BEST ATARI 8-BIT ADVENTURE STRATEGY GAME

SILENT SERVICE

Runners up: *The Pawn and Alternate Reality (The Dungeon)*

BEST ATARI 8-BIT SERIOUS SOFTWARE

MINI OFFICE II

Runners up: *Price Shop and Synfile*

BEST ST GAME

BARBARIAN

Runners up: *Flight Simulator II and Terrapods*

BEST ST SERIOUS SOFTWARE

FLEET STREET PUBLISHER

Runners up: *Fast Balls and Vegas Elite*

COMPANY TO HAVE DONE THE MOST TO SUPPORT ATARI

RED RAT SOFTWARE

COMPANY TO HAVE DONE THE LEAST TO SUPPORT ATARI

ATARI

Many thanks to all of you who voted in the PAGE 6 AWARDS. Putting it all together was not easy as the votes were severely weighted with the result that most of the lower places were tied and there were some extremely close fought battles for the top spot in most categories.

The least closely fought category was for Best Serious Software on the 8-bit where *Mini Office II* was a runaway winner, indicating that there is an interest in using the 8-bit micros seriously if only software publishers would take note.

The Best Article Program in PAGE 6 was, once again, very widely spread with your votes indicating the wide spread of interest which PAGE 6 continues to support. Almost all of the articles or programs published during the year received votes but the top three were well ahead of the field although very closely fought between themselves. The 'commercial' category for Best Software was very interesting, we really didn't know what to expect. Your votes were extremely widely cast indicating just what a breadth of interest there is amongst the PAGE 6 readership. Several of you got a bit confused and included program listings from PAGE 6 in the commercial category and they got more votes than some commercial software! Just goes to show you how good the program listings are!

The two categories which caused the most interest and for which your votes were eagerly awaited were for the Company Person who had done the Most or Least to Support Atari during 1987. Your votes for the Company to have Most Supported Atari went overwhelmingly to Red Rat Software, a just reward for a small company that has stuck with Atari while others have gone off to other pastures. Let's hope that your votes will encourage Red Rat and other small companies to keep supporting Atari. If you can back up your votes with your money, we are sure that the support will come from these companies. Second in this category was PAGE 6 (thank you) and amongst the other honourable mentions were Software Express, U.S. Gold, Microzone, Jeff Minter, S.S.L., Ken Ward (naming Ken, he probably voted for himself) and even some guy called Jack Tramiel!

Heading the votes for the Company to have done the Least to support Atari in 1987 were Atari themselves which goes to indicate that, in the minds of voting Atari owners, Atari still haven't got their marketing right. Atari owners tend to be a very dedicated and loyal bunch and criticism is generally borne out of frustration that Atari don't do more to support themselves and their users. Close runner up in this category was John Lawson of Computer Support. Atari owners don't like being ripped off and have long memories. Whenever John Lawson is hitting it, he ought to say that! The best vote in this category came from the guy who voted for 'The Wily'. We won't publish his name otherwise he'll get even less support next year!

Anyway we said we would get 225 to spend on software off to those of the lucky voters so our super sophisticated selection technique (tick in a hand and grab out!) pulled out the following lucky winners: Graham Stewart from Dublin, Gwyn Fisher from Tasmania and D. Maylor from Guildford, Surrey. The cheques are in the post as they say!

The PRINTER JUNGLE

With so many different types of printer around, how do you go about making the right choice?

Who needs a printer? The answer is quite simply everybody. Whether you use you Atari for programming, word processing, record keeping or even just playing games, you will find a use for a printer. Applications such as word processing, of course, demand a printer and any sort of record keeping will be fairly limited unless you can get hard copy. Programmers will find that do-debugging programs will be much easier with a printer listing but what about those games players? Well, several games, particularly adventures, do have some printer support and you can always try and get a graphics dump of that high score screen. So you see everybody could use a printer.

Deciding to add a printer to your

system is easy but the next step will be the most difficult: hardware decision you will ever have to make. The choice of printers is overwhelming and no magazine article could possibly cover all of the printers available. What we can do is select several different types of printer ranging from Atari's own models to Epsons and the like and explain the advantages and disadvantages of each so that you will be better armed when you come to make your decision. In the end it will be your decision for what looks good on paper is purely subjective. One thing to come to terms with straight away is that you will never get it quite right because technological advances mean that you will always be looking for the greater good. You will have to get as

near as you can and be satisfied.

Printers come in all price brackets but no will deliberately keep our survey confined to the sort of printers that most owners can afford. If you want to spend £1000 on a printer then you probably know exactly what you want, or at least you should do!

WHAT DO YOU WANT IT FOR?

The best starting point is to write down all of the applications you are likely to have for a printer. Do you just want to dump our program listings for checking? Do you want to write letters? If so, are they going to be to understanding friends or to the bank manager asking for a loan? Do you need graphics? Bear in mind that graphics are not just pretty pictures as most of the currently available desk top publishing systems use graphics dumps for their final output. Work out when you really need a printer for and then you can decide what type of printer you need. None of the affordable printers will give you letter quality and graphics to choose with care.

LETTER QUALITY OR DOT MATRIX?

The first thing that confuses almost all new purchasers is 'letter quality'. Almost all manufacturers advertise their printers as having a 'letter quality' feature when in fact all they mean is that they have different print styles, some of which are better than others! True letter quality, to accepted business standards, is only available from a printer with a daisy wheel or print ribbon unit, with one exception for lucky XL, XLi owners, these don't come cheaply. If you need professional, formal documents that are designed to impress then you need a letter quality printer. These are ideal for business to business letters, formal reports or college theses but beyond that a true letter quality printer has very little

THE MYTH OF EPSON COMPATIBILITY

One of the biggest problems faced by the prospective printer purchaser is the myth of 'Epson Compatibility'. Unfortunately, if you want a printer that is 100% Epson compatible you have little choice but to buy an Epson!

At its lowest level 'Epson compatibility' simply means that the printer uses the same control codes for its major functions as the Epson so, for example, if you send ESC P the printer will switch to pins characters. Fine for word processing but problems often begin when graphics are required. Most printers will support Epson graphics commands to some extent but many do not and there is no easy way of telling when you have access to both an Epson manual and the manual for your printer. The third party manufacturers who strive for Epson compatibility will often support whatever of the graphics modes but seldom every one. Some of these Epson modes are so obscure that other manufacturers will think they can safely leave them out. This is fine until a program like Plot Street Publisher comes along which, in its first version, used an obscure graphics mode found only in the Epson FX series. It was not even compatible with other Epson models so there was no chance of it working on another manufacturer's Epson 'clone'! Plot Street has now been extended and works on most Epson compatibles but the first version served to graphically illustrate the problems which can arise.

A good example is the Kyocera laser printer which has an Epson emulation mode and also has, rather usefully, a full feature comparison in the manual. Out of 70 Epson features, 15 are missing. Most are inconsequential such as the ball, and paper, and device but if, for example, your program downloads a character set to use 8-bit to image graphics, you have had it. A closer look and one that is not obvious at first sight, is that the 8-bit image mode supports only 4 of the Epson's 7 personalities and gives which Plot Street used!

The above highlights the problem and there is no easy answer other than to try and test your prospective printer with the software you are using or buy from a good Atari dealer who should have already tested compatibility. If you buy discount you have little chance of doing this but a reputable authorized dealer should be willing to allow you to try a printer out if you have any doubts.

Epson compatibility really only means 'compatibility to a degree'. How much of a degree depends on the individual manufacturer.

READER REPORT

Citizen 120D

Andy Hunter gives a personal report on his Citizen printer



There are many printers to choose from, and finding one that suits you can leave you with a headache, feeling alone, or even bored! The printer I am using is the Citizen 120-D. It can print in draft mode at 120 characters per second or at 24 characters per second in RXQ mode. Along with the printer you get a 500 page special bond manual, a serial interface and a tractor feed unit.

Many printers claim to be Epson compatible and as far as I have been able to tell, the Citizen is justified in doing so. It is also IBM compatible. On the right hand side of the printer there is an interface 'drawer' which slides out to reveal 8 DVP switches. By using these, you can configure your printer to suit the way one of the three FX printers or an IBM graphics printer.

An added bonus which the Epson FX range does not have is the ability to print in reverse (black on white). You also have the addressable graphics in six densities.

There are 11 international character sets built in to choose from, with accented characters as well as fine and block graphics. You can print in expanded, compressed, emphasized and double strike print plus subscript, superscript and italics.

Another useful feature that you can use is the dot sleep feature which not only prints the hexadecimal value of every code received, but also prints all the corresponding characters and the correct code abbreviation.

There are two built in self tests. A comprehensive printer self test prints all of the 128-D's standard characters, plus the block graphics and accented characters and the maintenance self test identifies the location of control programs and character generator and performs a printer alignment test.

On top of the printer, to the front there are three switches and three lights. These switches are for ON LINE, LINE FEED and POWER FEED (acts as a reset), the lights are for PAPER, PAPER OUT and RE-ADV. The manual gives you a step by step run through of all the features. There are nine chapters and six appendices plus a four page quick reference guide.

As usual, the DVP switches are in an interface 'drawer' coveridge, which makes things easy when you want to access the switches. Into this coveridge you plug in your interface if needed. The printer buffer holds about 4K of data at a time, though I believe this can be upgraded.

The price of the printer is also an added feature, depending where you buy it of course. You can get it for as little as £150.00 and upwards, with a two year warranty. A new ribbon costs about £1.50 and will print around 2,000,000 characters and the print head will last for 100 million characters before replacement. Most operations are very simple to perform. You don't even need a controller!

The Citizen 120-D is a fair little machine. I have had no problems using Prowrite, Typewriter, Rubber Stamp, Print W@ in any of the various word processors. The printer is in constant use and I certainly consider it good value for money.

use. No graphics, no print enhancements other than underlining and white you could get away with doing programs listing; the time taken may not be justified. Unless you spend a lot of money these printers are slow.

Dot matrix is the most popular choice for the price quality ratio considerably. From the budget end such as the Atari 805 up to class 24 pin printers which can give exceptional results. In most cases a dot matrix printer will enable you to have different styles such as bold,

emphasised, double write etc. with different fonts as well as graphics in one or more densities. Something to bear in mind is that connecting a printer to your Atari does not automatically mean that all of its features will be instantly available, graphics for example depend on software and if you happen to buy a printer for which there is no software support, you won't get graphics unless you can disfigure the manual and write a program yourself!

CONNECTING IT UP

One aspect of buying a printer that is often overlooked is that you must contact the printer up to your Atari. XL/XE owners who stick to Atari brand printers have the advantage here as the printer will come complete with the necessary built-in interface and cable and you simply plug it and go. The fact that

the 8-bit interface is built in makes most of the Atari printers, with the exception of the 5845MM, unsuitable for XT owners.

The XT has a built in Centronics port so that, in theory, all you need is a standard Centronics cable to connect your printer. In practice it is not always that easy for the XT is not a 'standard' machine and there are several printers that will not work without modification as you will read elsewhere in this forum.

If you want to use a third party printer with the XL/XE then you will need some sort of interface which will add between £30 and £70 to the price of your printer so bear this in mind when looking for those 'bargains'.

LET'S START WITH ATARI

The most logical place to look for a printer for your Atari system is with the



Atari brand but only one of these printers is suitable for the ST, so if you are an ST owner you might like to skip a few paragraphs while we discuss the models which are available to XLINK owners. Let's start with the smallest, and possibly cheapest, printer you are ever likely to find. The **ATARI 1020**

PRINTER PLOTTER is a tiny printer that you can hook up to your XLINK for the minimum of cost. It is unusual in that it uses four different coloured 'ball point pens' to draw on a roll of paper. It is certainly the cheapest colour printer you will ever find and it is even possible to produce screen dumps in colour with the right software. Generally, it is suited mainly for making notes, doing 40 column program listings or producing simple drawings. You may be able to write to understanding friends but if you want to write to the bank manager a hand written letter would probably be better! Unfortunately there is no commercial software that supports this printer but several magazine listings have appeared enabling you to have 80 column printout, do graphics dumps, design cassette labels and more. You will probably get a second hand 1020 quite cheaply nowadays and it is a good starter although you will probably end up with a more versatile printer. One point to bear in mind is that the paper rolls and replacement pens are not easy to find (try Tandy's as they produce a similar printer).

If you have decided that you want true letter quality, the much redesigned **ATARI 1027** may serve you well. The quality is not quite what you would expect from a more expensive dot-matrix wheel printer but is perfectly adequate for most people's requirements. How in mind that, at a little over a under £100, this is the cheapest letter quality printer ever made and if you want to do comparisons you will be talking about a printer costing at least £200 and, more likely, around £300. If you look after it, the 1027 will give you excellent service. It takes single sheet paper and gives typewriter style quality using a print carriage. You will be able to produce very acceptable quality letters for the only enhancement is underlining. You could conceivably use it for program listings but you may well be up all night



ST (IN)COMPATIBILITY

One of the great selling points of the ST is that all of the necessary peripherals, including Centronics Parallel, are built in so that all you need to do, in theory, is to buy a standard Centronics printer and a cable and plug it in. That's the theory but in practice it doesn't always work like this.

The ST is NOT a standard machine so for many printer manufacturers are concerned and several printers will need to be modified to work with it. Some may not work at all while others, such as the NEC P2020, will work to an extent but will often give you garbage at critical moments. A standard Epson will give you no problem but some 'Epson compatibles' may need to be modified. Let's give you a couple of examples. A while ago we bought a Kyocera Laser printer in the belief that it would hook up to the ST without problems. Well, no, it just did not work. The supplier could not work out what was wrong until several frantic calls to Atari uncovered the information that the power supply from the ST was too high causing the printer to 'cut off' as soon as it received data. A HiCom extension to the printer had to be changed to 1000mV which cured the problem but this is not a job for the average user.

Similarly, the new NEC P2020 does not work properly unless modified. NEC are aware of the problem which, they say, is due to the strobe signal on the ST not being standard. The fix is an upgrade to the firmware of the printer and a new wire link on the PCB, again not a job for the ordinary user. Authorised NEC dealers have been approached and the problem will modify the printer if you tell them you want to run it with an ST but if you buy direct you could face major problems.

There are just two examples and there are probably others. We would like to hear from those who have had similar problems. Whatever printer you buy, tell the company you buy from that you want it to run with an ST and ask for an assurance that the printer will do so. At least then you have the chance of getting your money back or a modification at no cost.

changing the paper, it is very slow! Again you should be able to pick up one second hand at a very reasonable price but try and get a sample print out first as several models suffered from a fault that produces print in quite noticeably 'wavy' lines.

If you have decided that you need a dot matrix, and have only a limited budget, then the **ATARI 1029** will be the obvious choice but be warned that it is a budget printer and the quality is not what you would expect from an Epson or the like. Commercially, just about the only software to support the 1029 is 10-PRINT and many owners have been disappointed to find that well known programs such as PRINT SHOP will not run on the 1029. The reason that the printer is not widely supported is that it has only 1 point lead pins instead of the standard 8 or 9 pins and prints in a 7 x 9 grid as opposed to the more usual 8 x 8. Programs such as PRINT SHOP which have been written to support 8 x 8 matrix printers can be fairly easily adapted to run other 8 x 8 printers but adapting to a 7 x 9 matrix would require major re-writing. Due to the fact that this printer was never on sale in the States, software support from American companies is never likely to appear. So what is the 1029 useful for? It is ideal for program listings, and with programs such as those published in Issue 29 of PAGE 8 you will be able to get inverse and control characters as well as different

lines. Several graphics dumps have been published and with programs like 10-PRINT or the POINT BY POINT chip from David Electronics you will produce reasonable quality letters and reports, but don't expect miracles. The 1029's chief attraction is its price and it will serve you well if your needs are limited.

Atari's top of the range dot matrix printer is the **XMM5000** and ST owners can rejoice on here for the **XMM 504** is identical. The only difference is the 8-bit interface built into the XMM5000. For the first time you will get a wide choice of print style with Pica, Elite, Condensed, bold, double under, double under, italics, subscript and superscript readily available by adding a few commands to your documents. On the ST you will also get screen dumps by using the Alternate Help key combination and most commercial software will, or should, have a driver included for this printer. The XLINK owner is more limited but will be able to access most features although graphics dumps may prove a problem. The XMM and MM printers are basically SHINWA's in disguise so if you can find software that supports the SHINWA CP80 you should be okay. The XMM and MM can be used for just about any application but, to be honest, the quality is not that high. There are several third party printers for only a little more that will give much better results but if you are an XLINK owner then bear in mind

continued on page 22

The Panasonic KX-P 1081

J.E. Robinson tells you about his Panasonic

The decision to upgrade from my 1027 to a more expensive, preferably laser compatible, MQJ, Dot Matrix machine was not taken lightly. A special offer topped the balance, and the change was made. Never have I regretted so much the decision over spending the extra few pounds! This machine really is something special.

The package deal (from Component) included the Printer at £179.25, a Converter Interface for the XL-501 at £19.00 with a PARTWYPER PLUS sheet in free. The printer included a generous length of cable, with a plug, but everything else was ready to drop up, even the slip sockets on the interface, and those inside the printer, were pre-set and ready to go through the ribbon, printed on the front cover of the Instruction Book, to read the manual completely, should be needed.

The manual is ring bound, and is easy to read and understand. It is comprehensively indexed and laden with every possible cross reference, even the page numbers are in a format that makes search and locate a doddle. The printer itself is coloured a nice rose-gold grey and is a compact, nice, piece of equipment, small enough to fit happily on a standard home computer desk. The controls are nicely well placed, being a bank of switches at each side. The right-hand bank also has three lights to indicate Paper On, Paper Near and On Line which indicate when the printer is ready to accept data from the micro. This is coupled to a green switch which puts the printer 'on line' after paper is fed in, for instance. The two other switches are Power Feed, which feeds the top of the next sheet, and Line



Feed, which moves the paper one line at a time. This last also serves as a 'soft tick' mode, when used with the on-off switch which causes it to print out the 96 ASCII characters over the full page with and the power is turned off.

At the left-hand side is the Print Mode control, giving the choice of Standard, NLQ or Compressed modes, and the Paper Feed selector, which adjusts the amount of pressure placed on the pinch rollers. This can accommodate single sheet or fanfold paper. Inside the machine, after the two timing covers have been removed, can be found the head gap lever, which adjusts the printing head-platen gap to allow for multi-sheet copying, and a light dip switch.

There are set in the most popular position before shipping, but can be over-ridden by software commands. The ribbon cassette is easily fitted, and reported to have a life of 2 million characters in draft mode. The print head itself has a stated service life of 500 million characters. The transformer to built into the machine, which has it's own connector to the main.

All word processors should work without problem on the Panasonic and for the dedicated individual, or the professional man, the programmable capabilities of the KXP 1081 give the user the choice of over 80 print styles, 16 International Character

Sets, emphatical, double under, subscript, superscript, proportional spacing and a host more that may be programmed into action. Blank or line graphics ability are built in by permitting the selection of alternate IBM character sets, and the mapped graphics can create many special effects, from club or company logos, to artistic images. Software commands, or program commands, can override most of the hardware switched configurations.

Printing speeds are reported to be 120 cps in draft mode, or 24 cps in NLQ mode. Both, I feel, are decidedly underestimated. Printing is bi-directional, but single direction may be selected, as can half speed printing. Page length may be set by the software, or matched to each the slip machine. Software control is available to slip perforation, set vertical or horizontal calculation, set a more or more different line space, underline, set italics or even delete the line character and there are many more.

The quality of the print is well up to the standard of the rest of the machine. NLQ is achieved by printing the top part of the line in one direction, and the bottom part on the way back. The result is certainly equal to many a possible typewriter. The KXP 1081 is, arguably, one of the best value printers around.

Companies mentioned in this feature from whom further details may be available.

- Ansel Corp (U.K.) Ltd, Ansel House, Railway Terrace, Slough, Berks. Tel 0753 33344
- Epson (U.K.) Ltd, Darland House, 388, High Road, Wembley, Middlesex. HAS 4116. Tel. 0880 289 6122
- Panasonic Industrial UK Ltd, 280-290 North Road, Slough, Berks SL1 4QL. Tel. 0753 73181
- Citizen Europe Ltd, Wellington House, 4/5, Cowley Road, Oxford, OX4 2JW. Tel. 0895 72621
- NEC Business Systems (Europe) Ltd, 15, Oval Road, London, NW1 7EA. Tel. 01 993 6111
- RSD-Connections Ltd, P.O. Box 1, Biare, Herts. Tel. 0918 5285
- Frontier Software, P.O. Box 113, Harrogate, North Yorkshire, HG2 0BE. Tel. 0423 67140

the cost of that interface if you look elsewhere.

OTHER MANUFACTURERS

Now we start examining the realm of software-oriented Epson-compatible printers. Every computer owner must have heard of Epson, but there are also dozens upon dozens of "Epson-compatible" printers around. The major reason for the appearance of all these clones is that Epson printers are, well, always have been, expensive. Whether a genuine Epson or worth the extra is open to debate but be warned that if you try and go too cheap you may well end up with a printer that gives poor results and has little software support.

Your choice in third party printers is basically "Epson-compatible or not" and provided that you choose printers with similar features the deciding factor will be whether or not you like the quality of print. Surprisingly it is considerably different from one make to another. If you are going to commit yourself to any reasonable amount of expenditure on a printer then it is essential that you do all you can to get sample printouts from your selected models. Over five years ago I purchased an NEC 8813 for use in producing the program listings in PAGE 6. The main reason for choosing this model was that I saw a manual someone had produced on it and, to my eye, the result was far superior to the Epson printers. Epson's produce a very square, light, font which I find lacking in quality but, as stated earlier, "quality" is very subjective. This is why it is essential to compare printouts if you possibly can before making your final choice. The NEC 8813 has been a cracking printer coping with more work than most could use. It's likely to have in use or within years. It can do everything that an Epson can do but software support has been sparse and it has been a struggle at times

finding programs to support the printer but they have been found (or written) and all of the listings in PAGE 6 have been produced on this printer from the early days. If you buy a "non-Epson" printer this is one of the problems you may face, you must trade off the subjective appeal against the likely support. The NEC 8813 is, alas, no longer available but NEC do produce other models.

THE EASY WAY

What about an Epson then? Well, this is certainly the easiest way out of the jungle, for every commercial program that supports printers will support the Epson. Your ST will dump screens directly to an Epson and the XL, XE has a wealth of public domain programs, magazine listings and commercial software for the Epson. Several models are available and they all have similar features with pins, dots, bold, double-strike, enhanced, excellent super and sub-script, italic and several graphics modes. Epson tends to have a policy of phasing out their printers within a year or so and it is therefore hard to keep up with the various models. Within the price range we are concerned with Epson's current model is the LX800 with a RRP of £275. It will give you all you need from a dot-matrix and is, naturally, compatible with all the earlier models. You may also come across the QX800, LX600, LX300, P2300, P2400 but these are now out of production and you could have a problem finding spares if you need them. Ribbons etc. will present no problems as they are readily available in view of the large number of these printers in use. The strange thing is that, if you can find an older model you will probably have to pay a lot more than for the newest one! There are far too many models to explain in detail and, as stated

most are no longer in production. For details of the current models throughout the range (up to £1500) try and get hold of Epson's incredible catalogue which comes in the form of a magazine called "Which Epson". It will give you all the information you need. All you then need is the money!

THE SLIGHTLY MORE DIFFICULT CHOICE

There are dozens of other third party printers that claim to be Epson-compatible but it is all too easy to make a mistake. Two of the most popular third party printers, which offer excellent value for the money, are the CITIZEN 128-D and the PANASONIC KXP 1061 which are the subject of Reader Reports elsewhere in this feature and you will not go far wrong if you choose one of these. If you want to get one of the cheaper third party printers, the safest bet is to buy one that you know other owners have purchased, unless you are a true pioneer! That way, at least you can get some help if things go wrong. If you buy from the discount shops don't expect any advice or help if you can't get the printer going, most of them will probably never have heard of an Epson!

THE NEW TECHNOLOGY

The latest innovation in dot matrix printers is the 24 pin print head which can give exceptional results, particularly when used with dot-to-dot publishing packages, but until recently these printers have been very expensive and have been beyond the reach of the average user with prices starting at around £600.

NEC have now however introduced an extremely competitively priced 24 pin printer, the NEC P2200, at a recommended price of £395 (discount about £100 less) which brings 24 pin technology into the reach of almost everybody. The P2200 is an excellent printer in all respects with super quality print in styles such as Courier, Super Pica, OCR and Scanline that are not available on lesser printers. In addition, font cartridges can be added for even more variety. All of these fonts can have the usual enhancements and you can even design and download your own fonts. Graphics are well supported and graphics produced are with programs such as Fleet Street Publisher is truly excellent.

The printer is bristling with innovations such as the ability to insert single sheets without taking out the tractor feed paper and having all "business" controls operated by the push buttons on the front rather than having



Before you turn the page, check out all the other parts of this feature about interfaces and compatibility and the like and then make up your own mind. If you don't have a lot of money for a printer, decide where you want the printer to do and buy accordingly. If you look at the above information in mind you will not

worry of the results and will be a pin that is less than many Epson 9 pin printers!

FOR TOP QUALITY. SELL THE CAR!

The best print available nowadays, outside of true typesetting, is from the much talked about laser printer, but of minimum of £1000 lasers are really beyond the scope of the average user. The Argus laser may look better value but then you have to purchase a huge IT! go with it!

If you are seriously thinking of a laser treat very carefully, it is very easy to make a very expensive mistake (ask me if you want to consider a laser then the

Graphics from the NEC P2200 using Fleet Street Publisher

Once you have purchased your printer there are many accessories you can add to make use of the printer and communication between your Atari and your printer a little easier. The printer manufacturer will have several accessories such as roll sheet feeders, tractor feeds and the like together with printer buffers and other exotic devices. Before you buy check that the printer does not have such "optional" extras that are not optional for your needs as these often have an incredibly high price. A one sheet feeder for an Epson, for example, could set you back around £190, more than the price of another manufacturer's printer!

Add-ons are an area where you can get

enough to own two printers, a printer share is well worth while if you can get it at the right price.

EXTRAS



ADD MORE SCOPE TO YOUR PRINTER

It may quite badly and the principal reason is that most of these units, such as printer buffers and printer shares, are only normally needed in business. One universal rule seems to be that if you are setting for business use, double the price!

Most users will not require any extras but a printer buffer is one luxury that, once experienced, you will not want to be without. Likewise, if you are lucky

The best value printer buffer, at around £50, is Super's **MicroBuffer** which gives you 50k of buffer and a unique 'repeat' feature to repeat the data in the buffer as many times as you want. The unit simply plugs into your Atari or an interface and then to the printer. It accepts data from the computer as fast as possible and then stores a page to sending it to the printer at whatever rate

the printer can handle. Your computer is then free to do other tasks while the buffer looks after the printing. Most printers will have a built in buffer but this is often only around 5k and is seldom more than 5k. Older printers may only have a one line buffer! If you print out a lot of data, such as spreadsheets, or regularly do graphics dumps then the MicroBuffer is an excellent time saver.

Printer shares can cost well over £100 and rarely can't be justified for the home user at that sort of price. If you have to pay that sort of money, better to keep pulling the plug in and out! There are cheaper alternatives, though they are often hard to find. One such device is the Sunrayline 2-way. One obtainable from

to fiddle about with clip mistakes. The printer will 'walk through' the various options by printing out a series of questions to which you answer 'Yes' or 'No' by pressing the appropriate buttons. Ingenious, and you don't have to keep finding the manual and a screwdriver!

24 pin printers give a matrix of 360 x 360 dots per inch and you will see claims elsewhere that this is better than laser printers. In theory it is, for most laser print at 300 x 300 but where lasers use minute particles of some of the main advances in density by superimposing with comparatively heavy pins. The result is not as good as a properly used laser that is infinitely superior to 8 or 9 pin printers and is, in fact, much better than many lasers used in 'simulation modes'. If you need quality or are into desk top publishing forget the rest and get yourself a HPC P2280. You will amaze us by the results and all for a price that is less than many Epson 9 pin printers!

FOR TOP QUALITY, MEET THE CAR!

The best print available nowadays, outside of laser typesetting, is from the much talked about laser printers, but as a minimum of £1800 lasers are really

beyond the scope of the average user. The Atari laser may look better value but then you have to purchase a Mega ST to go with it!

If you are seriously thinking of a laser, read very carefully. It is very easy to make a very expensive mistake (ask us!). If you want to consider a laser then the only advice we will give you is to buy the Atari DTP system or a Postscript laser but these are expensive. If you buy a laser for the ST which does not support Postscript you will most likely find that there is no software support or that the

results will be far from what you expected. Unless the laser is directly supported by software the results may be extremely disappointing. Believe it or not, graphics produced on a laser printer used in Epson emulation mode can be considerably inferior to an Epson 9 pin dot matrix printer!

NOW GO AND BUY

As stated at the beginning of this feature, it is impossible to give more than just a few guidelines about choosing a printer as the choice is so varied. A whole book could be written describing each of the available models. We have reached the end of the road as far as this feature goes leaving you from the humble H30 to the mighty laser. Before you turn the page, check out all the other parts of this feature about interfaces and communication and the like and then make up your own mind. If you don't have a lot of money for a printer, decide what you want the printer to do and buy accordingly. If you have all the above information in mind you will not go far wrong!

Choosing a printer really is like tripping through the jungle but, hopefully, we have shed a little light to guide you on your way. **More Overleaf!**

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More Post Script graphics

THE RIGHT CONNECTION

Many third party printers come without any sort of cable to connect up to your Atari so you will have to purchase a suitable cable and in the case of the XL/XE machines an interface as well. The people who sell your printer should be able to supply you with the necessary cable but be careful, for you might get stung for up to £25 for a cable when you can get a similar cable elsewhere for around £8.

If you have an ST and a Centronics parallel printer then a cable will be readily available but these do range in quality from the fairly insubstantial to quite solid, hardy-weatherable super cables. They also come in different lengths so bear this in mind. A 1 metre cable can be quite restricting, especially if you have other equipment hooked up. There are also flat ribbon cables available which in some cases can be more convenient as they can easily be tucked under such items as hard disk drives etc. It is difficult to recommend a particular cable as they all do the job and price varies considerably. Best place to check is the advertisements in PCW magazine where you will find quite a choice. Give the advertiser a ring first to find out just what type of cable he supplies.

XL/XE owners will, unfortunately, need more than just a cable to get a non-Arari printer working their systems. You will need an interface of which there is currently a fair choice ranging from around £30 up to about £60. The most obvious choice is the **ATARI 890 INTERFACE** which can connect up one parallel device (a printer) and up to four serial devices such as modems. This simply plugs into the I/O port of your computer and can be 'chain chained' to other peripherals. You will still need a cable from the 890 to your printer and may have to have this made up as it is not the standard Centronics fitting at the interface end. The 890 is no longer available new and you will have to pay around £30 second hand. If you can get one cheaper it may be worthwhile but you might want to consider something else.

The **PAR CONNECTION** is the other full interface connection allowing a parallel printer and two serial devices to be connected. The unit is well made and worthwhile, especially if you may want to expand telecommunications in the future. It was designed as a replacement

How to choose the bits in between



for the 890 interface and, as such it succeeds well. This is another unit that you just plug in and forget to fit as your printer goes and it should cause no problems. A full review appeared in Issue 58. It will cost you £28.99 new and is readily available from your local dealer or from the distributors Premier Software.

The advantage of the above two units is that you do not need to start again, if you want to add a modem to your system at a later date. If all you need, however, is a straight connection to your printer then there are other alternatives which are basically cables with an interface built in.

The most sophisticated of these is the

GRAPHIS AT which retails at £28.95 but which can be obtained cheaper. It is a standard cable which plugs into the printer at one end and the Atari serial port at the other but has an interface box a few inches from the Atari end. This interface is unusual in that it can be configured in several ways by using 8 dip switches on the top of the unit. The flexibility of these is to make the interface flexible enough to handle any printer configuration but in practice this will only be found useful if your computer is used with more than one type of printer. The interface can be set so that control codes are ignored or printed, line feed can be off or on and the non-standard Atari Carriage Return is changed to ASCII or not. The remaining dip switches allow you to configure the interface to several types of printers. To be honest almost all of this can be obtained from dip switches built into the printer or by software control so what the advantages are I am not sure. Often, non-technically minded users are confused when dip switches set on the interface clash with those set on the printer. If you like gadgets, the **GRAPHIS AT** will be worth playing with but there are much simpler interfaces around.

A much simpler alternative which does the job equally as well is the **MICRO PRINT INTERFACE** from Supra, also distributed here by Premier Software. This comes in a 50" long cable which plugs into the serial port of your Atari with an interface at the other end that plugs into a Centronics standard printer. The interface box measures 3" by 3.5" by 1" so is fairly unobtrusive when plugged into the printer. This unit, whilst having a standard Centronics plug, does not use the retaining clips found on all printers so that it does come as if it may fall out at any time. The interface is quite heavy and on printers that do not have their connectors close to the bottom of the printer it tends to sag, leaving you with the feeling that an accidental hit could snap the PCB. However, it works and is completely 'transparent', just plug it in and go. It will cost you around £28.95.

A much better interface cable **ICD PRINTER CONNECTION** which is similar to the Supra interface but is altogether a much more compact and well finished unit. This comes with an

STARTRAK Game Controller from RHdesign £18.85

Reviewed by John
Davison jnr

incredible 10 feet of cable enabling you to take your printer almost anywhere. The interface end is a super, compact, light unit being no wider or deeper than the Centronics plug and just 2" long. It has the facility to use the standard retaining clips and you will hardly notice that it is there. This is priced at £26.95 in the States and has not, in the past, been easily available over here but Promise Software are now distributing this interface at just £29.95 which must make it the first choice for any 8-bit owner. Another one that you just plug in and forget. Highly recommended.

Finally there is the **P.P.P. interface** from Rambit which, at £29.95, is intended to allow you to connect up your printer at a budget price. This comes as an interface box which connects to the Parallel Bus Interface of the XL or XE machines and then, via a standard Centronics cable which you must supply, to your printer. The interface is software driven either by disk or cassette but has the option of an EPROM driver which can be fitted to your computer thus avoiding the need to boot software each time. The disadvantage of software drivers is that they will not work with all word processors, for example it is difficult, or impossible, to load the printer driver and then a word processor that has to be loaded by a power-on. The figure solves this problem but then puts the price up to £44.95 which is more than the Micro Print interface which you can just plug straight in. You may also need to buy a Centronics cable which will add at least £8 to the price. The P.P.P. interface works but, sadly, does not compare favourably with the Micro Print interface. A great pity, so small companies such as Rambit deserve support in the Atari community for continuing to make products available when others don't. In the days of the 800 as the only choice, the P.P.P. would have been a useful value but now it has strong competition. If Rambit could afford to reduce the price they would find many more customers but, unless you can sell in great volume, obtaining the lowest price on components is not easy.

So there you have a choice of most of the currently available interfaces and cables. Don't linger about connecting up or you could find yourself at the proud owner of a brand new printer that won't talk to your Atari!



StarTrak is a form of game controller which I don't believe I've come across before. Basically it's a black box with seven or eight small buttons laid out in two concentric rings of eight buttons plus a central fire button. Why seven or eight buttons? Well the reason for this is to give you the right 'basic' directions, as on a normal joystick, i.e. up, down, left, right and the diagonals, and the same again with firing activated. Below the buttons on the unit is the StarTrak logo wheel and a three way switch which enables you to flip between auto fire, 'burst' fire or normal firing. The unit supplied did not have a cable permanently attached. You must plug the supplied cable into a mini pin connector on the front edge of the unit but I understood that this may be redesigned so that the cable is permanently fixed. It really needs it as the cable tends to fall out in use. The cable supplied with my unit was around six feet long, which is considerably longer than the average joystick cable - a good or a bad point depending on your point of view.

I tried StarTrak with many different games including Rampage, SuperSprix, Tronika, International Karate, Airball and FrostByte. I found I just got used to using it with FrostdByte and Airball, but on the other hand SuperSprix was more enough impossible to play (in one anyway!) In most cases I did not get on very well with it at all. One game which really did benefit was Airball, because using StarTrak made it easy to obtain accurate diagonal movement. I would have expected it to make Karate games

easy to play but after a few rounds with International Karate, which with a normal stick I can usually keep going for a long time, I found the computer was consistently beating me! The controller is suitable for any game in which diagonals are needed a great deal of the time, but for most games, like shoot 'em ups where fast reactions are needed I just couldn't get on with it.

The construction of the stick is not very good, being very light and not really very strong. Whilst testing the controller I found two things which annoyed me. The first was the cable slipping out from the socket mentioned above and the other was the fact that the fire button kept inexplicably locking even though the auto fire switch was not activated. I hope that there are just minor faults with my particular unit.

If you are not used to any one particular type of controller then you might be able to get used to StarTrak - but for me, I'm going to return to my simple Atari stick. Try before you buy, it is quite different from a normal joystick. You may take to it straight away, I couldn't!

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COLOUR TUNER



Choosing the right colours made easy by John Lawford

Last summer I got confused, not for the first time. I might add. Perhaps confused is the wrong word, disconcerted may be closer, led up-creek and it wasn't just with the weather as the little lady demanding that, the moment the recession ended, something had to be done about the lawn. Sometimes those computer terms take a long time to grasp!

Even after reading up the SETCOLOR command for the comprehensive time I still had to write little notes to myself which I subsequently couldn't decipher so I decided it was less hassle to fiddle all about SETCOLOR and go back to FORKING the COLOR registers with the color value *16 + luminance. Great. I knew that, according to the book, 40 would give me a lightish orange but how light? Then there I had to work out that $2^7 + 8$ was 48. The color number was simple enough I could look that up but exactly which shade would a luminance of 8 give me. It was time to forget about the lawn, pray for more rain and get down to some programming - The result was COLOUR TUNER.

USING ALL THE COLOURS

I claim to use Graphics II-one of ATARI's marvellous GTIA modes, because it would give me a chance to play around with all the color registers from 004 to 71E. I needed a way to vary the luminance from the keyboard and to be able to see the effects immediately on the screen so I decided to use the console keys to achieve this. Pressing SELECT would increase the luminance in steps of two and OPTION would decrease the value by two steps. When the brightness value exceeded color + 16 then the display would move on to the next colour and so on. After a few minutes because I had a possible little program.

STICK IN A DLE

What was needed now was an interesting introduction page in Graphics II but not in that boring old blue and white. I remembered reading somewhere that it was possible to set a DEL (Display List Inversion) on any line - but how?

Out with the books again and another two hours of semi-confusion but eventually I stitched together the subroutines which start at Line 20000. Basically it is a small machine code routine which sets and enables the interrupts. It reads the data starting at Line 20050 and loads location 710 with the background colour and location 708 with the luminance of the characters. As I wanted the background to be light pastel shades, the majority of the time had to be dark so the character luminance was set to 8.

I used COLOUR TUNER to experiment with the background colours and used the values obtained as the data for Lines 20060 - 20066. You can use this routine in your own programs to create Graphics II screens in glorious technicolor, simply GOSUB 20060 and sit back in amazement at your own artistic talents. The screen will vary as you designed it until you press RESET or change the Graphics mode, when you will have to call the subroutines again to get it back.

USING COLOR TUNER

When you first run the program there will be a slight pause while the machine code is loaded and if you've made no typing mistakes you'll see the colourful introduction screen.

Pressing START will move you into the main program and you should see eight grey bars being drawn each with a figure above it, and exactly what's happening at this stage has type a number from 1 to 8 for the bar you wish to tune and press SELECT. If you keep your finger on the button the colours will cycle through the available shades. Use OPTION to stop back and use the two buttons to arrive at just the colour you had in mind for each of the 8 bars. Press the 0 key to work on the background and when everything is to your liking, press Q to see the values you should POKE into the color registers to get your selected colour.

It's as simple as that. A neat way to get exactly the colours you want without guesswork. Trouble is, writing these programs takes less time now so I guess I'll have to go and see that lawn after all!

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00 3 0000 4 0 0
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00 7 0000 0
00 8 0000 0
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22 STRANDED and Lapis Philosophorum

STRANDED

There was a time when English software was the predominant product of Atari and IBM in the U.S. The bulk of their product line consisted of single-board games, but during their waning days also produced the good (and only) good Adventure.

That was very bad in 1984, or, more than old-fashioned could possibly have forgotten the game by now. Now, interestingly, it's never forgotten, but it's not as readily available. The game is available in Stranded.

Stranded is an illustrated 30-level port written by D. Woodhouse and C. Hooper. Yosemite was designed for both the Atari and the Coliseum II, the first version being available on diskette sometime in 1980. The game shipped a few happenings magazine reviews, and seemed to have been considered worthy of a life span. It was later included as part of a collection of disk-titled Atari Software Title Volume 2. This was a disk better value for money. It's an extra \$4.99 for three disks, yet you only get Stranded, but also another game on one (Judson), Ecco, Dungeons and Dragons and Grand Wizard. This disk is not really for sale, usually at a discounted price. I paid \$10.95 for my Stranded.

Stranded may not be a real remarkable game, but it does have its place in Atari history, for it was the first computerized version Atari Adventure on cassette which had graphics. Needless to say, the graphics commands for all locations had to reside in memory at the same time (because of the limitations of cassettes) and therefore, the graphics had to be very simple. However, they are drawn nice and big and if you've seen Level 9's early graphics, then you'll know the rest of what to expect.

The game itself has a rather corny storyline. You play the part of Special Agent 501 of the S.A.S. (Nasty way to name of Stranded laughs at this name. Don't ask me why, it's not my private joke. It may be a reference to the sound of "501" in the Coliseum II. Now that WOULD be funny.) The year is 2144 A.D. You were returning home to earth aboard your spaceship when you were shot by a transporter that had landed on a strange planet. Your mission is to find your way home.

Once the game gets under way, the first thing you'll notice is the primitive, two word parser and the lousy vocabulary. When entering a verb, only the first four letters are significant. Because of verbs longer than four letters, it's not easy to know that is full and some must be truncated. For example, CLIMB is okay, but EXAMINE must be speak ISLAM.

The second thing you'll notice is the terrible map. It's one

Garry Francis casts his eye over two very different adventures and gives the usual hints and tips

of those games where all the exits are covered up for no apparent reason. For example, going north doesn't necessarily mean you can't return by going south. You may have to go east or west or up or down or goodness knows where! That's a little different from other games to put your mapping skills to the test.

The third thing you'll notice is the lousy instructions in the game. For example, "There's a robot which explodes, yet remains intact, even when it is climbable in one form, but not in another, a door which is climbable, looks good to mace. Now many times you pick the lock and a opening with one more while on the ground and no way, what to do. This is just a sample. There's a many more.

The early graphics of Stranded were beautiful when first designed (but not the basis of the lousy production). However, they ARE terrible. I think the whole game is a couple of hours, if you're a beginner, it may take a couple of days, but you can't ask for the game to be any better. It's a little bit of a long run. If you are having trouble, make sure you type HELP in every room. This will give you a useful list. It'll be done for you, but it's called help, so accompanying this article.

For me, the high point in the game was when I came upon a message that said, "Don't be a fool, you're walking on a mine. Stay in the shadows. There's a lot of gold in the basement!" The game started with a 3000 Blue Police Public Call Box seen to effect in the TV ad. I was a huge fan, and I have only recently discovered Doctor Who. Before that, there were few other high points.

Overall, Stranded is a disappointing game. As an alternative to a long drive to bed, it's a good way to pass time, but it's not a game. It's a good way to pass time, but it's not a game.

And to any other Coliseum II programmers who are thinking of entering an Adventure to the Atari to make an extra five bucks... don't bother!

LAPIS PHILOSOPHORUM

Wise King Gimelair of Athanien has been poisoned by his spy-mem. Messengers have been sent throughout the land to find a cure for the poison, but so far, they have been unsuccessful. When a messenger visits you with news of the King's plight, you decide to come out of retirement and return to Athanien in order to concoct a poison to bring the King back to good health. Thus the scene is set for Lapis Philosophorum - The Philosopher's Stone.

Lapis Philosophorum was written in German by H. J. Rickman and A. Volkamp. Fortunately for us, it has been translated to English and is distributed in the U.K. by Aristonsoft. (Aristonsoft no longer have U.K. offices or services available in my opinion. *Sad.*) It has been available since late 1986, but strangely enough, it is rarely ever mentioned in advertisements or magazine articles. This is a pity, as it's really quite a good game.

I don't review Lapis Philosophorum here because I want to concentrate on game playing strategy. After from which, Jim Shore has already reviewed it in issue 26 (March/April 1987). The only comment I'll make is that the overall look and feel reminded me a bit of The Blade of Montpelieu which I covered way back in issue 12.

The game starts in the living room of your house. You are mysteriously banished and have no idea how to begin making your poison. Asking for HELP often gives a useful hint or tid-bit of information, so get into the habit of using it every time you discover a new room. If you explore the house thoroughly using LOOK, EXAMINE and READ (they all give different responses), you should find an old book which tells you about a mysterious stone called the Lapis Philosophorum. This is said to be capable of creating a universal healing potion, but only the monks of the House Mercurary know how the poison is produced. At least your objectives is now clearer - find the monks and/or the Lapis Philosophorum.

(Lapis is Latin for stone. Philosophorum is no-doubt a corruption of the Greek philosopher, meaning philosopher or lover of wisdom. Hence the subtitle, The Philosopher's Stone. Interestingly, the philosopher's stone was once believed to be real. The Concise-Oxford Dictionary defines it as a 'supposed object of alchemy' or a 'substance supposed to change other metals into gold or silver'. Both uses are mentioned within the game.)

If you have trouble leaving the house, it's probably because you haven't tried all the directions. Each room has eight possible exits - N, S, E, W, U, D, IN and OUT. The latter two aren't mentioned in the instructions.

Once you've left the house, you'll find yourself in the middle of the city. You can't leave the city just yet because of the guards on the gate, but there is plenty to explore and do in the meantime. You could try finding another way out, but I won't guarantee there is one. The city's many nooks and crannies could prove helpful here, but if you borrow anything from there, make sure you return it on time (within 30 moves)! You could also try evicting your lot of rodents and your double of fellows or doing a good turn for a little old lady. Her gratitude could provide the key you need to leave the city. (You are getting sleepy... sleepy... You are falling asleep...)

If you leave the city at this point, you might be leaving a lot behind. Oh, Family you had some money! Have you lost something? Some find it quite profitable.

Once you've got some money, it's off to the market place for a buying spree. What's this? Only a pig for sale? Stewie. What

a lousy market place! You will later find that the market place actually sells less of most things of interest to a control-aholicist-spy-adventurer, but the vendors keep things out of sight for fear of thieves. As the Adventure continues and you think of something that may be useful, come back to the market place and try to buy it. It will usually be available. You have enough money to buy a set number of things. All but one come from the market place. When the money runs out, you'll know that the market place's usefulness has also run out.

By now, you should be ready to venture beyond the city gates. The countryside of Athanien consists of scattered plains and forests broken up by a wildly meandering river. The river creates a barrier which must be crossed several times during the game. You'll first encounter it just north of the city where the path branches and crosses two bridges. One leads to the King's castle, but the guards won't let you in without a coin for the King. The other leads to a band of drunken braggarts. How can you get past the braggarts without getting annoyed? You can't be the answer. Hmm, all this talk of braggarts reminds me of nights and curling up in bed with a good book to read. Also, remember the market place.

Once past the braggarts the game really opens up and the puzzles get harder. First of all, you will probably find a thin crack in the nearby rocks which allows you to see into a cave. You CANNOT fit through the crack or get the object you see in the cave, but you CAN get into the cave another way. Make sure you draw a map, because geographically, this game is very well laid out.

A little further north, you'll find a seemingly useless wood, but a bit of thought and a trip to the market place should pay dividends here. If you sleep all night and work all day, wear suspension and a hat, you'll have no trouble with this one!

Just west of the wood, you'll encounter the river again. You can cross the river at three different points using three different methods in order to access three different areas. I'll refer to these as the north, south and west areas. You'll probably visit the south area first because you only have to cross a bridge. Explore it thoroughly and collect all the useful items.

Acrossing the north area isn't quite so easy. Make sure you type HELP for a valuable hint and before long you'll be paddling down the river - but don't paddle TOO far!

When you're on land again, you'll find a cave which you probably can't enter yet, but a trip to the market place will solve that problem.

Once inside, your progress is blocked by a dry and empty trail. It will only let you pass if you succeed in a life or death game of hangman. This turns out to be quite a fun game within the game, which can be played over and over again if you've solved the game beforehand.

The program has a list of 30 words. Each word is two characters long. The first time you play the game, a word is picked at random. From then on, the program cycles through the words in the same order.

The normal strategy in playing hangman is to try all the words first, then fill in the gaps by picking the most promising looking consonants. This strategy works here too, except that you cannot always afford to try all the vowels. You can only miss four characters before you get hung! Start with 'E', then get a little more selective. For those having trouble, a full list of the words accompanies this article. (But no cheating! Give it a go yourself and only use the list as a last resort!)

Note that there is a bug in the program which causes mistakes in one word. On one occasion, I went through another

Garry Francis' ADVENTURE HINTS

25 words of mischief below, realising something was drastically wrong. The rumpuses included no rumps and spurs, imbedded within the words. If this happens to you, rebuke and try again.

Once past the look, the cave can be freely explored ... well, almost. Because of the partially collapsed tunnel!

The trail will block your way again when you decide to leave. This is a mischief problem. Just remember that trails are greedy!

Accessing the west area requires you to somehow attract the attention of the ferryman on the other bank of the river. If you manage that, you'll soon find yourself at the abandoned Moss Monastery, but without a way to get in! Remember the cheap depository? Remember the market place? Remember the Madman's! If you dig around I'm sure you'll find the key to this puzzle and if you get some help, you'll be able to turn a negative situation into something positive.

Once inside the monastery, you'll need some brown loaves to open the trapped door to the courtyard. And a jewel canal. Put the combination for the lock down's work any more. Everything here is in a bit of a mess. Maybe it's time to do some cleaning up. Mines, mirror safe and round, where's the combination found!

Once you've managed to open the jewel case, your course of action will become clear. Just collect the four ingredients (most of which - if not all - you will have found by now) and mix them together at the appropriate place. The last thing left to do is to take the life giving potion to the King, but be prepared for a surprising (and humorous) ending!

NEXT ISSUE

Let's tell you that next issue is an Adventure Special Issue. I'm looking forward to that one! I'll have a bumper crop of Adventure hints from over thirty different Adventures and maybe one or two other surprises. See you then.

As always, feel free to write if you have suggestions for the column or if you'd just like an Adventure hint, but include two International Reply Coupons if you'd like a reply.

Garry Francis
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Barfleeton,
N.S.W. 1286
Australia

HANGMAN WORDS FOR LAPIS PHILOSOPHORUM

EXHIBITION	CHALLENGER	HITCHHIKER
SUPERHERO	ASCENSION	LITERATURE
EXPERIMENT	SLIGHTLY	BLACKBOARD
LITIGATION	PULLING	DEPARTMENT
ACQUITTANCE	EXPOSITION	ALACRITY
NAVIGATION	DEPARTMENT	INTERLOPER
PHOTOGRAPH	SATELLITES	AMBIGUITY
OFFICIAL	STATISTICAL	INFLUENCE
STATIONERY	COMMISSION	STYLISH
SEMI-CRIME	HELICOPTER	SYNTHESIS
SEPARATION	CONVULSION	INFLUENCE
GOVERNMENT	MAJESTY	HYPOTHESIS
EXPLORER	LABORATORY	PROCELLAN
PERCESSION	ENTRANCE	MURMUR
STRAYBIRD	WILDERNESS	TRUSTFUL
SCANDALIST	CONFESSION	AGONY
ADVENTURER	INTERESTING	

STRANDED

1. What's that your way to the desert?
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2. What's that your way to the desert?
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3. What's your name in the desert?
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4. What's your name in the desert?
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5. What's your name in the desert?
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RABBIT

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HEAVY METAL is a JD arcade adventure for any ATARI 400/800 XL/XE with at least 48K RAM and a joystick.

Your mission is to recover the seven lost swords which have been scattered throughout the double maze-world of rooms that you inhabit. You control a spinning ball-bearing with a joystick in port 1. Move the joystick in the appropriate direction you wish to move. You may climb walls that are low enough and you may use ball-off walls, although you'll die if you fall too fast! Hold the trigger to put the brakes on and stop your ball-bearing from moving.

In each room there may be a number of teleports which will transport you to another location. These are marked by a diamond floor pattern. Simply step on the transporter then press and release the trigger to transport! In some cases you will press and release the trigger to transport! In some cases you will encounter a jumping bear, an evil black ball-bearing and a scary piece of steel. Contact with any of these is fatal. To safety places of steel. Contact with any of these is fatal. To reflect a level simply move over it. You have a certain amount of time and your game is over when you run out of time. Getting killed simply costs you time and you'll start the room again.

The **START** to begin a game at the first location. The **OPTION** to begin a game from the last location visited, however you lose any swords previously collected and so you'll have to go back for them. Use **SPACE** to pause, then any key to resume. Use **ESC** to abort a game in case you get stuck somewhere!

HEAVY METAL

Thirty five screens, evil ball bearings, slime and much more in this machine code extravaganza from Paul Lay

PAUL LAY

Paul Lay is well known to **PAGE 5** readers through his previously published articles and programs and as he has stated that Heavy Metal might be his last 8-bit program, we thought it an opportune moment to bring you a short biography.

Paul Lay B.Sc. (Eng.) at City U. is a 22 year old Software Engineer from Billingsy, Essex. He graduated two years ago from Imperial College, London with an honours degree in Computing Science. Paul's first exposure to computers was with the good old PDS but his first experience in computing for real came at school when he opted to take an "O" Level Computer Studies course. Shortly after, he received a Sinclair ZX81 as a 16th birthday present and immediately started cranking all sorts of things into a whole 'n RAM! At a couple

of years later, after learning to program on his Dad's Atari, Paul became the proud owner of a little Atari 800 which is still going strong today.

With his own machine, Paul started writing some short machine code utility programs and submitted them to Personal Computer World magazine with a fair degree of success. His first submission won the Program of the Month award and later appeared in the PCW 'Best of' book. A little later he was introduced to Page 5 magazine in which he has since had quite a few programs published. *Frantically Hot!* was the first high in issue 18 and *Heavy Metal* is the latest but, hopefully, not the last.

With a few magazine listings under his belt, Paul decided to have a go at writing a commercial game. The result was *Spring* which was initially released by *Software Solutions* and then later re-released by *Red Box Software*. It features some excellent graphics reminiscent of the best American games of the time.

As a university Paul had studied Pascal,

Modula 2, C, Micro Prolog, Hope and Simula together with PDP-11 Assembly. In fact his third year project was a PDP-11 Assembly and Simula version in C. With this background Paul just had to get an ST and found his university work a good grounding for learning 68000 assembly. Shortly after Paul acquired the ST, Amiga magazine announced a £2500 programming competition to be set to work on a conversion of an 8-bit game that he had already had published in Amiga called *Play The Devil On The Beach*. The result was a game called *Play The Devil On The Beach*, which won the first prize! Unfortunately Amiga were two days before paying with the prize money so he had the game for his friends!

One conclusion was that *Software Solutions* spotted the program and arranged with Amiga to market it outside the U.S. The result was an improved version entitled *Mining: One Devil which appeared on the Big Blue label as a budget title on both 8-bit and ST formats.*

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What's Happening

All Software have recently signed up a distribution agreement with Lakeside Computing for their range of budget priced software. Among the products already available are utilities and educational software including the first of a series for young children entitled **ADD WITH OSCAR** and **SPELL WITH OSCAR**. Programmers in GFA or PAST BASIC will find several useful programs including **PICTSTEP** which allows Degas or Neo pictures to be included in programs with ease and **AN ANIMATOR** which can supply animated sprites for use with these languages. All All Software is at a budget price starting at £3.99.



Forger Software now have an impressive clock for the £20 and £300 series called the **FORGET-ME-CLOCK** which costs at £22.95. This battery operated clock simply fits beneath the keyboard of your computer stand, once there, can be forgotten. The current date and time will always be available whenever you boot up and the batteries are recharged whenever the computer is on. The unit is priced at £22.95. Also from Forger is an amazing new hard disk drive for the Mega ST which actually fits inside the case of the CPU. The **MEGADRIVE** from Sage will be available in 20MB, 30MB and 40MB configurations and will offer all the same facilities as standard hard drives, except you won't see it! Prices start at £289.99 which includes dealer installation.

Other releases to look out for include **MINIFIGHTER** from Abstract Concepts an original adventure based on the book of the same name with aligned graphics and independent characters that do their own thing while you play. Firebird's new budget releases include **1 BALL**, **MISSION GUNSCIDE**, **THRUST** and **WARBANK** all for just £9.95. Others include **CAPTAIN AMERICA** from U.S. Gold, **MARCH 3** from Elite, **ROLLING THUNDER** from U.S. Gold, **SCRAMBLE DELUXE** from Lakeside Games, **TRATOR** from GIG and **THE PLINTSTONES** from Grand Slam.



Grenada Graphics should be out now.



Creation Software's second release is **STORMTROOPER** which is a fantastic arcade adventure featuring horizontal parallax scrolling and has 16 levels. If the gameplay is as good as the superb graphics then **STORMTROOPER** should be something really special.



Among the re-releases or revised versions - **K-WORD 2** from Exotic which has been reduced in price to £29.99, **RAMEN** from Blast, which is now in Version 2 priced £29.95 and features a read proof RAM disk, printer spooler, undelete utility and a multiple disk accessory to allow access to GEM files from within other GEM programs. Also here **STRIP POKER 2 PLUS** for £14.99 which has pictures as good as they quickly dropped the original version!! **TIME BANDIT** from Microdeal has also been re-released at a new price of £19.95.

QUICKLIST UPDATE

Quicklist, released last issue, has been updated several times since the copy we had for review and is now available from Lakeside Computing at a new price of £3.99.

All Software take on their several of the criticisms of the review have been attended to in the current version. The program can now read from any drive including hard drives and has faster save facilities and, following comments on the review, has been further amended so that the keyboard can be used and the display is normal on exit. There is also now a FREE custom disk formatter with the program which makes it just as much a bargain at the new price.

You can get a copy from Lakeside Computing, 33, Donalich Road, Preston, Lancs, PR1 2QP.

DUNGEON MASTER

FTL/Microsoft
£24.99

Reviewed by
John Sweeney

Dungeon Master is a Fantasy Role Playing game of quite amazing quality. The graphics are superb, from the detailed corridor walls, which have to be carefully examined since they contain secrets such as levers, to the animation of the Dungeon's inhabitants as they attack you. The only bad thing about the animation is that it is so good you keep looking at it when you should be concentrating on your attack! The game happens in real time so you have to react quickly in a fight.

A great deal of thought has obviously been put into the ergonomics of the command input. By pointing at the appropriate part of the screen, and pressing the appropriate mouse button you can display vast amounts of data about your characters' status and possessions instantaneously, and issue quite complex commands to cast spells



or pass items between your characters with the greatest of ease.

You control four champions (elves, dwarves,izard-men, woodriffs), etc.) in a quest to the depths of the dungeons. The view throughout is a view ahead down the corridor of what your champions can see. The quest starts off fairly easily, teaching you how the game works by giving you simple puzzles to solve - pick a key up and try it in a keyhole, stand on a floor panel to clear a pit. Not too many dangers on the first level - just enough to allow you to familiarise yourself with the game system and learn how to cast your first spells.

All your characters can learn to cast spells. Your main problem is finding

out what they are! The **Dungeon Master** manual is very easy to read and introduces you to the 'Dungeons and Dragons' concepts; it also teaches you how to cast your first spell. The rest you need to learn, either by experiment or by finding clues in the dungeon.

Of course any game can look good to start with - I haven't got any for you, but I have checked with a friend who has had rather more time on it than me - he is down on the 12th level! He is still thoroughly enjoying it - apparently the traps, monsters, and puzzles do get progressively harder - so it holds the attention well. (And no huge risks!)

It really is almost impossible to find any fault with this game (I could complain about the fact you have to commit suicide in order to restore a saved position - but that would be childish). Check it out now. If you have never tried a game of this nature before then you won't find a better one to get started on. If you already like computerized PRP, then you will love **Dungeon Master**.

Next issue will be an **Adventure Special** so look out for an in depth review of **Dungeon Master**. If I manage to think it is that!

TETRIS

Microsoft
£19.95

Reviewed by
Lee Ellingham

Computer games get more and more complex and it becomes more and more difficult to find a game that you can just boot up and play. Don't you sometimes long for the simple days? Remember when you used to keep going back to Breakout for just one more go? The trouble is that it is easier to write a complex storyline than it is to come up with a new idea for a simple game. All of the simple ideas have already been used, or have they?

Suppose you could find a game that was as simple to play as Breakout, as challenging and as addictive but was totally different? Surely you would be onto a winner! Well, Andromeda have come up with just this formula with Tetris and it surely must be a winner.

It's simple. In the middle of the screen you have a vertical column in which various geometrical shapes fall. All you have to do is rotate them and



move them left or right so that when they reach the bottom of the column a another shape a solid line is formed. If you form a line, it disappears and all the remaining shapes drop down one line. If you have gaps in the line then the shapes stack up on top of each other until they reach the top of the screen and you lose the game. If that sounds boring, believe me it's not! Your brain and fingers will be constantly working as you try to figure out the best position for the next shape, bearing in mind always that the one after must be slotted in. On the slower levels it takes practice and by level 9 you need to play by three minutes - it may take you months to get that good!

The shapes are controlled by the keypad which takes a little bit of practice, unless you are an

ex-Spectrum owner(!), but once mastered control becomes almost automatic. The shapes can be rotated, moved left or right or quickly dropped - and that's about it, nothing more is needed. Simple in concept but difficult in execution. The game plays on both colour and mono systems. It is, in fact, easier to play in mono and is one of the few games that is just as well suited to both systems.

The packaging is appealing for a game costing £19 (just an inlay printed on the inside with instructions for four different machines but then there really isn't much to say in the way of instructions). In the long run you will almost certainly get your money's worth for this is one of those games you will play up time and time again whenever there is a slack moment, just to see how much better you can get - and be prepared for some early morning sessions as you try 'just one more time'!

Who would have thought that after all these years the successor to those old favourites Pang and Breakout would appear! Tetris is a little more sophisticated but its roots are in the very heart of the all-time computer classics.

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\$99.95



Reviewed by
John S Davison

For years now I've been a user of the ancient but excellent Visual spreadsheet package on the 8-bit Amiga, with occasional usage of the ubiquitous Lotus 1-2-3 on the IBM PC. Until now I've not had the chance to use a spreadsheet on the ST, so I was curious to see how this GEM-based product from Ditek compared.

The package contains a 148-page spiral-bound manual and a single-sided disk. The manual isn't really up to scratch for a program of this price — all the material is there, it's just that you have to hunt around to find it. A proper index would help, as would a reference card of some description. The disk isn't copy-protected, making backups and installation on a hard disk relatively painless. It requires 128K minimum to run, but large spreadsheets may need 6024K. This review was conducted on a 320BTM with colour monitor, but it also works with monochrome systems.

LOTUS CLONE?

Although there's no claim anywhere in the packaging or documentation, MasterPlan is a partial Lotus 1-2-3 clone. It's not fully compatible as it doesn't have macros or database facilities, and has fewer features in other areas — such as built-in functions. VIP Professional is reportedly the nearest thing to Lotus on the ST, so I used a Page 6 public domain VIP complete disk to check compatibility with both VIP and (surprisingly) Lotus. The complete I tried did seem to load

and work OK (except macros) once I had changed the filename extension to .WKS.

After bootup you're presented with a blank worksheet. This doesn't quite take up the full screen as the top five lines include the menu line and a control panel area, which are always visible. Menus can be several levels deep, so one of the several panel items allow you to step back a menu layer or go straight back to the top level. Menu selection may be done with mouse or keyboard, with keystrokes using the same conventions as Lotus.

The control panel has a neat and compact layout and contains several mouse-selectable action and status icons plus status and edit lines. The Express icon, looking like a collection of arrowheads, is used for rapidly moving around the worksheet in combination with MasterPlan's roll range facilities. Others allow you to do such things as inserting help, linking calculations, viewing a graph, and so on.

Worksheet capacity is massive, potentially holding up to 8192 rows by 256 columns meaning you have the memory to support it. Columns which may be varied globally or individually to suit the needs of particular columns. I expected to be able to have multiple windows open on the worksheet giving simultaneous views of several different parts of it, but this isn't possible.

Instead, the screen can be split horizontally or vertically permitting simultaneous viewing of just two different parts of the worksheet, with

independent or synchronous scrolling of the two windows as required.

GOOD USER INTERFACE

Much thought seems to have been put into the design of the user interface, with the mouse generally employed in sensible ways. For example, the right-hand mouse button duplicates the Return key, allowing single-click acceptance of defaults or confirming a requested command. In position this should mean less switching between mouse and keyboard and a reduction in the amount of "redraw scrolling" required. Mouse usage isn't mandatory though, as there's usually keyboard or function key alternatives available.

Moving around the worksheet may be done in several ways — via the Express icon, GEM scroll bars, keyboard arrow keys, the GoTo function for jumping directly to a specified cell location, or simply by moving the mouse pointer. To help you keep track of where the rows and columns actually represent, the top and/or side titles may be frozen in place so they're permanently visible whenever you scroll the worksheet.

As with most spreadsheets, the cells can contain one of three different types of data, namely, values, formulas, or labels. Values are simply numeric values, and can have a wide range of formats. Different formats may be specified for different parts of the worksheet.

Formulas can calculate a numeric



value from parentheses held distributed in the worksheet. A formula can also include one or more of MasterPlan's library of 46 built-in functions, which are a subset of those found in Lotus. They include financial, mathematical, logical, statistical, date manipulation, and other special functions.

The third type, labels, are used for entering constant data such as title lines, column and row headings and the like. In fact, you can type in complete sentences, or even paragraphs of explanatory text if you wish. Unlike some spreadsheets, MasterPlan doesn't need you to manually sleep up your text and enter it in cell-sized chunks, but will take the whole string of input characters and automatically enter it into the appropriate number of cells (if they're empty). If any happen to be occupied, the current contents remain intact so you don't accidentally overwrite them. MasterPlan also has a general cell protection facility to prevent any accidental change to cells.

EDITING FEATURES

Setting up a worksheet can be very tedious unless you have decent editing features. MasterPlan is very good in this respect, having full cell editing facilities (including UNDO) and all the expected row/column insert, delete, copy, and move functions. It also has cell range commands, allowing easy manipulation of defined ranges of cells. Copying and moving a range of cells may be done using the mouse, simply by dragging a box round the required cells and pointing to the target locations. Any cell references contained in the cell range may be automatically adjusted if required, and in addition you have full manual control over

absolute and relative cell addresses.

MasterPlan has comprehensive file handling facilities allowing not only the normal loading/saving of complete worksheets, but also the saving of selected sections and combining of several different worksheets.

Combining works on corresponding sections of two worksheets, permitting replacement of cells in one with those from the same location in another (including labels and empty cells). You can also add/subtract corresponding cells in from the current worksheet, enabling you to quickly produce a summary worksheet from several others. You can also import files from programs other than MasterPlan in text, numeric, or mixed form.

Once you have your worksheets set up you can print a hard copy if required. MasterPlan will automatically divide the worksheets or selected part of it into sections that will fit the page format you specify. Page length, margins, headers, footers, and borders are all user adjustable. You can also send a string of comment codes to your printer to select type style, font, etc., as required. One thing you can't do is print sideways on a page, which is sometimes useful for very wide worksheets. You can direct output to a printer or to a file, the latter allowing transfer of a worksheet to a word processing program or other utility.

TURN NUMBERS INTO PICTURES

MasterPlan has reasonable graphing facilities, allowing you to turn all those indigestible numbers into an easily understood pictorial form. Graph types include line, bar, stacked bar, and pie charts. These may be customized with

various title, label, legend, grid, and scale options. Switching between graph types is very easy, so if a line graph proves inappropriate a few clicks will produce a bar chart in its place.

Graphs are drawn in a separate window and most can show up to six sets of data. Pie charts handle only one set of values, with each value shown as an individual slice of the whole. The program calculates the percentage value of each slice and displays it alongside the relevant legend symbol at the side of the main chart. To me this looks messy, I would have preferred to see the value adjacent to the main pie display instead. It's possible to toggle worksheet and graph windows to display them side-by-side. Thus, after making changes to worksheet values you can see the effect on the graph almost immediately.

Graphs may be dumped to the printer using the GEM screen dump facility. You can also produce a picture file on disk in DIBRES format, permitting the use of separate utilities for enhancement or display of your graphs. MasterPlan's graphing facilities aren't as good as a dedicated graphing program such as E-DGRAPH, but are perfectly adequate for most purposes.

In summary, I liked MasterPlan. It's easy to use and has many facilities I need from a spreadsheet package. Didn't call it a financial spreadsheet, but I found it perfectly suitable for general use. It's a pity it doesn't have macros, though, as this reduces its flexibility. So, if you want a good Lotus-like spreadsheet, but don't need the power (or expense) of a full Lotus clone like VIP, then consider MasterPlan. It's probably just what you need.

SPECTRUM 512

Only 16 colours? See what your ST can really do



disk which changes the file. It correctly sets the frequency on bootup and if you then load Spectrum itself it works perfectly. The problem should be solved when the program is made available here by Elocatic. Distribution, but check it out for in case.

COLOUR MANAGEMENT

Spectrum's most obvious asset is its ability to put 512 usable colours on screen simultaneously. By usable I mean that you can draw with any colour at any time in any position on the screen. In fact there's a slight limitation in that you can't have more than 48 colours on one scan line, but practically this isn't a problem.

So many colours can be an initial nuisance as they become difficult to manage. Spectrum handles this by having several different types of palette available. Custom palettes can be defined containing just the range of colours you want to work with, and may be saved and loaded as required. The floating palette allows you to select a colour and have Spectrum

automatically provide the 28 shades closest to it. Alternatively, you can fix the palette and use an unchanging selection of shades, and you can even pick up colours directly from an existing picture. There's also a feature where you can specify two-colours and Spectrum provides a palette of all the shades in between. All this is additional to the built-in, spectacular, 512 colour matrix palette which may be called up at any time!

Colour flexibility doesn't stop here, though. There are facilities for editing colours in existing pictures too, either in the whole picture or in a localised area of it. You can search and replace one or more colours with others, and add/subtract the red, green, blue, or several luminance colours of existing colours. So if you don't like an effect you've created it's easily changed.

512 usable colours on your ST's screen? All at the same time? Yes, it's now possible with this amazing new art package from ANTEC. There's no catch, it really does work. The screen shows rock motifs, rich colours anywhere on a live resolution display, with no signs of flickering or other aberrations. This new miracle is achieved through some extremely clever programming involving the timers in the ST's MMU chip. It also requires various chips in the ST to be accurately synchronised with each other. More of this next.

The package received for review contained a high quality handbook ring binder containing a well written 99 page instruction manual, and one single sided disk. The disk contains Spectrum itself, disktools, synchronisation, and picture format conversion utilities and a few sample pictures. It will run in 512K, but one megabyte gives additional flexibility.

Before using Spectrum you have to ensure the ST's chips are correctly synchronised with each other. There's no guarantee that this will always be the case when you switch on, so the

small utility program supplied allows you to test it for yourself. If the sync is not you simply switch off, wait 15 seconds and switch on again and you'll usually find it's then OK. I had no problems with this, but beware if you have a machine released before December 1983, or early MMU chips. Don't mess with Spectrum. An authorized Atari repair centre can fix a new one if required.

One thing ANTEC overlooked is that European ST's run at 80Hz rather than 60Hz. The review copy was sent directly from ANTEC in the States and was set for 60Hz which causes screen distortion of the screen display making it really unusable. At first, I thought this was the MMU chip problem, but when running PAGE's Spectrum Classic Art Show public domain disk (containing examples of Spectrum pictures) everything worked fine. PAGE's has added a program to the

Reviewed by
John S Davison



NO STAIRCASES

Less obvious features are 'Anti-Aliasing' and 'No Zag', used to smooth out jagged staircase effects normally seen on lines or colour boundaries drawn diagonally across the screen. Anti-alias processing may be selectively applied to any part of a picture, and works on colour boundaries as well as just lines. Other options allow it to increase the contrast between adjacent coloured areas and to add a noisy, blurred effect to pictures.

No Zag does a similar thing for line drawing, but the processing takes place immediately the line is drawn. No Zag also smoothes out sharp angles in lines, so if you draw a zig-zag line it reproduces this to a smooth continuous curve. Similarly, polygons may be reproduced to form shapes with smoothly curved outlines.

Both Anti-Aliasing and No Zag work by what is really an optical illusion. They fill in the areas immediately adjacent to the offending jagged edges with subtle mid-tone shading. The effect can be seen quite clearly if you examine a processed area using Spectrum's picture magnification facility. To work properly it requires a large number of shades, which Spectrum has, of course. It really does work - these hard jagged lines do look considerably smoother, but there's also an overall softening effect which you may not always want.

Spectrum has three different fill facilities. The first works as you'd expect, filling enclosed areas with solid colour or pattern. The second is Fill To Now, which only works when it tests the colour currently selected, allowing actions such as pattern fill of an area already containing a pattern. The final one is called Gradient Fill, and this

automatically fills a given area with a graded range of colours from a palette defined by you. A number of options let you control the smoothness of the effect.

OFFSET PATTERNS

Spectrum's other features may be found in most art programs. There are freehand line, straight line, circle line, polygon, circle and ellipse drawing facilities with a choice of 36 different brushes provided. These can paint with any of the 512 colours, or with any of the 48 supplied patterns or custom designed patterns. The 'offset pattern' feature allows you to paint over the same area twice with the same pattern, with the second application being offset thus creating a new pattern. There's also a nice airbrush feature, with four different spray modes and nine flow rates. 'Undo' is available to cancel the effect of your last action.

Cut and paste facilities are provided through the block options. There is a buffer area to hold the blocks, there being enough buffer space to hold two complete pictures at a 128x128, and twelve pictures at a 64x64. You can scroll through the buffer to pick out any of the blocks you previously put there and paste them back anywhere into the original or another picture. The buffer can also be copied, saved, and loaded from disk.

Before pasting a block into a new location you can rotate, stretch, compress, or flip it vertically or horizontally. Spectrum doesn't have the more advanced block distortion features of programs such as Art Director, but I doubt whether most people would miss these anyway.



DISPLAY AMIGA PICTURES

In addition to its own file format, Spectrum can load pictures in DIBGA2 or NeoChrome formats. It also reads Amiga low resolution and High And Moddy (HAM) format pictures, as available on certain bulletin boards. When displaying HAM pictures, Spectrum uses a dithering algorithm permitting over 6500 colours to be effectively simulated on the ST's screen. It will also write pictures in DIBGA2 format, but you lose the colours, of course. You could use this to transfer Spectrum pictures to other utilities - a printer driver for instance, as Spectrum doesn't have one at present.

Spectrum places a heavy demand on the processing power of the ST, so one or two tricks have been employed to speed things up, including occasional temporary switching off of full colour mode. This doesn't interfere with the program's usability in any way, but it can be disabled if you wish, with the penalty of increased response times. Overall response is fast with the exception of Gradient Fill, which can sometimes take minutes to process a large area. However, the spectacular effects it can produce are well worth the wait.

Spectrum 512 is a magnificent achievement, representing a major step forward in art programs for the ST. It's impossible to do it full justice in a magazine review, you really have to see it in action. And when you do, you won't believe your eyes!

Spectrum 512
ANTIC
 Distributed by
Electric Distribution
 £19.95

MOEBIUS

Origin Systems
Microprose
\$24.95

Reviewed by
Ron Stewart

In the year of the Yik, the disciple Kaimen abandoned the true path of Moebius the Windwalker and stole the 'Orb of Colonial Harmony'. The ensuing months have brought ruin to the land of Khanara and as a disciple of the Windwalker it is your task to retrieve the orb. To do so you must train hard and travel many miles and fight many battles in the four states of air, earth, air, wind, and fire.

Moebius is a martial arts graphic adventure game in the mold of the Ultima series. You control a character, utilizing the resources and magic available to you. First you will have to locate and train your disciple who is allocated certain characteristics when he/she is created. The training is hard and the opponents tough. As I have traveled through the land I have come across some tougher enemies, perhaps, for the evil overlords. As this is a martial arts game your training will



include armed and unarmed combat. After you have completed training you may enter the world of Khanara. Here you will travel the land, defeat evil monks and assassins, as well as collecting artifacts and magic spells. As you go, Moebius will look over you. Slaying the evil ones will increase your experience points and thereby increase your level. Do anything rash and your karma and destiny will filter and your actions will be more difficult to carry out. Moebius will frequently visit you and restore your mind and body. Should you fall to an assassin or guard he will restore you from the dead, but only three times.

Game control is by joystick or keyboard. Generally, I found the mouse easier to use, especially during a fight. The

screen itself is split into two. The lower third being the control icons, while the upper portion shows your movements about the land or the fight graphics. Fight scenes use large figure graphics. Should your body take too much punishment you can rest and run but only at the expense of your karma. Mapping is carried out for you as you travel through the game. Maps are drawn either from your character's memory or by using lenses which tell you the location of specific objects.

Let's be quite clear that Moebius will not be over in a couple of hours or even days. To complete the tasks will take a lot of playing time. Origin estimates fifty to one hundred hours. I would judge that to be a conservative estimate. The graphics are much improved over the 5-bit games, but still remain a little chunky. The sound is a little repetitive but can be turned off in stages, finally leaving only the sound effects. As I stated earlier Moebius bears comparison with the Ultima series. If you are used to Ultima then Moebius could be a little too easy for you. I recommend it as an absorbing challenge. This one also works on Macintosh.

JOE BLADE

Players
\$9.95

Reviewed by
Ron Stewart

Joe Blade is a Mean, tough, fighting machine, trained in a Tibetan monastery. Not only that he is a teenage pin-up and pop idol. He has now finished his monkish career to receive six hostages from the evil clutches of Cross Bloodfinger. Armed only with a machine gun he must infiltrate Bloodfinger's head-quarters, fight off his private army, blow up the HQ and rescue the hostages in the space of twenty minutes or so.

Joe explores the HQ, which consists of cells and passageways. On the way you will have to contend with the soldiers who guard the hostages. This is done with a quick press on the fire button. Having done so the guard will dissolve into little stars, nobody said anything about realism did they? Along



uniform, while wearing it the guards will ignore you, but once this protection will disappear eventually. Inside the HQ are six body tagged devices which have to be activated to blow up the HQ. Activation is by rearranging a five letter code within thirty seconds. Failing to do so puts an end to the game as the bomb blows up in your face. Once the first bomb is primed you have twenty minutes to find the rest of the hostages and set the remaining bombs. The game will also read if you are slow enough times. This

usually happens when you have run out of ammunition and are rushing around looking for more.

When I first received this game I played it, as I usually do, for a couple of hours to get a feel of it. My initial impression was not very good. I thought the game was slow and boring. Fair graphics, but slow and apt to end abruptly when a body tag went off. This can be a real frustration when you have found three or four of the hostages and have already armed a couple of bombs. I came back and reloaded the game before I wrote this review and ended up becoming quite hooked. It is not a great game, but the under a corner what do you expect. There is enough game play here to keep you going for a while.

The original version of this game on the Spectrum was a 'No.1 hit' in the budget charts. Frankly, I don't see it as that good a game. Fun, yes, addictive, possibly, but No.1, not. If this is the sort of thing in that Spectrum people rate over, it makes me proud to be an Atari owner!

SPACE ACE

Infogrames
£19.95

Reviewed by
John Davison jr

The latest release from the French company Infogrames is a game which looks suspiciously like a former release of theirs, *Prohibition*. The game is based around a character by the name of Lee Enfield who is known as a "Time Traveler".

Lee is a typical all round good guy who is 'always there when he's needed', ready to lend a helping hand to a close friend or underdog, wherever the call, whenever the time comes'. *Space Ace* has his own brave little pal trying to rescue a friend called Bill from the evil "Yellow Shadow". This particular story is set in the twenty second century, and Lee has to shoot the various crazy robots and monsters which pop up all over the place in the suitably fantastic looking



scrolling background. You can see the sights of Lee's laser gun and it is you who must control them and destroy the enemy. The gun has some very useful features built in such as a direction indicator showing you in which direction the enemy is and it will also tell you when they are about to fire at you (oh, isn't twenty second century technology a marvel!). After killing all the monsters on one level you must destroy a 'magical mirror globe' before running towards the lift and the following level.

The graphics in the game are, to be quite honest, abysmal. They are badly

drawn, cheaply looking, and totally bland in appearance. Like its predecessor *Prohibition* the screens are all drawn in four colours giving each screen a decidedly boring look. The game has also been released on the IBM PC and Amstrad CPC computers and I would imagine that the graphics have been transferred from one of these machines as the ST graphics potential is far beyond what we see here! One good point about the screen is that the scrolling is very smooth and at times very fast.

Another good point in favour of the game is the music over the rather dull looking side screens. The music, who created the excellent tunes for *TNT*, *Charles Collier*, again shows us that he can get some very good sounds from the ST sound chip.

Overall, *Space Ace* did not impress me at all, and although the review copy was a pre-release sample I cannot say that the finished version will be much improved. There are much better games available.

SUPER SPRINT

Electric Dreams
Software
£14.95

Reviewed by
John Davison jr

One of the first releases for the ST from Electric Dreams Software is the arcade classic 'Super Sprint'. It is a racing game for one, two, or three players (yes three!) which is viewed from above. During the race there are many obstacles which must be negotiated, including ramps, oil slicks, and opening and closing gates.

The whole package has a feeling of quality. Upon loading the game you are presented with a very crisp and clear loading screen with a scrolling message smoothly moving by at the bottom.

Once loaded the game goes through a series of screens including a very well drawn representation of the picture from the packaging and a high score table. You are then moved onto selecting the control methods of the three available cars. These cars can either be computer driven 'bots' or they can be controlled with the joystick or keyboard. It is the



keyboard option that enables you to have a three player game, two players use joystick and the third uses the keyboard (there is always a fourth computer controlled car). The following screen allows you to select which track you race on and you then move onto the racing!

As well as fighting for the lead position in the race, the four cars must compete to pick up extra points and also 'wrenches'. When four of these wrenches are collected, they can be traded for 'wrench parts', including a turbo charger, an increase in speed, and an increase in traction which will enable you to take the corners much more easily. Each of these custom parts can be added to the car in up to five levels, and if you ever manage to obtain all fifteen you can opt for the 'increase

score' option.

In all there are eight different tracks which must be raced, some containing underpasses, others consisting ramps which must be jumped over. You will come across obstacles on later levels, including oil and water slicks, grenades, cones, and 'peppers', which move up and down to get in your way.

The screen, as mentioned earlier, is the race track viewed from above. The track does not scroll and is similar in layout to the racing games seen in arcades and on home games machines many years ago. The graphics in the game are nothing less than brilliant. The colours are all bright and pleasing to the eye and both backgrounds and the very small sprites are finely detailed. The animation of the cars is incredibly smooth, and they move along the straight and around the bends with great realism. The sound is also pleasing, with some good sound effects during play and pleasant tunes in between the races as the positions and scores are being shown.

Overall, *Supersprint* is an excellent game and is well worth the price. The impression you get right from the start is one of extreme quality. The graphics and sound are both excellent and it is a VERY playable game. While reviewing it I played it for literally hours on end.



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DARK CASTLE Mirrorsoft £24.95

Reviewed by
Damon Howarth

The sounds of an organ in the depths of a castle's ruins together with the view of a castle in a scene, worthy of Hammer's best realisations, greets you on loading this magnum opus from Mirrorsoft.

The game comes on three single sided disks with permission to, and instructions on how to, transfer the two data disks onto a variety of alternate storage media (including even RAM disk). A good idea of the size of data used in this game can be gained from the fact that the RAM disk needs 512K of free memory and a hard disk expects about 800K of space. On the basic STFM I found transferring the information disks onto the external 1 meg drive and then running the whole game from that drive saved me many irritating changes of disk. I did feel that



Screen 2

the game suffered from the long delay in loading screens from disk although the general graphics and audio effect seemed worth the wait.

Dark Castle has an attractive user friendly front end from which difficulty levels or help screens may be activated. The help screens seem nicely cut as one of the most helpful and graphically pleasing of their genre. The game can be controlled in many ways and although I found the keyboard and mouse options the most simple and effective way the joystick option looks very workable. Essentially it is a platform and hidden arcade adventure with colour co-ordinated levels and various traps to perform accompanied by several gruesome sound effects. The

character under player control has a pocketful of rocks to throw at the phantasmagoric of opponents which include an evil necromancer and a most effective gargoyle.

The style of self defence is somewhat more elaborate than in many such games and necessitates using the mouse to aim the arm and then follow the rock's flight path to a victim. There is a most satisfying metallic clunk when a man or woman is struck on the armour and some likable squawching when smaller creatures are hit. The effect of the graphics during the gameplay is more those of a Tim and Jerry cartoon as are some of the spot effects for the characters.

I enjoyed this game but am aware that it will be compared to Black Lamp and as such I am not sure how it will fare up. The slowness of screen scrolls can be frustrating, although the game's lighter moments and presentation do a great deal to compensate for this. If you are an arcade adventure fan and want something atmospheric and relaxing then have a good look at this.

LEE ENFIELD (Amazon Adventure) Infogrames £19.95

Reviewed by
Damon Howarth

Lee Enfield, it appears, is the official representative of the Times Parrot employed by Colonel Griggs to defeat evil. This is the first of the series that I have come in contact with and there is actually the third in chronological order it could explain why I had some difficulty in understanding much of the game's relevance.

The presentation of this game from France is of high quality, indeed graphically there is little to fault it on, and the music that introduces the title page is atmospheric and reminiscent of Humphrey Bogart's finest hours. American adventures. The game, and it's attendant instructions, though have something to be desired.

The player is presented with a multi-window display showing a portrait of the indefatigable hero which acts as a form of damage received



counter, a playing area which is unfortunately small, and a direction flicker to warn of enemies. There are also markers for dynamic wind and the current score counter. I admit all of this is in superb soft shaded pictures and the effects of the well aimed spins coming out of the screen is at times surprising but, all in all, it rarely disturbs a Barbarian style close wherein the hero wields a mean Bowie knife as opposed to a broadsword.

The controls are either joystick or key (in fact the keyboard needs to be used at times) and the collision detection seems somewhat haphazard. I could not tell if I was damaging my opponents until they fell over, the same blow seemed to miss or hit without

reference to situations. At least the player does receive a warning of impending doom as his portrait changes to a bloody sized individual. The screen following his demise is one of Galle romance as Lee obtains embraces from his nurse and a concerned friend offers him flowers.

The game had a very good graphic back up and somewhat suits to. Passages on the Wind did not have the gameplay to maintain interest, I am still wondering why the usage of opponents is so mechanistic? Since there is no real explanation for this all I can assume is that they are all victims of a time warp seen in earlier episodes. Even with this possible explanation in mind I could not see why it was necessary to combat Red Indians and spear ships as well as Macdonian Plains warriors? Perhaps the one pleasant point was that whenever faced with a crowd without obvious exits Lee could blow holes in the wall with his dynamite. Come to think of it I never did find Bill (the object of the quest) and sadly I did not even feel it mattered - maybe he will be spotted having re-appear in any further sequels!

ENDURO RACER Activision \$19.95

Reviewed by
Ron Stewart

Pete Postern writes again! This time in the form of motorcycle enduro racing. The *Start-up* of the Activision packing quotes the computer press as saying "The most faithful and compelling coin-op conversion ever seen". This is praise indeed, so I tried it in my local arcade to spend a pound or two. I have to tell you that Enduro Racer can only be described as an average version of the original.

For those of you who have not been to an arcade recently the game is as follows. You ride an enduro motorcycle across a variety of terrain. Lining the side of the track are trees, signs, rocks etc. All are there to ensure that you remain on the track as much as possible. On the road or track itself you



will have to avoid other competitors in the form of bikes and vans. The track also has jumps and water streams over it. To jump successfully you have to pull back on the joystick to get your bike to wheelie.

The computer game has five stages. Stages three and five are a little weird in that the road is surrounded by water and in some cases is submerged. Don't even a motorcycle off! To be fair to Activision their graphics are great and this is an addition game. The main problem lies with the collision detection, which is appalling. If you hit another bike you will only be bumped

off course. This is fairly more than an annoyance factor, although you might hit a tree if it happens on a bend. It is also possible to go straight through vans, especially if you have just gone over a jump but what makes this all the more frustrating is that the program is not consistent in its detection. Where you think you will get away with scraping a van occasionally you end up as a heap at the side of the road. I have also found that if you are off-balance at the end of the first stage you start the second crashing straight away. Again not consistent, just annoying.

Game control is either by joystick or mouse. I found the mouse to be more accurate when controlling the bike but it was very difficult to throttle with. One nice touch is to the ability to stop the game and save the screen to disk as Doge frames.

A pleasant enough way to spend a few hours and fairly addictive, but I am left wondering just how much better it could have been?

CHAMPIONSHIP WATER SKIING Infogrames \$19.95

Reviewed by
Ron Stewart

Infogrames have been fairly prolific in their ST output during the past few months. Recent offerings, Bubble Ghost in particular, have received good reviews in the computer press. With this release of output it is inevitable that a sub-standard offering comes along once in a while. Championship Skiing is that program. In short it's a real Do-Do!

Many carefully spent have ended up in computer games. Who, for instance, would have thought that darts or shuffleboard could be successfully converted to the computer? But the French having a world Champion in the shape of Pierre Martin, who is nicknamed the 'Sea Prince' have decided to have a go at water skiing.

The program itself is divided into three disciplines, jumping, freestyle, and slalom. These can be selected as separate games or played in sequence,



It is possible for up to three people to compete against each other. Before jumping and the screen dissolves into an idyllic tropical island scene. In the centre of the setting is a ski ramp and off to one side is a magnifying glass containing a picture of your skier. He starts to move with a flick of the joystick. This provides the necessary acceleration to get up the ramp. Holding the joystick for too long or too short a time will see the skier ending up splattered over the side of the ramp. This takes a deal of trial and error as there is no indication of what is too long or too short. Once you have made it up the ramp you will have to balance the skier to make a perfect landing. Your performance is measured by the distance jumped.

Freestyle shows our crazy skier

being towed behind a boat complete with the necessary music. To get the skier to perform, the joystick and fire button need to be moved and pressed at the same time. Once again this needs a great deal of practice. Just to add insult to injury there are two sets of movements, one when the skier is in the middle of the water and another when he is on a wave.

The third part of the game involves the slalom course. The course starts down a screen which is bordered by yet another subtle young thing this time in a hammock. Control of the skier is either left or right. Moving the joystick up or down shortens or lengthens the rope but adds acceleration around the marker buoys.

The main problem with all these events is the time needed to master the control movements. This applies especially to the freestyle jump up to eleven different actions are possible. I spent a number of frustrating hours just trying to get the hang of it. The background ditty, by the by, is extremely annoying and soon has to be turned off. Once the control sequences are learnt the it little left in the game to keep you entertained. Maybe water skiing is just one of the subjects not suitable for computers.

GUNSHIP

Reviewed by John S. Davison

Microprose might easily have met their Waterloo during the development of Gunship, as it took them three times longer and four times the number of people originally estimated. The resultant product has to be something special to enable them to recoup that sort of investment, and from the reception given to the non- Atari versions already released it seems to be exactly that. But what of the ST version? Read on to find the verdict.

The package contains rather more bits and pieces than usual. The strong cardboard box holds two single-sided program disks, a full size keyboard complete guide for the complex controls, a superb quality 54 page Operations Manual, an ST technical supplement, and a sheet of passwords and countermeasures. With the program split across two disks the swapping can become tedious, but two drives may be used if you have them. It can also be installed on a hard disk.

On loading you hear the sound of a helicopter starting up, followed by the sight of a screen-filling, superbly animated picture of the AH-64 Apache attack helicopter rising into view to the strains of Wagner's Ride of the Valkyries. It's a nice screen per excellence.

How Easy Is It?

Flying the Apache is relatively easy—it's the combat that's difficult. It's vital to start with the low risk training missions while learning to handle the Apache as you can't be shot down at this stage. Then progress up through the enemy scenarios to the ultimate challenge—raining on the wings of the Warsaw Pact in Warsaw Europe.

To make things easier you can choose 'easy' options rather than the more difficult 'realistic' options. Easy flight mode prevents pitch, roll, altitude, or altitude/energy dip from the screen, whereas realistic mode requires you to constantly juggle the cyclic and collective pitch controls to counteract the variation



IDENTIFICATION TEST

Your first task is to pass a military equipment identification test by correctly matching a screen picture of a piece of military hardware with pictures found in the manual. Get it wrong and you'll be assigned to training missions in the USA—a neat way of discouraging use of pirate copies of the program, as without the manual it's rather difficult.

Then you select the overall mission parameters. Operational areas cover the USA, SE Asia, Central America, the Middle East, and Western Europe. Mission types are graded as regular,

reflexive, or hazardous. Enemy quality may be set by choosing from third, second or first line troops. Finally, you can choose between easy or realistic mode for flight performance, landings, and weather conditions. Combination of these divides the overall difficulty level of a mission, which in turn affects your chance of survival, gaining promotion, winning medals, and scoring points.

MISSION BRIEFING

With setup complete you're issued with detailed orders at the mission briefing. These tell you to fly to given map references and achieve specific objectives, such as destroying enemy AA guns. A mission consists of a primary and secondary objective, and to complete it you have to achieve both. Success wins you points, and perhaps medals and promotion too. The briefing also includes a weather report, mission timing (anytime day or night), and mission password, which you may be challenged for when approaching a friendly base. Unless you make the correct countermeasures in reply you'll be blown out of the sky by your own troops!

A map can be displayed showing the positions of your targets, and you can request an intelligence report to find out where the opposition are likely to throw at you. At this point you can 'report sick' if you don't like the look of the mission. You'll get another mission assigned by your CO, but you'll also earn a

in life. Easy landing mode means you melt away from all landings, however heavy. Realistic mode here requires you to land correctly or suffer consequential damage to aircraft and crew!

Easy weather conditions means light winds, while the alternative means windy flying conditions and temperature. Easy fuel air resistance is easily implemented, but real induced drag is more complex overhead.

In summary, by selecting the right options carefully anyone should be able to fly the Apache. Survival during combat missions is something else however, requiring practice, patience, and skill.

reprimand for miscalculation, making those promotions harder to achieve.

You then load the Apache with fuel and armaments appropriate for the mission. Weather conditions affect the maximum load that can be carried, or none is needed. Armaments include Storm choppers ammunition, Hellfire air-to-ground and Sidewinder air-to-air guided missiles, PAVAR unguided rockets, and Chaff and flare drops to confuse the enemy missile systems. Correct selection is important as certain weapons are ineffective against certain types of target.

FLYING A MISSION

You now find yourself in the Apache's cockpit awaiting takeoff. The screen is divided into two main parts in the usual flight simulator fashion, showing a through-the-windscreen view and the instrument panel. Outside you can see a colour-filled 3D view of the terrain, showing hills, fields, roads, rivers, enemy and friendly bases, and other ground features. No wireframe graphics here! The view can be panned 45 degrees left and right so you're not restricted to looking just straight ahead. The hills are important as they can shield you from detection and attack. As expected, the view changes realistically as you manoeuvre, the horizon smoothly rising, falling, and rising, and the view rotating in response to your controls.

Scattered around the landscape are enemy and friendly combat units of various types. They show up only as small dots, and to identify which is which you have to use the Apache's Target Acquisition and Designation System (TADS). This projects a frame onto the windscreen showing a potential target's position. It also puts a TV picture of it on the CRT and locks the selected missile or gun onto it.

At the left of the instrument panel are the engine/rotor speed and torque indicators, and the Apache's inertial navigation system. By placing a cursor on the map display over your destination target, this system will guide you to it. Next to these are the airspeed indicator and altitude barometer. Centre screen contains a CRT display which can show a moving map of the area, the TADS target picture, or video messages, while under this the current status of the weapon load is shown.

To the right are the altitude and vertical speed indicator, and on the far right are the radar/infra-red warning and jamming systems and threat display. This last screen shows the position of

in-flight missiles, enemy helicopters, and any enemy guns or missile launchers currently tracking you. Across the top of the instrument panel are 18 warning indicators to alert you to enemy inflicted damage to the Apache's vital systems. Keeping track of all this while trying to track the enemy, find your objectives,



How Does It Compare?

I found Gunship disappointing as a pure flight simulator, as I expected more in-flight agility. Those pitch, roll, and yaw restrictions that an otherwise excellent simulator, Digital Imagination's Tomcat/awk on the Sable machine is virtually identical in concept to Gunship and gives the pilot much more freedom, making spectacular 'out-of-control' and other semi-serious manoeuvres possible with ease.

Gunship exceeds me of Microsoft's Strike Force Harrier (reviewed in issue 28). This had a similar problem—good combat simulation, but mediocre flight simulation performance. I found Gunship more enjoyable than Harrier, though, as you don't have to perform maintenance runs to locate the target. I found those got in the way of the action in Harrier.

So, although Gunship is good there's still a need for an accurate helicopter flight simulator on the ST. I'd dearly love to see a helicopter equivalent of Flight Simulator 2. Can you hear me, Sublog?

and persuade the boss to remain airborne takes some doing!

Control is achieved via the keyboard, with 48 keys dedicated to various functions. The complete supplied help file you find yourself may exceed those. In addition, pitch and roll may be mouse or joystick controlled. I found the primary controls rather sluggish, but I'd suppose say this is realistic. I also found the range of movement restricted—you can't roll the aircraft beyond about 30 degrees, nor can you pitch it into a steep climb or dive. Add to this a tail rotor control which only works when you're hovering and you realize Gunship's flight simulation isn't as realistic as it might be.

TOUGH CHALLENGE

Combat is a tough challenge even at the easiest level. I repeatedly found myself leaving one very sick helicopter back to the nearest friendly base after receiving severe warnings by enemy tanks and missiles. The tank bases around you is spectacular bodies, and the missiles can be seen streaking in as you from quite a distance, but it takes skill to avoid them. Despite the Apache's landing and deceleration systems it still takes practice and a cool nerve to be able to deploy the right countermeasures at the right time. Higher levels being an additional bonus—the enemy send their formidable Mi-24 gunship helicopters after YOU!

Your 'Service Record' of achievement is kept in the Pilot's Register. It's already initiated with a set of names, but you can replace these with your own. It's really a sophisticated disk based high score table.

The general standard of graphics is good throughout, although certain 'incidental' screens look as if they've come straight from a machine of lesser graphic capability. Sound could be better—for instance engine starting noises are pathetic little squawks instead of the beautiful screams of twin rotors. Some sounds are realistic, though.

I found Gunship to be a first class combat simulator, but a little disappointing as a flight simulator. Even so, its depth and complexity should capture your interest and imagination, and its overall quality makes owning it a pleasure. Yes, it is something special and deserves to sell well in ST format.

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Steve Pedler's
Programming GEM

DIALOG BOXES

Creating those boxes is easier than you might think

In the first three parts of this series we have looked at some of the graphics facilities available from GEM's Virtual Device Interface (VDI). Many of these routines are used by the Application Environment Services (AES) to display menus, dialog boxes (sometimes known as "forms"), windows and other features of GEM. In this article we shall examine how forms are constructed and how to use them in a program.

OBJECT TREES

The fundamental building block of all forms, (and menus, which are a form constructed to a specific format) is the "object". Several different types of objects are available, including boxes, text strings, images and clickable objects allowing the user to input text. Some of these objects have attributes which can be changed by the programmer, such as colour, but with other types of object this is not possible. A complete form is built up from a series of objects of the required types. In memory, the objects are stored sequentially, but it isn't quite as simple as that because the AES also needs information about how the various objects relate to each other both for display on the screen and for user interaction. This introduces the concept of an object tree.

Object trees can best be explained by use of an example. Most ST users will know the dialog box which is displayed when you select 'Format' from the File menu on the desktop. The object tree for this form is held in the GEM ROM, but it probably looks like the tree shown in Figure 1. The type of each object is shown in capital letters (see Table 1 for details) and the number in front of each object is the index number of that object in the tree. Note that the first object is numbered zero. The meaning of the numbers in parentheses is explained below.

The object tree for this form consists then of a root object (object 0, the box which surrounds all the other objects) and, by analogy to a tree, two levels of branches. The tree can also be thought of as a human family tree. Looking at it in this way, the root object has six children (i.e. there are six siblings - the generic term for brothers and sisters). Two of these objects also have one children each. Each object can be said to have a parent object, the only exception being the root object. This may seem a complex way of representing a series of objects, yet it is essential for the construction of even simple dialog boxes. Objects are stored in memory in an arbitrary order, and the tree provides essential information

for the AES about how the form is organised.

KEEPING TRACK

How does the AES know which objects are parents to which children? This information is contained in the first three 16-bit words of each object's definition, according to the following rules:

Word 0 contains the number of the next higher numbered sibling of the object. All objects may have siblings except for the root object. If the object has no higher numbered sibling, it contains the number of the parent. If it has no parent either (remember this only happens with the root object) this word contains -1.

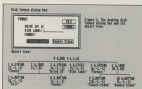
Word 1 contains the number of the object's first child, or -1 if it has no children.

Word 2 contains the number of the object's last child, or -1 if it has no children.

These three pointers are given in parentheses next to each object in the object tree in Figure 1. You should be able to see that for each object the pointers conform to the above rules.

FLEXIBLE CONSTRUCTION

The use of object trees means that the construction of dialog boxes is extremely flexible. However, the definitions of the individual objects must follow a set format. Each object definition consists of 24 bytes, made up of 18 16-bit words and one 32-bit longword. In C, the best way of handling these variables is by means of a structure, and Table 1 shows how the object structure is defined (assuming 16-bit integers, which is not the case with all compilers - for Lattice C, short ints would be used). This code, which



you will probably find in one of the header files accompanying your compiler, defines the structure to be of type OBJECT, so whenever the compiler encounters an OBJECT it treats it as a structure of this type. The use of each field is as follows:

ob_xpos, ob_ypos, ob_xsize, ob_ysize: the three pointers to the other objects in the tree, as discussed above.

ob_type: the type of object. The various types available are listed in Table 2. It shall not discuss types G_IMAGE, G_PROVIDER and G_WINDOW any further here as they are used infrequently in constructing forms (I may return to them in another article). Some of the types of object may appear to be very similar, but there are important differences. With G_BUTTON, G_STRING and G_TITLE, the text is always displayed as black text on a white background, and there is no control over the colour or thickness of the border (if any). G_TEXT and G_CONTEXT are similar to G_STRING and G_BUTTON, but do allow you to change these attributes, at the cost of some additional programming.

ob_flags: there are nine possible flags which may be set for any object. These are set as individual bit fields within this word, and are listed in Table 1. **ob_state:** there are six additional flags which give information about the state of the object to be displayed. These are also set as bit fields and are listed in Table 4.

ob_spec: the object specification. This is a 32-bit longword comprising words 6 and 7 of the object structure. It has different uses depending on the object type:

G_BOX, G_BOX: word 7 of the object structure is the colour. Bits 0-3 of word 6 contain the thickness of the box border. Bits 8-15 of word 6 are ignored (should be set to zero).

G_BACKGROUND: as for G_BOX, except that bits 8-15 of word 6 contain the ASCII value of the character to be displayed in the box.

G_STRING, G_TITLE, G_BUTTON: ob_spec is a pointer to the text string to be displayed.

G_TEXT, G_CONTEXT, G_TEXT, G_CONTEXT: with these objects the 34-byte object definition is not sufficient to hold all the required information. The ob_spec field points to another structure (type TEXPDEF) which contains the additional data.

The border thickness (only used for

boxes) can have the following values:
1 to 128: increasing thickness from the edge of the object inwards
-1 to -128: increasing thickness from the edge of the object outwards
0: no border

If the colour word is applicable to the object type, it is constructed in the following way:

bits 0-3: fill colour (boxes only)
bits 4-6: fill density, where 0 = no fill,
7 = solid fill (boxes only)
bit 7: write mode, where
0 = transparent, 1 = replace (see below)
bits 8-15: text colour
bits 16-15: border colour

Not all these bits have significance in a particular object, exactly which bits are used depends on the object type.

The write mode may need some explanation. As an example, suppose you wish to display some red text on top of an object which is coloured blue. Each character in the character set is constructed as an 8-bit pixel (bits 0 in low and medium resolutions). If the write mode is 'replace' - sometimes referred to as opaque - the pixels which are set in the character's definition are displayed in the required colour (red in this case) while the pixels which are not set are displayed in background colour (usually white, unless it has been changed). In this mode then, your text would be displayed as red characters on

a white background - not as all white was wanted. In transparent mode, only the pixels which are set in the character definition are displayed, resulting in this case in red text on an uninterupted blue background.

ob_x, ob_y: the x and y coordinates of the upper left-hand corner of the object. These are absolute screen coordinates only for the root object, for all other objects they are relative offsets from the position of the object's parent.

ob_width, ob_height: the width and height of the object.

Note that these last four fields are often expressed in terms of characters rather than pixels. This is to ensure objects can be used in different resolutions. For example, if an object in medium resolution is 8 pixels high and 24 pixels wide, it would be physically half as high in high resolution because the pixels are half as tall. But if it was said to be 4 characters high and 8 characters wide, these sizes could be converted into pixels by multiplying by the character width and height (8-bit pixels in medium resolution, 16-bit in high resolution). The actual physical size of the object would therefore be the same in both screen modes. Objects stored in memory files are always stored in this way, and are automatically converted to pixel sizes

Table 1. Definitions of OBJECT and TEXPDEF structures.

typedef struct object {	typedef struct text_def {
int ob_xpos;	long fd_offset;
int ob_ypos;	long fd_attr;
int ob_xsize;	long fd_wid;
unsigned int ob_flags;	int fd_text;
unsigned int ob_flags;	int fd_color;
unsigned int ob_state;	int fd_color;
long ob_spec;	int fd_color;
int ob_x;	int fd_color;
int ob_y;	int fd_color;
int ob_width;	int fd_color;
int ob_height;	int fd_color;
int ob_bwidth;	int fd_color;
int ob_bheight;	int fd_color;
}; OBJECT;	}; TEXPDEF;

Table 2. OBJECT types.

No.	Type	Comments
00	G_BOX	Graphic rectangle.
01	G_BOX	Graphic text.
02	G_BUTTON	Graphic text in a box.
03	G_STRING	A 32-bit (max. 256,256) field points to a structure of type TEXPDEF.
04	G_BACKGROUND	A programmer-defined object, the ob_spec field points to an OBJECT structure.
05	G_TITLE	See G_BOX title box.
06	G_BUTTON	As rectangle with text (width is 0).
07	G_BACKGROUND	As rectangle containing a single character.
08	G_STRING	A text string, used for the long-base menu.
09	G_TITLE	Predefined graphic text.
10	G_BUTTON	As object, but in a box.
11	G_STRING	As text.
12	G_TITLE	As text string, used for the menu titles.

resource editor.

The initialization function `start()` is very simple, and much of it we have used before. Once the basic initialization is over, the five objects which require TEDINFO structures are given the address of the appropriate structure in the `obj_spec` field. Note the use in a long data type; if this was not present the compiler would generate a warning because `obj_spec` is declared to be a long in the structure definition. (This is the case in the Lattice C development system used to write this program. If you use another compiler you may find that the structure definitions are slightly different - for example, `obj_spec` may be declared as a `char*`.) Then we insert the addresses of the acquired strings into the `OBJECT` and `TEDINFO` structures. Finally the coordinates and sizes of each object are converted from characters into pixels by multiplying by the character width or height. (The sizes of the characters were obtained during the initialization call to `get_handles()`.)

THE DIALOG BOX IN USE

Interaction with the dialog is very simple. Function `form_error()` calculates the coordinates and size of the form when centered on the screen. This is an optional step, but centered

forms look nice. To do this, `form_center()` is passed the address of the object tree and pointers to four variables which will hold the required coordinates on return. If we want to display an expanding box when the form is drawn, we need to determine the point of origin for the box and its initial size. Here we just use the `COORD` of the screen for the origin and an initial size of zero, but as long as the starting size is smaller than the eventual size you can choose your own origin and size.

To display the form, first call function `form_dial()` to reserve screen memory for the box. The first parameter is `area`, defined as `FMID_START` is possible. The next four parameters are not required here, so are set to zero. The last four parameters are the size and position of the form as calculated by `form_center()`. The next step is optional. This is the expanding box effect, and is done by calling `form_dial()` again with the first parameter set to 1 (`FMID_GROW`). The next four parameters are the origin and size of the initial expanding box, the last four being the coordinates and size of the dialog box as it appears on screen.

We then enter a loop which will not be exited until the user clicks on the

'Quit' button. Function `clear_strings()` simply puts a zero into the first byte of the input strings so that when the forms is displayed the editable fields are empty. The form is drawn with the function `obj_draw()`. This is called with the following parameters:

```
obj_draw(address of the object tree,
first object, depth, x coordinate of first
object, y coordinate, width, height)
```

The `x` and `y` coordinates and size have already been calculated by `form_center()`. The 'first object' is the number of the object to be drawn first. Objects with lower numbers than this will not be drawn. Here the first object is zero - i.e. the root object. The 'depth' indicates to what levels the object tree is drawn. This tree has four levels, but to ensure all levels are drawn I have used the arbitrary figure of 30 (the fact that there are only four levels won't cause an error).

To interact with the form, we call `form_dial()`. The first parameter for this function is the address of the object tree, and the second is the number of the first field to be edited - in this case the surname field, though it could just as well be any of the three editable objects. This is so that the `WEB` knows in which field to put the cursor. If there are no editable objects, this parameter must be zero. `Form_dial()` will not return until the user selects an object which has the `EDIT` or `TOUCHEXIT` flag set. This will return the number of the exit object selected.

TIDYING UP

Before we can finish with the form there is some housekeeping to do. The exit object is now in a selected state, and must be reset in unselected. If this is not done, it will be displayed as selected when the form is drawn again. This is achieved by the statement `!set_obj(selected) obj_state = NORMAL`, which clears the `SELECTED` flag on the button used to exit the form. Try leaving this out and see what happens. Anything that the user typed into the editable fields is now stored in the arrays `surname()`, `forename()` and `age()`. It isn't shown here, but in a real application you could now manipulate these strings in some meaningful way, such as saving them to disk.

How do we know if the user clicked on the 'Male' or 'Female' buttons? (They can't both be selected because they are radio buttons.) Whichever one

Table 1. Object flags.

Value	Name	Result if flag set
0	NONE	No flags set.
1	SELECTABLE	The object can be selected by the user with the mouse. If it is then drawn in reverse.
2	DEFAULT	If the object is selectable, it can be selected with the default key. There can only be 1 default object per tree.
4	EDIT	Holds the interaction with the <code>WEB</code> and control is returned to the program.
8	EDITABLE	The object can be edited by the user.
16	EDITED	The object is a 'radio button'. Within a group of radio buttons, only one can be selected at any time. When another button in the same group is selected, the previously selected button is deselected.
32	LASTON	The object is the last one in the tree. Only one object per tree can have this flag set.
64	TOUCHEXIT	Is for the <code>EDIT</code> flag. However, if this flag is set the user need only press the mouse button, rather than press and release as required for the <code>EDIT</code> flag.
128	NOEDITED	The object and all its children will not be drawn if this flag is set.
256	INDIRECT	The <code>obj_spec</code> field of the object definition acts as a pointer to the required values, rather than containing the value itself. This makes it much easier to alter the object specification, since the contents of the <code>obj_spec</code> field are not changed directly.

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was chosen will have the SELECTED bit set in obj_state, so we test the obj_state field of each button by doing a bitwise AND. The variable 'made' is set to either TRUE or FALSE depending on the result, or to NOT_STATE if neither button was selected. This case we don't reset the object to its unselected state, leaving it pre-selected (as a possible default option) when the form is next drawn.

When the interaction is complete, we perform the (optional) step of drawing a string box, by calling form_dial() with the first parameter set to FMD_SHORTK. Screen memory is released with the final call to form_dial() with the parameter FMD_FINISH.

NOT THAT DIFFICULT!

As you can see, the construction and use of dialog boxes is not difficult, and is made even simpler by the use of a resource construction set. In the next article we will briefly touch on the use of resource files and then go on to examine the programming of the dialog-boxes menu.

Table 4. OBJECT STATES.

Value	Name	Result if bit set
0	UNSELECTED	None - default object state.
1	SELECTED	The object has been selected and is drawn to reverse.
2	DRAGGING	An L to draw across the object (lines only). A click sets it down in the object (used for drag down menu).
4	CLICKED	The object is drawn with focus lines and text in object so that cannot be selected by user.
8	DOWN	An L to draw around the object (lines only).
16	UP	An mouse to draw around the object or the lower and right-hand sides (lines only).
32	DRAGDOWN	An mouse to draw around the object or the lower and right-hand sides (lines only).

Table 5. Validation characters for editable objects.

Character	Input characters allowed by the MS
1	Letters A-Z (upper case only), spaces.
2	Letters A-Z (upper and lower case), spaces.
4	Letters A-Z (upper case only), digits 0-9, spaces.
8	Letters A-Z (upper and lower case), digits 0-9, spaces.
7	Valid filename characters plus "?", "*", ".", ",", and spaces.
6	Valid filename characters plus "?", "*", ".", ",", and spaces from validation character "T" so that "T" should only allow input of a filename plus a drive specifier whereas "T" of a box indicates it to be specified. In practice a string box in MSYS seems to mean that the "T" specifier is needed even if no folders are used (e.g. A:\MYFILE.C) so it would seem sensible not to use the "T" character.
8	Valid filename characters plus "?", "*", ".", ",", and spaces plus input any valid filename, including drive and subdirectory specifiers, but cannot use wildcards.
2	Any character can be input.

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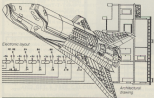
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GLENTOP

SLAYGON

Microdeal
£19.95

Reviewed by
John Davison jnr

Slaygon is one of the latest releases from Microdeal who seem to have been very quiet with their ST releases of late. This game is a graphical, mouse controlled adventure which has you playing the part of a United Defense Force military officer. Your job is to take the control of the Slaygon and infiltrate the Cyberdynamics laboratory. Slaygon is described as the ultimate infiltration device. It is the most sophisticated military robot ever created, and it is so powerful that conventional weapons have no effect on it whatsoever.

Your mission is to destroy the laboratory facility and therefore destroy the source of toxic virus which Cyberdynamics are working on. You have managed to obtain a forged low security pass which will give you limited access to the laboratory



complex. You must manoeuvre around the few hundred rooms avoiding four different types of security robot and various different forms of mine and force shield which block your path. The rooms within the complex all have security checks on the door and you must have the correct colour card or a high level card in order to enter a room. In all there are five security levels.

Slaygon has various useful facilities to help you, including energy absorbing shields and a draining device. These devices do drain energy, however, and without energy you cannot continue on your quest. On your travels you will find over thirty six objects which can be picked up and used, and these range from security passes to force field or

mine deactivators. Slaygon has storage facilities for eight objects, but each object carried drains some energy.

The screen layout shows the objects carried at the top of the screen with the three dimensional outside view below on the right and the map screen below on the left. In the centre of the screen are the direction pointers which must be clicked on with the mouse to move the Slaygon around the laboratory complex. Near these pointers are the Quit, Load and Save game switches, and your Energy indicator. To the right of the pointers are buttons for using the various objects you are carrying and for examining objects. At the bottom of the screen are the switches for activating the draining device, shields, weapons, weapons, etc.

Slaygon's graphics are very close. They are not superb, but then this type of game does not really call for mind boggling graphics. Sound also is not that good, but that again doesn't really matter. The game is very playable and I have spent many hours playing it. This review has really only scratched the surface of an excellent game and if you like graphical adventures then you will probably like Slaygon.

TRAUMA

Fire
Informatique Metal
Hurlant
Distributed by
Infogrames
£19.95

Reviewed by
John Davison jnr

The latest game from the people who brought us 'Bubble Ghost' is a vertically scrolling shoot 'em up, boasting 'digital music'. The game comes in a double cassette sized box and it spreads across two disks, but the first disk appears to contain nothing but the loading screen and the sampled music.

The game has the typical space shoot 'em up type scenario complete with 'barbaric war breaks' who are apparently used to pulverise the solar system. Your mission (surprise, surprise) is to stop the catastrophe from happening. You must destroy the enemy planet which is, of course,



defended by various forms of attack ship, and giant 'hyper ships' which are supposed to be indestructible. Along the way you can pick up new weapons systems for your craft, and each time you succeed in destroying the supposedly indestructible hyper ships you will collect an energy generating globe. There are four globes which go together to give energy to the 'space barbarians' and each globe is guarded by a hyper ship.

The 'digital music' of which the packaging boasts is some of the silliest I have ever heard. The sampling quality is superb, but what has actually been digitised is awful! Every note and then

the jolly, bouncy little tune is incorporated by a deep voice moaning. 'T-T-T-T-Trauma' is an obviously French score. The effect could be good given the correct style of music, but the way it has been done in the moment is just a joke! The sound effects during the game are not sampled and are, to be honest, a little feeble. They are, however, adequate for the game which rarely has slow moments during play.

The graphics in the game whilst not being superb are more than acceptable and are pleasing to the eye, being colourful, well drawn, and fairly detailed. The animation of the spaceships is noticeable and the relatively large 'hyper ships' are quite well drawn and animated, but in some cases they look a little 'transparent' as parts of them seem to fade away into the background.

Overall 'Trauma' is a good shoot 'em up. It does not stand in any way nor does it break any new ground in ideas. However, it is very playable and has the right level of difficulty, being neither excessively hard nor easy to play.

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XENON

Mellbourne House
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Reviewed by
Damon Howarth

I am now the proud owner of a well-worn (and well-used) Xenon, Mellbourne House's new vertical scrolling shoot 'em up, in the guise of the discset. Furthermore it has created bags under my eyes and given me arcade players cramp. It would in fact be fair to say I have become someone that has had on this particular extension in to space, much to the dismay of the household in general.

The game play is fast and furious, the effects loud and bright and the all round feel of the game is a very close approximation to the exhilaration felt in an arcade. The packaging consists of the almost compulsory story explaining that you must ferry through Xenon territory in an effort to crush your superior and, in the same booklet, an explanation of the controls and the myriad apparatus that need destroying. Oh yes! There is also the disk, which leads me to wonder why such large boxes contain such small contents!

The game is controlled via the joystick and optional (although I found preferable) spacebar process, in a most



responsive and positive manner. One thing that differentiates this from the run of the mill upward scrolling style of game is the tactical thought that is necessary to survive. In the main the choice as to which type has to be made on a regular split second basis and can mean the difference between existence and nothingness. The ground car is used against low level opponents and is capable of obtaining certain advantages whereas the flying fighter is the only resource for air warlike and the recovery of other specialty rewards.

The beginning of each stage or level is preceded by a digitised speaking photograph of Captain Xed urging you to victory and informing you as to the current score number. Graphically the game is superb and the soundtrack which accompanies the game compliments the general feel of excellent presentation and the aura of professionalism which surrounds the whole experience.

Once launched there are a variety of weapons aimed to destroy ranging from the simple unaimed dome which explodes upon contact to the forward shooting ladybirds and the extremely tough and intelligent Sentinel ships who take many hits to dem and whose one touch sends your ship into oblivion. One of the most complicated parts of the game seems to be remembering the various bonus letters and subsequently making the choice as to which of mutually contradictory bonuses to take while in motion. This, to my mind only adds to the tactical feel of the game since the choices must affect your handling.

For those who enjoy an even more competitive style of play there is a two-player option which allows the players alternate attempts with the same joystick and this also plays very well. The box claims the game has self adjusting difficulty which in my experience would seem to indicate that the game starts fast and slowly and progresses to normal and final, there just did not seem to be a turbo like and sub-option aside from the automatic demo mode!

All in all this seems a very worthwhile buy and would seem a must for any arcade or general gamer. The whole package exceeds value and I have no hesitation in recommending it to anyone.

PENGY

Red Rat Software
£9.99

Reviewed by
John Davison *jr*

Pengy is one of Red Rat's first games for the ST. As you can probably guess from the name, it is based on the old favourite, Pengo, which has come out in many different guises on home computers since it was released in the arcades all those years ago.

In this version you play the part of Eddy the Penguin who lives in a castle surrounded of blocks of ice. Life would be perfect if it wasn't for the Snow Globals and Globos which have the castle. Eddy has the ability to slide the ice blocks which make up the rooms, the idea being to use them to squish the



enemies which are chasing after him. As well as squishing the globos to obtain a greater score, Eddy can also activate the electrified walls which surround each screen. This freezes any enemies walking next to them and allows Eddy to walk over each glob without this way and then receive a score for killing them.

Graphically, Pengy is pleasant but looks rather old in style. The background and the sprites are fairly flat and simple, although quite

subtitled. Animation is very smooth and Eddy is decidedly cute in appearance. Sound effects in Pengy are minimal and are not exactly awe inspiring.

Although the game is quite pleasant I do think that Red Rat could have tried a bit harder. The graphics could be improved immensely and the sound could be made considerably better. A lot of music on the title page might be nice as well. All of these improvements could have been and should have been made, as the entire game is a tiny 48k! My personal view is that if you were to spend the selling price of around ten pounds for this game, you might be disappointed, however there are worse games around for a similar price and I do know of people who quite like Pengy!

RAMPAGE Activision £14.99

Reviewed by
John Davison *for*



Yet another wacky conversion for the ST, this time in the shape of Rampage from Activision. The packaging boasts that you can "See grand cities reduced to rubble! Witness acts of primeval savagery! Gasp in male and female ecstasy!"

The story behind this game of mass destruction begins in the Greenhanger bus food experiment where three intrepid customers got more than they bargained for in their 'Big Mikes'. The company's research division had apparently shipped some experimental food additives by accident. The effect of the burgers on our three heroes, George, Lizzie, and Ralph was that, apart from nausea, indigestion and a foul aftertaste, they had the sudden desire to rip off all their clothes and

adopt the attire of designer fur and scales, and grow to around fifty feet tall! George, Lizzie and Ralph have become a Gorilla, a Lizard, and a Wolfman - and boy are they mad!

The aim of the game, which can be played by three players (two with controllers, one with the keyboard) is to survive, by flinging things to one behind the walls of skyscrapers. Things which are these items find pleasant to eat, such as the occasional goldfish in its bowl to a rather tasty human. To reach these edible items each "monster" must smash away at the walls and windows with his/her fangs. Some things which they do not find pleasing to eat are

toasters, TV sets, and potted coral. If one of these items is grabbed, then some damage will be inflicted on the creature concerned. Damaged buildings will eventually collapse into rubble, and if one of the creatures is still clinging to the side when it falls, again some damage will be done to him.

The nation's military is also desperately trying to destroy the monsters by sending in tanks and attack helicopters. If a character loses all of his/her strength then he is reverted back to human form, and has to shuffle off the screen naked! Also! So that's where the male and female nudity comes in.

The game's graphics and sound are both superb. The backgrounds are very well drawn and are very colourful. The large sprites are also extremely well drawn, and have smooth animation. The background music by David Whesker is first-rate and the sound effects of the buildings being smashed to pieces are really convincing. The game is highly playable with three players, but after playing for a long while you may begin to tire of it. Rampage is extremely violent, but great fun and I can highly recommend it.

MORE ST SOFTWARE ...

Among the others merited for review recently are the following. For the most part they arrived too late to get out to our reviewers in time for this issue. Watch the next issue for the appropriate reviews.

ANNALS OF HONOR from PDS. One of the first home produced war game simulations set in ancient times. £14.99. **UNIVERSAL MILITARY SIMULATOR** from Harebird, another war simulation in which you can fight any battle you can imagine whether real or not. Fresh Harebird against Hitler! Licensed to us by Software Express, we are still awaiting a review copy from Harebird. **POWERPLAY** from Arcana, a company new to the ST brings you a unique quiz game in which you take the part of ancient gods in a battle for knowledge. **POWER STRUGGLE** from PDS, second ST release from this British war gaming company which will be reviewed next issue. **THESS** from Microsoft, an incredibly detailed and addictive shoot 'em up in Defendable style but with much, much more. **SKYFOX** from Electronic Arts, the well known flight combat simulator makes it to the ST at last. **STUMP JET** from Acme, another flight combat simulator which has some ST competition. **GPA BASIC: ADVANCED PROGRAMMING** from Glensop, a book and disk which will give GPA users a lot of information to stretch this excellent Basic to its limits. The book is available at £13.99, the disk is £8.50 but you can have them both for £20.50. **MUSIC CONSTRUCTION SUIT** from Electronic Arts, now you can make music on your ST with one of the most famous and top quality music programs from the 8-bit world. **ULTIMA IV QUEST OF THE AVATAR** from Origin Systems now released on the ST, see John Davison's four page review in Issue 21. **HIGH JACK** from Vagler Software, a disk accessory with a superb scientific calculator that combines several most used disk accessories into one. **POWER BANK** from Harebird, received literally a couple of days before this was typed, looks an excellent Basic at £19.99.



The first two British ST wargames from PDS



THE SOFTWARE REVIEWS



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Love high



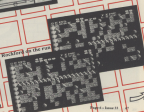
Rockers on the run



Disaster-ize Best



Challenging enough



BASIL, THE GREAT MOUSE DETECTIVE

Basil the Mouse lives in the basement of 211B Baker Street and like his esteemed neighbor Sherlock Holmes, Basil is a famous detective. Also like Holmes, Basil has a trusted friend and an arch enemy, known respectively as Dr. Dawson and Professor Ratigan. In this game the villainous Ratigan has embarked upon the most sinister criminal plan of his career, sharing which he kidnapped Dr. Dawson. It's up you, as Basil, to track down and rescue your friend by following clues through some of London's noisier areas to the evil Ratigan's den. The game is based on the Walt Disney film of the same name, so I expected a high quality product. I was not disappointed, and neither was my 5 year old son.

The cassette version had such a ridiculous long loading time (nearly 30 minutes) that I exchanged it for the disk version which loads in just 30 seconds and so far has been completely reliable. On loading you're treated to some fairly melodramatic music, but this soon gives way to a catchy theme which plays along with the game's credits and high score screens - showing the Top Ten Mouse Detective! There's no music during the

game itself, in fact the game is quite restrained in the sound department, being limited to a few beeps, bumbles, and binkos now and again.

The game is divided into three stages, covering the dockland area, the sewers, and Ratigan's den. Each stage consists of several sets of screens, around which you guide Basil using the joystick and a few keyboard controls. Each new screen visited scores 50 points, so the further you get the higher you score. To get from one set of screens to the next Basil has to leap up to and scramble through ledges and set in doors, the animation of which is quite delightful.

You complete each stage by using your magnifying glass to find and identify five correct clues hidden in jam jars, bottles, chests, and other places scattered around the many playing screens. Clues take the form of objects such as spoons, keys, guns, and a bar of soap. Unfortunately, the evil Ratigan has scattered eight false clues around each level just to confuse you, and a major element of the game involves deducing which clues are the genuine ones. Once you've got them all you have to find the exit to the next level. If you get lost on the way you can trade

clues for direction hints. The process is repeated for each level until you eventually find Dr. Dawson.

It's not as straightforward as this, of course. Ratigan's henchmen are reacting around trying to stop you finding clues. Any contact with them has a deleterious effect on your strength, as shown on a scale at the bottom of the screen. Run out of strength and the game's over, but you can avoid this by using the cheese you occasionally find during the search for clues. To add even more pressure there's a time limit for each stage, with a clock at the bottom of the screen to remind you how little time there is left.

Sometimes you'll find monstages. No, they don't hurt you, but you can score them in your pocket with the clues you've so carefully working on and use them later to incorporate Ratigan's torturous crimes.

The only problem I found with the game is where Basil sometimes gets stuck in a given location for no apparent reason. When this occurs all you can do is wait for the time to run out or reboot the game. It doesn't happen often, though.

I found the game's graphics rather attractive. The detailed backgrounds are drawn in sixteen shades of brown, while the area at the bottom of the screen showing clues, pockets, magnifying glass, strength scale, and score is displayed in bright primary colours. The sprite depicting Basil dressed in his detective's monocle and Ratigan's man in their thug's outfit are beautifully drawn and animated. My only criticism concerns the chess characters, which visually are often rather indistinct.

Overall, the game looks good, sounds good, plays well, and has just the right balance of series and interrelated challenges to keep players of all ages coming back for more. My six year old son now got the hang of it and plays it for hours, but younger children would probably find it too difficult without your help. Be careful though - you might just get hooked on it yourself!

John S. Davison



Published by Gremlin Graphics - £14.95 on disk - £9.95 on cassette - 1 player

SPEED ACE

SPEED ACE is the first Atari release from the newly formed company Zappella Games, and was written by Brian Jobling, who also programmed Tronsoft's Phantom and Blossomtop. This time he has produced a version of the popular arcade game Hang On - a sort of Pole Position on motorbikes!

By necessity the display is very similar to previous race games, with a winding track, grass verges and a scrolling backdrop of buildings and mountains.

The motorbikes are nicely drawn in three colours (red, green and white) and a sense of motion is achieved by alternate red/white flash-strikes and green/white lines. However, this movement is rather less than smooth as you begin to wonder if your bike has a flat tyre! Judging by the acceleration possible, this is quite a plausible explanation! Apart from these omissions, the graphics are generally reasonable and, although a bit cramped, on a par with the competition.

Controls have been restricted to a minimum. You only need to worry about

steering the bike around sharp bends and adjusting your speed as necessary. In fact, it's possible to maintain full throttle all around the circuit, providing you take the correct inside line into certain critical corners. The bike will skid heavily as a consequence so you've got to keep a wary eye on opposing riders if you adopt this strategy! A good point here is the way the bike loses over realistically as you negotiate bends. It's not advisable to overcut the grass verges or collide with other riders as this reduces your speed dramatically and as I've already hinted, fast acceleration is not one of the bike's notable attributes!

There's a choice of nine different race tracks with famous names such as Paul Ricard, Monza and Silverstone included, each one having different noticeable characteristics which relate to the circuit in real life. Additionally, you can choose the length of the race from one to nine laps, although at least two are needed on most circuits if you want a shot at Pole position. Unlike almost all previous race

games, **SPEED ACE** is a genuine battle to achieve first place - all of the other riders have certain positions in the race and these remain consistent with their movements around you. Mr Jobling is to be congratulated for this major breakthrough!

In addition to the one player game, a two player 'head-to-head' option is available in which the screen splits into two (a la Pacop III) to represent each player's view. Much as I applaud the inclusion of two player options, this one has a considerably detrimental effect on the speed and manoeuvrability of the bikes, to the extent that I would have been happier in its absence.

As a one player race game I rate **SPEED ACE** as second only to Activision's Great American Coaster Country Road Race, and if Zappella are going to continue producing games of this high quality then I recommend you walk out and buy every one!

Paul Rico

Published by Zappella Games - £1.99 on cassette - 1-2 players with joy sticks(s)

HENRY'S HOUSE

Little Henry has hit upon a spot of loot! He only took a small slip of his chemically minded father's latest liquid invention but now he is just six inches high and locked inside the brown cupboard, and so he must embark on a desperate quest in search of a cure, avoiding a multitude of obstacles along the way, from terrible counterattacks through perilous parents and other's cleaning chores to a final encounter with the vicious vampire!

This could only be the tiny plot to **HENRY'S HOUSE**, a game that Crampton owners saw several years ago when it was marketed by (dare I say!) English Software, but has now, as long last, been released in Atari format by the budget publishers Mastertronic. It could be described as a cross between Jet Set Willy and Healey Bobber's Back, but any similarity with the former game is strictly based on concept only, as this one is 100% playful and, quite honestly, a

platformer enthusiast's delight!

There are eight different levels in the game, each representing a room of Henry's house (honestly enough). Each room is packed with artifice and obstacles strewn across a familiar ladder and levels background, together with various traps designed specifically to end Henry's mission, such as low-flying mice in the kitchen, a high speed slipper in the bedroom and a hyper-wire cuckoo clock in the lounge! When all necessary obstacles have been reflected, a key is obtained which enables access to the following room. Henry can walk or jump, but only minor falls are permitted so his three lives tend to deplete pretty rapidly. A particularly commendable feature is the way you can re-commence the game from the level you previously completed, as opposed to the very beginning. On the negative side, this makes the game a bit easier to complete and once you've conquered all eight rooms you simply

return to the first at an apparently identical level of difficulty.

Graphics are nothing less than superb. Crampton has been used to exceptional effect and there's plenty of animation together with bright, clearly defined objects and some cleverly drawn scenery. Sound is also above average, with a cheerful 'Wade Brimble' theme tune and adequate sound effects throughout the main game.

The thing that makes **HENRY'S HOUSE** so refreshing is the liberal injection of humour into the plot and graphics. Small details such as pictures on the television set and mutton barking in the bathroom all contribute to this favourable impression. Add to this a super little platform game and the result is an incredibly addictive piece of software that should not be missing from your collection!

Paul Rico

Published by Mastertronic - £1.99 on cassette - 1 player with joystick

ROCKFORD CRYSTAL RAIDER

"Congratulations, you've just bought the greatest piece of games software ever released" - that's what it said on the inlay card, so naturally I had high expectations as I waited for ROCKFORD - an adaptation of the coin-op arcade version of the classic computer game Boulderdash - to load in.

I was greeted unceremoniously by a text-only title screen accompanied by some music that sounded remarkably as if it had been pinched from International Karate. There were no levels to select or option screens, simply a prompt to press START - so I did. Screen one revealed a familiar background of boulders, walls and glowing gates, superimposed by the famous Rockford character looking absolutely nothing like the cute little dude of old - this was more like Rocky Balboa in a Robin Hood outfit! Even worse, everything was coloured in "Who Dares Wins II style" (i.e. lurid shades of yucky green and brown). From then on, gameplay was much the same as Boulderdash, a simple case of

accumulating gems to gain access to the subsequent screen. On level five, "moving walls" were introduced and additional adversaries became evident on levels three and four.

Levels five to eight were different in design and colouring, and according to the instructions I had entered a new world in a series of five, each consisting of four levels. In each new world, Rockford would don a new outfit and take on the role of Cowboy, Hunter, Spaceman, Doctor or Chief. Apart from the cosmetic changes (some of them very good), the game continued to follow the essence of Boulderdash with a liberal selection of tactics, including snakes, fire balls and the ever-faithful anemone adding to the challenge on higher levels.

Despite my initial reservations I actually found ROCKFORD quite addictive, but in no way did it possess the instant appeal or professional finish of the original Boulderdash, and I do wish Mastertronic hadn't gone quite so O.T.T. with the sales hype. Perhaps

their confidence in ROCKFORD isn't really as solid as they would like us to believe. Why else would they re-release another title on the 8-bit side of the console?

CRYSTAL RAIDER was reviewed fully in PAGE 6 issue 26, and is basically one of those games that involves collecting objects from inaccessible rooms, avoiding the inevitable mines along the way. This is bound to keep you occupied the same time and although the graphics and sound are quite spectacular, like ROCKFORD the game holds a fair measure of addictions. If you don't already have CRYSTAL RAIDER then the package is well worth checking out, but if you want a version of Boulderdash then I'd advise you to stick to the original, which recently re-appeared in budget format courtesy of Palace Leisure Corp. Of course, if you're already a dedicated Boulderdash fanatic then ROCKFORD may well be the challenge you've been waiting for!

Paul Dixon

Published by Mastertronic M.A.D. - £1.99 cassette - 1 player with joystick

LEAGUE CHALLENGE

This fourth Atari release from Atlantis Software makes a departure from their previous trend of following popular arcade themes. As the name suggests, LEAGUE CHALLENGE is a football managerial game and adds to an already extensive list of similar titles on the market. It opens up with many of these, it's written entirely in Basic and, contrary to the instructions, will only load if Basic is enabled (i.e. by pressing START only on powerup). Atlantis have already asked us to pass on their apologies for the error. *Ed.*

The main game is presented with standard G.I. text on a standard background and uses the INPUT command to extract information from the player. Having chosen a team to manage from the nine-four available you are first presented with a "mid-week options menu" from which you can sell unwanted players or view various statistics relating to your team and its financial position. Owners may also be served and recalled from this menu,

although unfortunately the high-priced cover story's terminated afterwards for the benefit of us poor suffering Rev. B Basic owners!

Next, the intensity of training is selected (thoroughness is proportional to cost) and then it's onto the important task of choosing eleven members of your team to play in the forthcoming match, bearing in mind each player's strength, fitness and ability. The match itself is heavily played, albeit in a weird sort of fashion! Your view switches to a representation of the goal and part of the pitch, complete with several stationary players (but no ball). A white line suddenly emerges from a player's feet and plots a trajectory towards the goal. If it gets past the goalie the result is displayed in the text window. This process repeats for each half of the game, but in a few seconds it's all over and the final result is announced, so don't blink or you'll miss it!

Larger results are added to a master points table and there you're offered the

opportunity to purchase an extra player from the transfer market. Finally, you're reminded of the damage to your bank account with a full analysis of income and expenditure, before returning to the mid-week options menu for another round of the same. The cycle repeats a further three times to the end of the season when your performance is assessed and the team relegated or promoted as appropriate. And then you start again, for ever more of the same. It's not an applicable sequence by any means, but the monotony is such that I held great admiration for anyone who is still awake by the second season!

Perhaps if the graphics had been better and some sound included, LEAGUE CHALLENGE would have possessed far greater appeal, but Atlantis simply don't seem to have put much effort into producing it. Let's hope they'll stick to their good old arcade themes in future!

Paul Dixon

Published by Atlantis Software - £1.99 on cassette - 1 player - key board only

ACE OF ACES

To become an Ace of Aces, you need skill, determination, and a copy of this new American import from U.S. Gold - an absorbing flight combat simulator based around the Second World War which puts you in charge of an RAF Mosquito fighter.

Controlling the Mosquito fully requires interchanging between five different display screens, each representing an area of the aircraft. The Pilot's view focuses all the necessary flight measurements including Compass and Radar and gives you control over the yoke and gun or cannon. An icon-interface system - present on all the screens - sets toolbar like an on-board radio, prompting you to take action when necessary. For technical adjustments to the throttle, boost and trim you must relocate to an Engineer's screen. There are two of these, one for each engine.

Although there aren't any landings in the game, it's still possible to lower the landing gear to low speed. Set the flaps correctly and you probably won't need it!

In between frequent visits to the Engineer's department it's important to consult the map of enemy targets throughout Europe and keep an eye on the weather symbols to prevent storm damage. For ground targets, you must move to the Bomb Bay where you can additionally switch weapons and reduce weight by dropping any empty fuel tanks. The instructions supplied are brief, if not lacking, but fortunately there's a practice option where you can try out all of the major functions. The Mosquito handles rather sluggishly but even so, this experience is honestly addictive!

Select the game proper and you must first choose the number and nature of missions you wish to embark on. Whether you want to annihilate Nazi Bombers and V-1 Rocket Bombs or seek out the U-Boats and Prisoner-of-War trains is entirely your prerogative, but to become an 'Ace of Aces' all of the missions must be cleared successfully, and each credit bonus significantly so in the final points allocation. Having inspected

the intelligence report you must then collect sufficient supplies of fuel and weapons and finally study the area map before departure. A successful mission basically involves locating the adversary target, lining up with the fire button and quickly returning to base. Nazi fighters often intercept you on the way, and must be dealt with in a similar fashion. These always appear on a background of cloudy blue sky, so don't expect any memorable scenery or landmarks! Despite the lack of colour, graphics are generally adequate, with some cruddy slant animation on the Engineer's and Pilot's screens. Sound appears to have been neglected but even this does not detract from the sheer satisfaction of gameplay!

In those days of 'budget' games games you may think twice before shelling out ten pounds or more, but please to consider factors such as complexity, addictiveness and lasting appeal and I believe you won't find a better bargain than ACE OF ACES.

Paul Brown

Published By U.S. Gold - £9.99 on cassette - £14.99 on disk - 1 player with joystick

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TURBO BASIC

UNUSUAL ANTICS

by Les Howarth

Here is another unusual demo from Les Howarth who brought you the excellent Magic Window a few issues back. This demo gives an unusual effect by pointing the character set to the ANTIC chip.

HOW IT WORKS

If the character base is set to page 212 (memory location 5422) which is the start of the ANTIC address, pointing to the screen in GRAPHICS 1 will actually give GRAPHICS 3 PLATS in 3 colours. As well as pointing to the screen you can also use PLOT and DRAWTO as in this demo. The COLOR command chooses the character to be printed rather than a colour so COLOR 130 is usually character 130 (Inverse CTRL-B). By experimenting with different characters some weird effects can be obtained.

TURBO COMMANDS

The FILLTO on line 160 is a Turbo Basic command to fill an enclosed area with a color selected by FCOLOR, in this case character 90, which gives a nice jumpy effect. This effect changes if the SELECT key is pressed while a scrolling message is being displayed. The scroll will stop until START is pressed. Use OPTION to end the program.

Note also the frequent use of the percent sign in the listing. In Turbo Basic the numbers 0 to 3 can be used in this way to save memory. Each time these variables are used only one byte is used as opposed to six normally when using a number.

One effect I have added to the demo is a scrolling message using player initials. You are also limited to only 4 characters, 1 for each player, unless the 5th player is enabled of course. The DATA for the characters is taken directly from the resident character set, therefore there is no need to calculate the data yourself. This makes it possible to create any message by simply putting a new ALPLOC MESSAGE starting at line 390 looks at each character in A0 and transfers the necessary data to the P 04 area. As players can be moved horizontally quite smoothly in Turbo Basic, it gives the appearance of a nice scrolling message. The player initials area is initially cleared using the MOVE command as described by Roy Goring in issue 32.

One more command is introduced on line 90.

R = RAND(25) will return an integer random number between 0 and 24. The number in brackets gives the equivalent of INT(RND*(R+1)) in Atari basic.

```

00 1 0000 *****
01 0 0000 = Turbo-Basic Demo =
02 0 0000 = by =
03 0 0000 = Les Howarth =
04 0 0000 = =
05 0 0000 = PAGE 0 (RANDOM) = ENDED =
06 0 0000 *****
07 0 0000
08 10 GRAPHICS 1:PRINT TAB(10);PAGE 0
09 100 PEEK TAB(10);PAGE 212,200
10 00 00 00 00 00 00 00 00 00 00 00 00
11 0 0 10 00000000
12 00 0000 0000
13 00 0000 0000
14 00 0000 0000
15 00 0000 00
16 00 0000 1000, 10 00
17 00 0000 0000 0000 00,0,0,0,0
18 00 0000 0000 0000 000000
19 100 000 0000,000
20 100 0000 000000
21 100 0000 000000 00,0000000 00,0000
000000 10,10 000000 00,1000000 00,00
000000 10,1000000 00,1000000 00,00
000000 00
22 100 00000 00,0000 01,000000 10,00
000000 00,000000 00,1000000 00,00
000000 10,1000000 00,1000000 00,00
000000 00,1000000 00,1000000 00,00
000000 00
23 100 0000 00,000000 00,1000000 00,00
000000 00,1000000 00,1000000 00,00
000000 10,1000000 00,1000000 00,00
04 100 0000 00,000000 00,1000000 00,00
000000 10,1000000 00,00
05 000 000000
06 000 *****
07 100 0 0000,000
08 100 00
09 100 00 000000000000 0000 000
10 100 00 000000000000 0000 0000 0000
11 100 0000 0000,0 0000 0000,0000000
0000,00000000 0000,000000000000
12 0 0
13 100 000 00 0000 00000000 000000
000 000000
14 100 0000 00000000 1000 0000 1000
0000 10,000000 10,000000 00,000000
15 100 0000 0000,0,0,0000
16 100 0000 0000,1,0000 0000,0000000
00
17 100 0000 00000000
18 100 0000 00000000
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99 100 0000 00000000
100 100 0000 00000000

```

SOFTKEY

A superb utility to add instant commands,
text or even whole subroutines to your
programs at the touch of a key

Anyone who does much programming will appreciate the facility to assign commonly used strings of characters, such as programming statements, to a single key so that pressing that key will type the entire statement. A few utilities to do this have been published but this program offers the following advantages over others I have seen so far:

- Strings can be as long as any entry program line (over 200 characters), with multiple statements assigned to one key
- You are not limited to alphanumeric characters - any character except the RETURN key can be used, including commas, graphics symbols, control codes and inverse characters. So even machine code functions and printer controls can be assigned
- Up to 26 different assignments can be used at any one time, one for each alphabetic key (A-Z)
- The string is called by pressing the appropriate alphabetic key and the OPTION key simultaneously, so you will retain the normal, shift- and control-combinations of that key (some entries of this type often use one of these combinations to print the string, thereby losing the normal operation of that key combination)
- You can make up your own different sets of key functions and save and load them as appropriate.

The program provides for both tape and disk versions, so tape-only users can also enjoy the benefits of this facility. Even if you are not interested in the program as such, the article may still be worth reading as it demonstrates two useful programming techniques, one which allows a 'non-relocatable' machine code program to be relocated in steps of whole pages and another which overcomes the inability of the DATA statement to handle an embedded comma, a technique I have never seen published before.

by
Gary McDonald

PREPARING SOFTKEY

The main program is shown in Listing 1. Type this in three SAVE or COPY it as appropriate. You may leave it in their 900s if it is short because this is used by the program. It is being in a diskette program which needs key definitions incorporated into before RUNNING. Functions are defined in REM statements contained in program lines in the range 9-99 which you can either add directly to the diskette program and then RUN/SAVE as a new version, or make into separate programs which can be LISTed to disk or tape and later merged with SOFTKEY by ENTERING. Some examples are shown in Listing 2 but you do not necessarily have to use these - you can of course devise your own functions to suit your particular needs.

When SOFTKEY (as prepared by the key assignments as described above) is RUN it will create a machine code program and save it either as an ACTORUN SYS disk file or as a loadable tape file (or both), whichever you specify (multiple copies can be made simply by following the program). To use the functions you then have to switch off the computer and reboot (with BASIC installed). If you are using tape, remember to hold down the START key at the same time as switching on the computer then press the recorder's PLAT key followed by RETURN to load the basic tape. When the program has loaded, either from disk or tape, the familiar BASIC 'READY' prompt will appear.

From then on, whenever you hold down the OPTION key and an appropriate alphabetic key together

(either in lower-case mode or with shift, caps-lock or control) your string will be printed. Any key combination without the OPTION key will print as normal (the only key in which you did not want a print). The instructions in the program have been placed in SECTION 1000 but it will be available in most of the. After the string has been printed, press RETURN to reset it.

Don't forget to type a line number first. If you want the string to be part of a program line, otherwise it will be entered in command mode. You can of course enter it in the middle of a group of statements - just enter the first normally and call up your key function at the appropriate point. If you intend to follow it with more statements on the same line, don't forget to add a colon delimiter if appropriate.

The keys will continue to work in this way even after a REBOOT, but strange results can arise if you call DOS. If you still wish to use DOS, delete Line 160 from SOFTKEY before RUNNING it but you will then lose the function keys after a REBOOT. In any event, some DOS functions will overwrite the machine code and cause a crash when you return to BASIC.

RELOCATING THE OBJECT CODE

The machine code program loads into low memory (after DOS disk users) before BASIC is installed, and the lower down it is the more RAM is available to the BASIC (Page 4 of RAM is not affected). It makes sense to load in as low as reasonably possible, but this will vary depending on your system configuration (number of disk drives, file buffers, etc.) so SOFTKEY is flexible enough to allow you to specify the loading point in the source page boundary in page 4 in blocks of 256 bytes). To determine the lowest

address, switch on your computer to its normal operating mode (without the **SOFTKEY** AUTORUN on both tape programs) and type **PRINT PAGE(746)**. Add 1 to this number to derive a suitable lead address and change Line 143 as necessary from **ORG = 30** to your new number. **FREE(744)** normally gives 7 for a tape-only system and 28 for a single disk drive.

Line 150 shows all three bytes of the machine code routine which depend on the start address and effectively divides the routine by a whole number of pages up or down in memory from a certain address of Page 28. The bytes which have to be stored were determined by assembling the source code twice using two different starting addresses, the second one page higher than the first, and then comparing the two sets of resulting object code and noting which bytes were different and how they compared with the starting address. This data is contained in Lines 2000 and 2003 and is read into string arrays **K1.P0** and **K1.O0**.

A DIFFERENT WAY OF HANDLING DATA

The second unusual feature of the program is the way the data for the string assignments are incorporated into the program. The natural choice would be to use **DAT&** statements but if you wish to incorporate a comma in your string (which can arise frequently - when opening files, using arrays, FORKING, etc) the **READ** statements would only read as far as the comma and ignore the rest - in fact it would read everything after the comma as the rest of all data which would not be the intention. The **READ** statement overcomes this restriction but I had to write a special routine to access the data directly from the program lines stored in the computer's memory.

Line 208 of **SOFTKEY** determines the address of the first statement in the program and Line 210 then reads the line number. If this is 150 any lines between 0 and 99 will already have been examined and the program branches to Line 400 to write the code to disk or tape. Otherwise, Line 220 calculates the length of the line and bypasses any further processing if the line is empty. Lines 230 to 232 show that the key label is within range and if so incorporates its definition in a table in the machine code. Finally, Line 300 finds the address of the next line number further looping back to Line 210 to process it.

DEFINING YOUR OWN KEYS

As stated earlier, Listing 2 is just an example of the way you may define keys. You can assign almost any statement to a key from your own name through to often used keywords up to full one line routines. Defining keys simply requires you to create a program consisting of **REM** statements using line numbers up to a maximum of 69 which can then be merged with the main **SOFTKEY** program. This program must be **LIST**ed to disk or tape so that it can be **ENTER**ed once the **SOFTKEY** program has been loaded.

Strings must be assigned in the format shown in Listing 3; namely

```
Line no., space, REM, key (A-Z), string.
```

Note that there are no spaces between the key label and the assigned string (unless you want leading spaces as part of your string). A new line should be used for each key. They need not be entered in alphabetical order, but it is tidier if they are.

I hope you find this program as useful as I have. It obtains the tedious art of having to commonly used statements time and time again, reduces the chance of error and saves time. All you have to do now is remember what each key stands for, but if the functions have been assigned to a meaningful way this is not too difficult.

Although this article has described the use of function keys in **BASIC**, the host program also works with the Assembler Editor cartridge (different functions are needed of course).

SOME EXAMPLE ROUTINES TO USE WITH SOFTKEY

As a bonus, Listing 2 presents you with a ready made library of subroutines that you may use in your own programs. If, for example, you need a machine code routine to copy an area of memory just type in the line number you wish to use and pass **OPTION + M**. You need then only make sure that any variables used tie up with the routine. Much simpler than looking up or trying to remember a complicated routine. Every time you find a routine that you might use again you can amend the **SOFTKEY** program and create your own library of routines for use in your programming sessions. Brief descriptions of the functions defined in Listing 2 with the key to which they have been allocated are as follows:-

B - Dimensions a string **80** to 200 bytes and sets all elements to zero (Asterisk being symbol)

C - Close Channel 1

D - Lists the directory of Drive 1 without having to go to **DOS**

H - Calculates the high byte of variable **V**

I - A machine code routine to send or receive data from a device - can be used to read files. Open the device first (e.g. **OPEN L(1,0,"D:USER")**, set up a buffer to receive the data (a string for example) then call the routine with the **USR** function passing the following parameters - channel number, transmission direction (1 for read, 0 for write), buffer address and number of bytes

J - Print the 2 low-order bytes of the internal clock in jiffies (units of time approximately equal to 1/60 second in the UK)

K - Wait for a key to be pressed and store its **NTWACH** value in **K**

L - Calculate the low byte of variable **V**

M - A machine code routine to copy an area of memory to a non-overlapping region. Call with the **USR** function with parameters - number of bytes to copy, from address and to address

O - Open a device - don't forget to insert a name after the question mark

P - Print writing **AB** to the screen showing any control characters in their symbolic form

R - Lower **RAMTOP** to Page 96 to reserve memory

S - Another machine code routine. This one reads or writes any number of single or enhanced density disk sectors to or from a buffer. Call with the **USR** function and pass parameters - buffer address (a string), starting sector number, number of sectors and direction of transfer (0 for read, 1 for write). Only use the write facility if you really know what you are doing as you can easily screw up the disk, destroy valuable data and make it impossible to recover

V - Set the variable **VDU** to the screen address

Z - Set the internal clock to zero - both **POR**s to location 28 are intentional

6. FAST TRIG FUNCTIONS and HEX/DEC CONVERSION

I was intending for this issue to concentrate on a fast trigonometry technique to speed your graph drawing programs, but I have changed my mind! Once you understand the principle of the technique the applications are quite easy, so I will not labour the point. Instead I will lay the ground rules, show an example and leave you to find applications. This will leave me enough space (and time) to provide two additional useful subroutines for decimal to Hex and Hex to Dec conversion.

SPEED UP SINES

The Atari 8-bit computers are overall the best of their type, but this does not mean they are perfect and one weakness is the slow speed of mathematical and trigonometric functions in Basic. It is worth finding quick ingenious ways of avoiding these functions if you want to speed up your programs. One way to do this is to do all your calculations in advance during an initialisation sequence at the start of your program and then merely call up the results when you want them in the part of your program where speed is required. Many programs have a delay at the start during initialisation, and this is far more acceptable than a program that seems to drag itself along slowly all the way through.

I have taken the SIN function as an example. The subroutines is only two lines (SIN0 and SIN9). The first few checks whether the array has already been set up in it is a waste of time to re-initialise if the values are still intact as could happen on a program restart. In the second line of the subroutines the value of SIN(A) is calculated for each whole degree from 0 to 90 and the results is stored in the array SSIN(A). It is as simple as that! From here on you can use SSIN just as if you were using SIN as long as you remember the limitations... in only using for those values that have been set up i.e. whole degrees between 0 and 90. SSIN(1.4) will return a value equal to SIN(1), the nearest whole number, and numbers outside the 0-90 range will cause a string length or value error message.

As an illustration of the technique the short graphic program draws two sets of circles and two sets of sine waves to form a simple pattern in Graphics 8. It uses SIN for the first set of curves and SSIN for the second set in each case. This shows that the use of SSIN makes the drawing process about twice as fast (ignoring the initialisation time). You can also see that the sine SSIN range can be used to fulfil the requirements for a full 360 degrees of both Sines and Cosines.

If you do not use a full range of values of SSIN (or equivalent function) in your applications it is worth going back to the subroutines and changing it so that only the values you need are defined. This can significantly decrease the delay during initialisation.

Ian Finlayson shows you how to speed up maths functions and offers a handy conversion routine

HEX TO DEC AND DEC TO HEX CONVERSIONS

These two utility subroutines do not contain any startling programming techniques, but they are good examples of compact use of Basic programming. I will not describe them in too much detail but leave you to follow them through and see how they work. In each of the routines the first two lines tend to see if the subroutines has been called before and the respective string (TT12H or TT12D) is dimensioned only if it has not been done already.

In the main body of each program the trick is to know how to handle the transformation between values of letters and numbers. The value obtained when the keyboard key number 2 is pressed is not 2, nor does the character A have a value of 11, so all have to be manipulated to meet our requirements. For each key pressed on the keyboard there are three values used in the computer. First the ASCII value, or to be more strict, the ATASCII value (which covers the Atari specific graphics characters beyond the standard ASCII set). Second is the ICODE value which is the value which is used to generate the character on screen, if you poke the ICODE value into screen memory the required character will appear. Last is the keyboard value which is generated when a key is pressed, this can be found by PEEKing location 564. In the back of Computer's Third Book of Atari is an appendix which gives comprehensive information on the Atari character set, it is a most useful reference which has helped me frequently.

In these subroutines we are using the ASCII values of the characters to obtain a decimal value from a HEX string. The numbers 0 to 9 have ASCII values 48 to 57 and the letters we need, A to F have values 65 to 70 so we have to subtract 48 from the numbers and 55 from the letters to obtain the numerical value of the Hex character. Similarly, when converting from decimal to hexadecimal the 48 or 55 has to be added on to get the ASCII value. In each case the whole sequence 0 to 9 can not be handled in one but has to be split into numerical and alphabetical portions. For comparison, and to illustrate that there is another way of extracting numbers from string characters to numeric values, I have used STR\$ to obtain the Hex numeric characters from their respective numbers and VAL to get the numeric value from

Mark Hutchinson's



FIRST STEPS

bottom are the Y co-ordinates. To move up we subtract 1 from Y, to move down we add 1 to Y. To move right, add 1 to X and to move left subtract 1 from X. Easy.

Our next line could be

```
120 IF PEEK(832) = 14 THEN Y = Y - 1
```

but we would have to write eight such lines, one for each joystick position. There is a better way. As you can imagine, there can only be one value at any given time and it is possible using Boolean algebra to combine all the various conditions into one line. Sounds tough, eh? No need to sign up for the open university just yet. This is extremely simple.

BOOLEAN ALGEBRA AGAIN

If a statement such as $(P = 14)$ is correct (TRUE) then it is given a value of 1. If it is not correct (NOT TRUE) then it will be 0. So, another way of writing line 120 would be

```
120 Y = Y - (PEEK(832) = 14)
```

When the PEEK(832) does equal 14, 1 is subtracted from Y as before but if it does not equal 14 nothing is subtracted. This line looks complicated so I will change it slightly to make it more readable and I will add the rest of the joystick values as well

```
120 P = PEEK(832)
130 Y = Y + (P = 5) + (P = 9) - (P = 13)
140 Y = Y - (P = 6) - (P = 10) - (P = 14)
150 X = X + (P = 3) + (P = 6) + (P = 7)
160 X = X - (P = 9) - (P = 10) - (P = 11)
```

I have split the routine into five lines for the sake of clarity, but it can go into one line. Let's look a little closer at the routine. From diagram 2 we can see that X will increase when the joystick returns the value of 3, 6 or 7. If it is 3 then the first conditional bracket will be true, and hence 1, and the rest 0. This means that 1 will be added to X. If the value is 11 then no change occurs to X. Each of the conditions will not be true and all will have a value of 0.

To see something on the screen we use the PLOT command, i.e. PLOT X,Y. Then we just go back and do it all over again

```
170 PLOT X,Y
180 GOTO 120
```

So far we have used just the one colour. We could use the keyboard to choose other colours but I will look at the joystick button, location 844, and cycle the colours using this. The reason for this is that when the button is pressed a value of 0 is returned and I wanted to show you the reverse of lines

After having told you in an earlier column how to save and load pretty pictures I thought it would be a good thing to tell you how to actually draw those pictures in the first place. This will not be a fully fledged drawing package, just the basic essentials and I will walk through the program line by line so that you will see how it is built up, rather than having to look at it fully developed. If there are any routines which are not understood please write to me and I will endeavour to explain, either in this column or through your B&E.

LET'S PROGRAM!

The first thing is to pick a graphic mode and one of the best for this type of program is Graphics 7 as it has high resolution lines and lots of tiny dots on the screen and four colours. The first line of our program will therefore be

```
100 GRAPHICS 7
```

The COLOR command allows us to pick one of four colours and SETCOLOR lets us change that colour. Think of COLOR as one of four luminance pens and SETCOLOR as just changing the ink in the pen. COLOR 0 is the background colour and, when a point is plotted in this colour it cannot be seen. However, if used on top of another colour it will effectively erase the original colour. Our next line will turn on one of the colours

```
110 COLOR 1
```

Now we have to figure out a way to use the joystick to draw some pretty pictures. The joystick has eight possible positions as shown in Figure 1. We can read the position of the joystick by either using the STICK command or looking directly into the memory location using PEEK. I will use PEEK. If the joystick is pushed up, the memory will store 14 so we will tell the computer that, if it finds a 14, it must keep X at its present value (we are not moving sideways) and subtract 1 from Y to move the cursor up. These 'x-co-ordinates' are shown in Figure 2.

If we look at the screen, the top left is the zero position. Moving left to right are the X co-ordinates and from top to

UPDATE

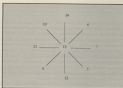


Figure 1 - Joystick positions

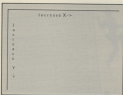


Figure 2 - Screen co-ordinates

128-160. Note that we must now move the GOTO and the PLOT

```
110 COLOR C
120 C=C+NOT PERC/640
130 IF C>7 THEN C=0
140 PLOT X,Y
200 GOTO 110
```

In line 130, C will increase to a value of 4. As the COLOR statement can only understand the values 0-3, line 140 will automatically reset COLOR to 4, the background colour. It is easy to also reset and reset X and Y in a similar manner to line 140. If X or Y passes outside the screen boundary ERROR (4) occurs and we must correct for this. If, for instance, Y reaches the bottom of the screen we can reset the cursor to appear at the top. This is called wraparound. 158 and 79 are the master 7 screen co-ordinates with a window. So we now have

```
150 IF X<158 THEN X=0
200 IF X<0 THEN X=210
210 IF Y=79 THEN Y=0
220 IF Y<0 THEN Y=79
230 PLOT X,Y
240 GOTO 110
```

WHIST (ISSUE 12) For the first time in a long time we were plagued by that old problem of extremely long program lines with the result that the last few characters of line 3580 got chopped off. The last part of this line should read THEN 41=50. You will also need a few tricks to type the line in. Type POKE 81,0 and press RETURN before typing in the line as otherwise NEXT to M, and leave out a few spaces.

Caution users may have found problems when moving Listing 3 if they typed in the RAM statements at the beginning of Listing 3. Just leave them out otherwise they will overwrite part of the original listing.

This is the basic program and I will leave it to you to customize it. For instance, a custom keyboard can send the program to the printer even or load routines that I gave you in a past article. This is up to you. I can give you the basics but you will never learn until you try adding or amending the program. So get computing!

Now let's dig below I go. Add this line before PLOT

```
PRINT "X=";X;" Y=";Y
```

This will let you judge the cursor position better. That is why I left the window in, but you may not wish the window to be used, so try this line before you save the picture.

```
GRAPHICS 7+18+32 (or use GRAPHICS 10)
```

This line will keep the same graphics mode (7), the 18 will take away the window and the 32 will keep what you have drawn originally. I have not used this code for several years but I think it is too great a trick to forget.

The screen save/load routines I give will save all graphics modes to disk or tape or can be used to transfer RAM or character sets. If you look at issue 51, page 81 table 2 you will note options 4 and 5. These will hold the memory location that you wish to read or write to. The character set will be saved or loaded one byte at a time, so the LOGO routine can be used for fast access.

YOUR LETTERS

I have received some letters from readers, such as D. P. Allen of Canterbury, asking about Turbo Basic. I never had the time to try this out, even though Leo told me it is great. Perhaps during the summer I will have some spare time (some hope).

If any beginners need help with programming, just send the problems, with an IBM or

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Bullfinch
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1111 RESOURCE FILE

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