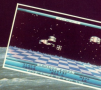


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PAGE 6 OFFERS

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on page 41

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PAGE 4 welcomes and encourages its readers to submit articles, programs and reviews for publication. Programs should be submitted on disk or cassette, articles should wherever possible be submitted as text files on disk. We seek to encourage your participation and do not have strict rules for submissions, it is something interests you, write a program or article and submit it. Appropriate payment will be made for all published programs and articles.

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WIN A VIDEO!

Here at PAGE 6 we are so impressed with Jeff Minter's MERAK video that we have decided to give away FIVE copies absolutely FREE in return for the answers to some simple questions.

FIVE easy questions for FIVE lucky people to win a copy of MERAK

1. What was Hasnamsoft's first Atari game?
2. Who wrote the music for Merak?
3. What are Jeff Minter's favourite biosites?
4. What is the special programming language used in Trip-a-Trova?
5. What small price will you have to pay for a copy of Merak if you don't win one?



You don't need an ST to appreciate MERAK - described in PAGE 6 on a 'new art form' - just a VHS video recorder so if you want to participate in a unique experience just write down the answers to a few questions and send them off to THE MERAK COMPETITION, PAGE 6, P.O. BOX 24, STAFFORD, ST14 2JH. You have only until the 15th February 1989 to send in your entry, after which date FIVE lucky winners will be drawn out of the cardboard box and the videos will be on their way.

If you don't want to wait until 15th February send me (should I?) you can get a copy of MERAK - The Video by sending a cheque or Postal Order for £12.95 to Hasnamsoft, 49, Mount Pleasant, Telford, Shropshire, TF11 1JH.

news scene

A NEW SPARTADOS

Great news for all fans of ICD's Sportados is that a new cartridge version has been developed with only the manual to be finalized. Sportados X comes on a new style 'X' cartridge that will allow other cartridges to be plugged on top with operations having complete control over the added cartridge, allowing it to be switched on or off.

ICD claims that Sportados X includes 444 of the tightest machine code ever written/and, amongst many other features, it gives you more free memory in your XL or XL than is available with any other

DOS. High Speed Data transfer is available on standard with the 51551, US Double enhanced 10M drives and floppy 1000's with all densities supported and the ability to handle 1.5" and 3.25" drives. It can even cope with Hard Drives and 8" floppies!

The new Sportados will include full file ARCing with routines very close to the IBM ARC standard. SDX ARC is said to be the latest and most efficient the computer available on any 8 bit computer. Future options for the product include a Developer Toolkit, a Database program and an XSPRO

handler if there is enough demand.

ICD have once again proved their commitment to the Atari XL/XX by spending a great deal of time and effort in producing Sportados X so let's hope that Atari owners worldwide show their appreciation.

The price at the time of writing was not finalized but Andrew Bennett of Frontier Software, distributors of ICD products in the UK, commented that his company will be distributing Sportados X at the most competitive price possible. The product should be available by the time you read this.

CAN'T FIND ANY SOFTWARE?

XL and XL software is becoming harder to find and many owners need to buy by mail order but even then it is difficult to know just what is available. One company, Sunam, is trying hard to ensure that you can continue to buy software for your machine and has produced a new 1989 catalogue which lists close on 200 games on disk or cassette together with over 40 ROMs and a dozen or so utilities and educational items. There is also a good selection of software to clear at special prices and a vast number of ROMs for the 2600 games console.

Sunam have been supporting the Atari since 1984 and, unlike many others, has decided not to jump on the ST bandwagon but rather to continue to provide exclusive support for the 8 bit machines. A copy of Sunam's catalogue can be had by writing to Sunam, P.O. Box 78, Moorfield, Clevedon, S610 3PP.

NOT JUST A GEM!

Whilst most attention is being given nowadays to the ST, a small company over in the States is working hard to upgrade the Atari XL and XL range to provide many of the features of the popular GEM system. Borne Software have developed the Diamond/DM graphics based Operating System which will give you XL or XL the look and feel of an ST.

The software provides a user definable cursor which can be operated by keyboard, joystick, touch tablet or mouse to access drop down menus with similar file handling capabilities found in the GEM system. Disk accessories can be installed and the environment includes icons, Dialog boxes and windows that can be opened and closed or moved, just as on the ST! The system is similar to the GEM system of the Commodore 64 which has increased the popularity of that machine even more and Borne Software are hoping that Diamond will do the same for the Atari 8 bit machines.

The standard Diamond bundle includes Desktop software that will enable easy access to DOS but, of course any further software used will need to be compatible as Borne Software have developed several programs to run with the system. The Diamond Programming Kit

includes macros for MACROS and basic source code to demonstrate how to use Diamond and therefore allow you to write your own programs. Diamond itself is a full featured word processor that allows multiple forms and multiple text sizes in a document and Diamond Print is a standard ad package but with drop down menus. Perhaps of greater interest is Diamond Publish, a desktop publishing system for your XL/XX with, it is claimed, text flowing from columns to columns and around pictures with different fonts and font sizes. Future products planned include Diamond Basic, Diamond ASM and Diamond C.

The Diamond system runs on a super cartridge and retails in the States for \$59.95 with the support programs at \$19.95 dollars each. There is no UK distributor, and with the present lack of interest amongst UK outlets in the 8-bit machines, there is unlikely to be one, but Borne Software can be contacted at 0991362, 042 Farm Lane, Warrenville, IL 60093, U.S.A. There could just be a possibility that H&E S might buy and distribute this type of product and a few letters to Borne Software might show them that owners in the UK are interested in their products.

ATARI IS ALIVE IN THE USA

Used to hear some rumours? Maybe there are all facts but a little bit of product is now being imported that it is impossible to sell. Anyway, a few products reported in the U.S. include Video Title Shop and Graphics Composition from Datawest, and from No Nills Software, a program to convert icons from Print Shop, Newsprint, Amarcord and Postscript. DSD XL for the new 51551 drive is also said to be most complete as is Atariwriter 80, the long announced and long awaited enhancement to Acewriter giving it full 80 columns support with the XSPRO. Apparently, Atari have had to rewrite the entire program from scratch.

Also reported for the 8 bit is Katakoda on cartridge with a new player mode and other cartridges include, Summer

Games, Mario Brothers, Desert Falcon, Ace of Aces, Eagle's Nest and Artful plus a new adventure on cartridge called Dark Conflict. It is not clear whether these are for the XL/XX machines or for the 2600 games console, more likely the latter! Let's hope so!

U.S. availability is unknown. A couple of addresses that might prove useful are Datawest, 19688 Nordhill Pl., Chatsworth, CA 91311, and No Nills Software, 880, East 32nd St., Kearney, NE 68147 both in the USA of course.

BALLBLAZER BOUNCES BACK

Blazer is the right name for a software label that brings back classics like Ballblazer which is now available on cassette at the bargain price of £3.99 not long after Atari themselves withdrew it. Ballblazer was originally produced by the team behind Labyrinth and features two player action on a futuristic grid with some

superb split screen scrolling which looks new ground on the Atari when it was first released. It still remains one of the most respected of Atari games and has not since been limited.

Surely everybody has a copy by now, but if you are a new owner you can grab yourself one of the Atari classics at a real bargain price.



A joystick is a joystick, or is it? There is an amazing variety of joysticks on the market at the moment so a new one has to have something special. The Micro Blaster (distributed exclusively by Compuserp) is a fairly standard design but is extremely rugged and comes with a normal 12 month guarantee of workmanship from the manufacturer but Steve Burke of Compuserp is so confident of the construction that he says Compuserp will give you a free replacement if you manage to break the stick under any circumstances!

The Micro Blaster certainly feels solid and the travel of the stick in all directions is very small giving it a very "tight" feel with a positive click when the direction is engaged. The mechanism inside comprises four micro switches around a solid metal shaft with a further two micro-switches for the dual fire buttons. Underneath is a slide switch which sets the fire buttons to normal or cyclic. The connecting lead is unusually long at 1.4 metres with a standard joystick connector. All in all, this joystick comes across as a very solid, well built unit. The only possible drawback is that it is quite large and heavy for small hands to hold, but this is a criticism that can be levelled at many joysticks.

There is not a lot you can say about reliability, it could take years to test a joystick to destruction! The Micro Blaster certainly feels more solid than many others on the market and would seem well suited to those who like tight, cyclic, control rather than the "slippy" movement found on many another stick. The Micro Blaster costs £22.95 and is available from Compuserp Ltd, Freeport (FAM), Loughborough, Leics, LE12 9BB.

ACROSS THE SEA TO IRELAND

If you live in Ireland you might be interested to learn of the Atari Users Group of Ireland who meet regularly in Dublin to provide Atari support. The group contact has changed recently from that shown in recent Resource Files and the new team is now Mike Casey at 3, St. Kevin's Park, Kilsnoo, Co. Dublin. Meetings are held on the first Sunday of every month from 12 noon to 4 pm at Powers Hotel, Bilsnoo Street, Dublin and the group publishes it's own newsletter covering programming, reviews, help out the file.

Conforming meetings will include a demonstration on Video Digitizing, a Music Month and a professional presentation on Desktop Publishing Practices as it looks like the Powers Hotel is a good place to be on Sunday afternoons if you find yourself in Dublin.

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Mailbag

EDUCATIONAL SOFTWARE

Last year I purchased an IBMPC with disk drive so I have two sons aged 10 and 11. They love the machine but only use it for games. I would also like to use it as an educational training aid on my eldest son in a way behind in his education and could do with extra tuition at home. I now know that the IBMPC has a wide range of capabilities but I do not understand the machine's basic and so I cannot work out any programs. What I can offer is any listing that I can input for Maths, spelling etc. or any educational programs. I have tried many. Alan reminds that all seems to be just games or utilities to please can you help?

T. Shephard,
Birmingham

There have always been regular requests for educational software but very little produced in the way of commercial programs or even user-written software. Most of what is available is aimed at pre-school children, primarily because it is easier to write simple shape matching programs and the like. There have been one or two listings in your issues of PAGE 4 that might be useful, notably *Maths Time* (see issue 24, and *Fun With*

Tables from Home (I'll come out of print).

There are also a couple of education disks in the PAGE 5 library of public domain software although these tend to concentrate on younger children but another disk called *Word Builder* might be more suitable as you can add your own words and definitions. We are always willing to publish listings of an educational nature that, even to be full, most of those submitted are so embryonic or poorly written that they do not do the least justice. How about a spelling program that allows parents to insert their own words perhaps with a brief description of a word and how or the way of spelling it? If it was one of the Alan's unique features, it can hardly look to play and in adding new words, and we could we'll publish it. There's a challenge!

TURBO XEP

I would like to answer Michael Davies about Turbo Basic. You can substitute a Turbo Basic file on booting by inserting a RETO, RETOBAG. When running a compiled program you can cut off from Basic but you can chain compiled programs with the .LTH extension before compiling or by renaming the file after compiling. Personally I think that Turbo

Basic is the second best thing I did for my Atari after substituting PAGE 4 and I reckon Turbo Basic is just as good. You can't return to Turbo Basic after using DOS but on the other hand you can't compile BASIC XL. As far as value for money, BASIC XL definitely cannot compare! I have an XEP-80 hooked up to my 1000X with which BASIC XL is not compatible but Turbo Basic is not only perfectly compatible but also solves the problems of displaying and dumping Graphics I access through the XEP-80 interface. Is there any literature for my XEP-80 or can I be the only one who purchased one?

Joseph M Camillell
Maida

Thanks for the tips on Turbo Basic. Many readers will be pleased to hear that, in response to at many requests, we are starting a tutorial series on Turbo Basic this issue and we hope that this series will answer many of your questions. Gordon Cameron has already sent in some excellent demos in Turbo Basic and should give you plenty of hints in future issues. Be sure to write to Gordon and let him know what sort of things you want covered in the series so that he is not left struggling trying to work out exactly what it is you want to know.

As to the XEP-80 we are not sure how many, or how few, were sold in this country and we are certainly not aware of any supporting documentation. We would be interested to hear from any reader who has the XEP-80 and wants to know anyone who has wanted out any programs or patches that take advantage of the unit.

TYPING TUTOR

I am a newcomer to computing and am finding that lack of typing skills is limiting my progress. Would you know if a typing tutorial program is available to help improve my typing skills with my Atari. Can you tell me if there are any programs available which would help me?

G.D. Pole
Nottingham

There have been a few commercial releases in the past but, as far as we are aware, none are currently available. There was a listing in issue 26 called *ILLUSTRATED* which will give you plenty of typing practice and you can begin by typing the listing in! If your typing needs that much improvement you can always try the *Atari 400* 26 for just £2.95 with the program and all others that that have ready to run.

THE LOST SOFTWARE

I do agree with the PAGE 4 policy on piracy and copying but having frequently bought whole systems from people and having acquired bits of 'stolen' disk I am amazed and disappointed by what I have found on them. Amazed at the quality and damaged by the unreliability (often due to the unreliability of the original) of some games and utilities. I realize that a lot of top class games etc. were still born because of piracy in the early stages, however it is a shame that these games never had the accolade they deserved and I feel sorry that their authors never had the chance to see their efforts rewarded in print. Although I have returned 90% of such disks and destroyed the illegal copies on them, there are some that I cannot bear to

part with and I won't destroy them because I can't get the real thing, even second hand! My example of *Lost Starfighter* is a case in point. It is far better, in my view, than the 'stolen' *Star Raiders II*.

Some of this stuff is now 4 to 8 years old, what has happened to the copyrights etc. of these still reasonably playable games? Could they not be released officially?

A long time Attention

We love your three comments anonymous because they were submitted as a survey form and not by letter but the points raised are sufficiently interesting to publish, particularly after the letter in the November Atari User regarding

pirated software, in response to which we have had a number of letters asking for the address of the writer so they can get it on the order! This raises some difficult questions. First is seeing that with a little software becoming available nowadays for the 8 bit machines and with so much unlicensed material around it is no wonder that today's users want that software. It's obviously not become involved in protecting legally held software but as it is unlikely that any company will now release these 'long lost' programs what can be done to make them available? What is the copyright situation of these programs? In this country they would remain in copyright even though they were not released but do the same law apply in the U.S.A. or do copyright

laws apply for only a limited period? Perhaps one of our American readers would advise. We are not advocating that anyone pursue or sue these programs in the exact that the copyright has expired but perhaps the original authors now have the rights back and could find anyone to publish for them? What it would be quite interested in discussing is possible marketing arrangements with anyone who has 'unlicensed material' or programs that were once released but are no longer available but the likelihood of any company or author responding is pretty remote. Most probably whoever owns the rights to these programs has forgotten that they even exist! So, what can we do about the wealth of software that is still unavailable for the Atari? Any ideas?

GENEALOGY

I can't wait to ask you if you can help me find a genealogy program. I have tried the most software available both here and in the States but none have any in stock. Can you put me in touch with William Bendow who reviewed these programs in issue 30 of PAGE 6?

**Paul Thomas
Birmingham**

We have had a surprising number of enquiries about genealogy programs and always find such "minority interest" enquiries quite interesting. There is virtually no chance of a retailer stocking this kind of software in the UK so the only thing you can do is write direct to the people who produce the programs. For the 8-bit, the best program is probably Family Tree by David Giles Software, 4753 Ramble Way, Fair Oaks, CA 95628, U.S.A. and for both the 8-bit and 32-bit there is a program called

Complete Your Roots from Winatich Genealogical Software, 2899 West 7350 South, West Jordan, Utah 84098, U.S.A. There is also another 32-bit program by a company called Flying Pig Software (which we recommended in another reader a while ago) but now can't find the address. However it was recommended it is most easy pleased with the software but could be please to us from the address once again? There is another program for the 32-bit called The Connection App might even be the Flying Pig one which we don't have details of at the moment but which will be included in some form in the PAGE 6 52 library by the time you read this. Usually you might be interested in subscribing to a quarterly magazine called Genealogical Computing from Access Inc., P.O. Box 476, Salt Lake City, UT 84143, U.S.A. Annual subscription is \$30 including six months postage. If you need more details from any of these companies, drop them a line, mention PAGE 6 and enclose a couple of International Reply Coupons for their response. Most small American companies are very keen willing to help.

As for writing to William Bendow or other contributors, we don't usually give out contributors addresses unless they have given specific permission but we are always happy to pass on your letters if they are in an envelope

addressed to the author and are enclosed in another envelope addressed to PAGE 6 with a request to pass the letter on. Remember that you should enclose a stamped addressed envelope if you expect a reply and in the case of contributors like William Bendow, who live in Canada, you should enclose a couple of International Reply Coupons.

CONNECTING A BROTHER

I have been offered a Brother H505 (Epson compatible) 9 pin dot matrix printer which has a standard Centronics interface so when I buy this interface for my MODEL 3 would it be possible to connect it to my computer and use it with MasterWriter or PaperLig word processors?

**Holger Kiewer,
Kingston upon Thames**

There is still a great deal of confusion over printer interfaces. Some printers come with a choice of a plug in serial interface or Centronics parallel interface and many owners assume that if they buy the Centronics interface they can just plug it into their 31 or 32 machines. Not so. Any printer with either a built in or optional Centronics interface will work with the 31 or 32 machines but only if used with a special Atari printer interface. The cheapest, and the best, of these is the KCI Printer Connection available from Frontier Software at P.O. Box 174, Monroeville, PA 15146 or 429.84. Buy yourself one of these and you can connect any Centronics compatible printer to your Atari but you might find that you have problems in choosing software to use with any printer that is not Epson compatible. You should have no problems in using either MasterWriter or PaperLig with your Brother or with almost any other printer. PaperLig is particularly suitable for a variety of printers so you can define your own printer drivers.

AROUND THE WORLD

I'm writing to ask if there are any Atari users who would like to be a part of what may be because, believe it or not, here in the nice island of The Azores there are only 24 Atari owners, three of whom own 32's. Software is practically nothing with only a few budget games like Bullfighter, Ruggy Night, Dig Dug and Hyperblast and not much more. The only good software I have was given to me by a friend of mine in America although I eventually bought Miss Office II even though it was difficult to get. Sometimes at school I have discussions with friends about the superiority of the Atari against the Spectrum and when I try to prove them wrong my arguments go down the drain because of the lack of software.

I have also written to Palser Software to see if they can send me information about Fig Forth as I want to compile my machines bottomos with such a language. I would like to thank all the team that has been responsible for producing Atari Day in the past and especially Andre Willey for his marvellous work and I look forward to hearing from anyone who wants to write to me.

**Carlos Jorge Sousa,
La Rua de Traveira 90,
Sao Roque,
Punta Delgada 9500,
Sao Miguel, Azores,
Portugal**

The Azores, eh? Its an always getting letters from people in this country complaining about how difficult it is to get software or meet other users but can you imagine how difficult it must be for Atari owners in some of the more far away countries? Like interesting comment repeated several times in

the recent survey was that some readers would like to know what it is like to be an Atari user in other countries, so here's a chance for some of our overseas readers to write in and tell us about software availability, local user groups, support from Atari, what makes it here with other users etc. If we get enough response we will run a short International column in the next few issues telling you exactly what it is like in all these far flung places. So let's hear from our readers in Norway, West Germany, Sweden, Greece, United Arab Emirates, Kuwait, New Zealand, Australia, The Falklands, Turkey, Peru, Ireland, Italy, Tanzania, Caribbean, Switzerland, Iceland, Jordan, South Africa, India, Yugoslavia, Ireland, Spain, Saudi Arabia, Zimbabwe, Mozambique, Hungary, Israel, Brazil, the Bahamas Islands and even Papua New Guinea! Before it or not these are just some of the countries where PAGE 6 is read. Let's hear what it is like out there.

FASTER CASSETTE

I am very new to ATARI and I am having problems with my KC12 tape recorder. The problem is that it is too slow, so I was wondering if there is an upgrade to make it faster?

**Blair Sutton
Brighton**

Yes, there is. A company called Auratix has been producing various cassette upgrades for several years and they have developed upgrades specifically to enable faster loads of both your own and commercial software. Auratix often advertise in Page 4 and will be happy to send you details of their products if you send them a L.A.S. to L.R. The Green, Sharnley, Burying Lane, PL12 9JH.

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Independent User Group

ST THE VIRUS ST DESTRUCTION UTILITY

The article last issue on viruses gave details of how to obtain The Virus Destruction Utility from Richard Rasmakers in Holland. The method of payment, through a bank transfer, was somewhat complicated so we have arranged that you may pay direct by ordinary cheque or Postal Order. Your disk will be despatched immediately upon receipt of your payment.

To order your copy of The Virus Destruction Utility send a cheque or Postal Order for £6.95 made payable to Richard Rasmakers to:

RICHARD RASMAKERS
18 BARBERLAAN 15 - III
NL-3582 YB Utrecht
THE NETHERLANDS

Your registered copy will be despatched by return and you will be eligible for updates as indicated in the article.

Since the article was written we have received a copy of the most up to date version of The Virus Destruction Utility and it appears to be very comprehensive and easy to use with options not only to destroy any viruses but also to protect your disks against future virus infection. You may not have any viruses but you never know and The Virus Destruction Utility is a small price to pay for peace of mind.

SYNTH II

One of the major, but sadly underused, capabilities of the POKEY sound chip is that of 16-bit sound. As you probably know, the SOUND command of BASIC can produce 120 pitch levels with very particular distortions, covering a 3.5 octave range. Although this is quite acceptable for many applications, if by no means stretches the chip to its limit. By joining two sound channels together, however, the pitch can be represented using two bytes, suddenly increasing the number of pitch levels to 4096! This increases the number of octaves available substantially from 1.3 octaves to over 30.5. Also, since the notes are much closer together, some interesting effects can be produced.

A musical note can be played with the pitch being varied slightly every vertical blank interval (50 times a second), causing the note to 'wobble', an effect commonly found on the Commodore 64 (although this is built into the hardware of the SID chip), and increasingly on the ST series.

Table 1 shows the bit usage of location \$D3F4, the audio-control byte (commonly called AUDCTL). Bits 1, 2 and 7 are concerned with distortion so we will ignore these. A brief mention of clocks is needed however (bits 6, 5 and 4). As you may or may not know, the POKEY chip as well as controlling sound production, also regulates the timing of various input/output functions such as loading from, to, or disk, counting down hardware timers etc. To make these operations more flexible, the chip is capable of running at three different speeds: 15KHz, 64KHz and 1.79MHz - these are the values for American Stars, but apparently British Stars run slightly faster. The lowest notes are produced using the 15KHz clock although these generally have little musical quality and are really just streams of clicks. The 64KHz clock is used by BASIC, the familiar 1.5 octaves being the highest available at this clock rate. Since the notes get lower as the pitch number gets higher, it is not hard to see that if 16-bit sound is implemented using either of these clocks, only very few octaves would be

A while ago Bryan Kennerley brought you Original Synth, now he explores the possibilities of linking sound channels together to produce 16 bit sound

gained. The clock should therefore be set to 1.79MHz if 16-bit sound is used. The result of all this is that a value of 80 (16 + 64) should be placed in location \$D3F4 to enable 16-bit sound. If you haven't done so already, type in the listing. You will see 4 variables at the start - DIST, WAIT, AMP and STEP. DIST is the distortion level and volume of the sound, calculated by:

$$DIST = Distortion * 16 + Volume$$

The significance of the other three variables will hopefully be explained by Figure 1.

WAIT (0-255) is the number of jiffies (50ths of a second) before the note starts to wobble.

AMP (0-127) is the number of jiffies that pass before the direction of the wobble is reversed - this is also proportional to the length of the wave, and finally:

STEP (0-255) is the amount added to/subtracted from the note pitch every jiffy.

Incidentally, quite a good lightning effect can be obtained using the following parameters and the highest octave available:

$$DIST = 15, WAIT = 0, AMP = 127, STEP = 4$$

These functions are also available from within the main program. They are accessed via the function keys:

START - move entire keyboard down 1 octave.
SELECT - toggle cassette unit on/off.
OPTION - move entire keyboard up 1 octave.

One small problem I encountered while writing this program was in silencing the notes. If the volume is set to zero when no key is pressed and this note when one is pressed, an unwanted click is produced, spoiling the effect. This can be overcome by zeroing the pitch instead of the volume. This works fine until you realize that when a distortion is used, sounds are still produced with zero pitch. The solution is a compromise, leaving the pitch at all times, but only zeroing the volume if an input tone is being used.

Although this program allows frequency modulation only, volume modulation could easily be added to the VBL routine, and a music routine could use pitch/volume tables to dictate the program of the sound. This of course could be done using all four 8-bit channels, the result being something like that in International Karate, or using 16-bit sound like that in AB The Trampolene, but unfortunately the alternative (no music) is that which is used all too often. Hopefully this will soon change.

Bit	Description
7	4 bit poly enable
6	Clock channel 1 with 1.79MHz
5	Clock channel 3 with 1.79MHz
4	Join channels 1&2 (16-bit)
3	Join channels 3&4 (16-bit)
2	High pass filter on channel 1 clocked by channel 3
1	High pass filter on channel 2 clocked by channel 4
0	Switch clock base from 64KHz to 15KHz

TABLE 1: Bit usage of AUDCTL.

SYNTH II

```

000 1 000 *****
00 2 000 *          SYNTH II          *
03 3 000 *
04 4 000 *   by Brian Koberling   *
08 5 000 *
0C 6 000 * PAGE 0 PAGE#000 - ENDLAMP *
0E 7 000 *****
00 8 000
04 000 01000070
08 100 000070
0C 200 000000
0E 300 000000
0E 400 IF PEEK(01000000)=041 AND PEEK(01000000)
    OR THEN 040
04 000 000 *****
08 000 FOR 01000000 TO 01000000 0:0000 0
    0:0000 0
10 070 0070 070,00,0,0,00,007,0,07,0,0,0
    40,100,0,000,0,000,000,0,000,000,000,0
    000,000,000,000,000,0
14 000 0070 070,000,0,040,070,0,007,0,040
    0,010,000,1,000,040,0,010,070,070,0,0
    40,0,010,000,00,040
18 070 0070 0,010,007,0,000,00,000,007,0,
    000,00,000,000,00,00,000,000,0,040,000
    0,040,0,000,040,0
22 000 0070 000,007,000,000,000,0,000,0,0
    40,0,010,070,01,000,001,0,000,000,007,
    0,040,000,0,070,000,0
26 000 0070 000,07,000,00,000,0,040,000,0
    140,000,0,007,0,070,007,0,070,000,0,0
    0,00,000,000,000,040
30 000 0070 000,0,000,00,070,07,010,00,0,0,
    000,0,000,000,070,0,000,000,000,0,000,
    070,070,000,0,040,000
34 000 0070 0,070,0,010,000,000,0,00,000,
    000,000,007,040,0,010,040,000,0,000,00
    0,000,000,0,000,000,000
38 000 0070 0,000,0,070,000,0,000,000,000,
    000,00,007,0,000,0,040,000,0,070,007
    0,040,0,010,007,0
42 000 0070 040,000,0,00,007,000,000,0
    000,1,000,000,007,1,040,000,0,070,00,
    000,000,0,000,00,000
46 000 0070 0,000,0,000,0,040,00,00,07,00
    0,070,0,000,00,0,040,0,000,00,07,000,0
    00,040,0,000,0
50 070 0070 000,04,000,0,00,040,010,00,00

```

```

0,00,000,000,00,000,070,000,0,00,000,
00,040,000,0,000,000,0
54 000 0070 00,07,000,070,000,0,000,000,0
00,0,040,000,010,000,000,000,000,000,00
    000,070,000,0,04,000,00
58 000 0070 040,000,0,000,000,0,00,07,000
    070,000,0,000,070,070,000,0,000,0,000,
    000,0,00,000,000,070
62 000 0070 000,0,000,00,070,000,0,00,000
    000,0,040,000,0,070,0,000,000,0,000,0
    070,0,070,000,0,000
66 000 0070 040,0,000,00,000,000,0,00,040
    000,070,000,0,04,000,000,0,040,000,0,
    040,0,000,000,0,000
70 000 0070 000,0,000,00,000,000,0,00,040
    000,070,000,0,04,000,000,0,040,000,0,
    040,0,000,000,0,000
74 000 0070 000,0,000,00,000,040,0,000
    0,000,000,0,070,000,0,040,000,0,000,0
    00,0,040,0,000,00,000,00
78 000 0070 *****
82 040 010000 000000 000000 00 0000100
    000 0:0000 0,0:0000 0:00000
86 000 0070 000,00,000,04,00,01,0,0,0,0,0
    0,0,0,0,0,0,000,0,0,0,0,0,0,0,000,0
90 000 0070 000,0,0,0,0,0,00,0,0,0,0,0,0,
    00,00,00,0,0,0,0,0,00,00,00,0,0
94 070 0070 000,0,000,0,0,00,0,0,00,0,00
    0,0,00,00,000,00,000,00,0,0,0,0
98 070 0070 000,0,000,0,0,00,0,0,00,0,00
    0,0,00,00,0,00,0,0,00,0,0,0,0,0,0,0,0,0
002 000 000 *****
004 000 000 *****
006 000 000 *****
008 000 000 *****
010 400 IF 01070000 AND 00001000 THEN FOR
    0:000000 TO 007000000 0:010:0000 0
014 000 000 *****
018 000 000 *****
022 400 0000 0070,007
026 400 0000 0070,0070
030 400 0000 0070,0070
034 400 0000 0070,0070
038 400 0000 0000,0000,0000,0000
042 000 0000 010,0
046 000 0000 000,0
050 000 0000 0000,0000,0000,0000
054 000 000

```

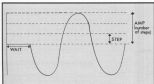


Figure 1 - Explanation of Parameters.



Figure 2 - Notes on keyboard

- > You are hopelessly lost in this Adventure, no one knows where you are, least of all you. What now?
- > PANIC
- > That will not help you, the authors of this Adventure want to make you a quivering wreck
- > HELP
- > O.K. just this once. Try reading John Barnaby's article in PAGE 8

It is surprising how many people try to solve an adventure without taking notes and I bet that there are thousands who have given up on all sorts of adventures. The only way to become a competent adventurer is through experience but there are ways in which you can help yourself and I hope to show you one way in which you can come closer to solving almost any adventure. Adventured players will already have worked out their own system of mapping but for the beginner or intermediate level player here are some tips that will help you get through almost any adventure, providing you can solve the puzzle! It is essential to maintain a clear record of your progress in a tidy and readily accessible manner, what you need to do is develop a system that will be flexible enough to cover the most of the adventures you may come across. I have used a simple system of A4 sheets over the years that has served me well. This system allows for the clear recording of:

- EXACT LOCATION with total description
- OBJECTS FOUND
- CHARACTERS ENCOUNTERED
- ANY VISIBLE EXITS FROM EACH LOCATION
- 'CONFIDENTIAL' EXITS
- COMPASS BEARING
- SHEET NUMBERING
- RANDOM ELEMENTS
- BASIC MAPS

Figure 1

MAPPING ADVENTURE

We'll look at each of these items in turn but first let's take a look at the mapping sheets. The simple and inexpensive system I use will be described in more detail shortly but firstly it should be appreciated that very few adventure programs give a hint to the player as to the number of locations to be found. Whilst it is reasonable to expect that a Level 9 adventure will offer in excess of 100 locations, the majority of games fall within the 75-125 location range. Many adventures have very few locations with many more problems, but this by no means implies that the larger adventure is short of puzzles! Experience will tell you what to expect from a particular software house or writer.

To help you in devising an effective map system I have designed a basic A4 size sheet - at DWD designs - which will provide for the vast majority of your needs during the course of the game, with most of your 'adventure' recorded on a single sheet! The two basic sheets are in vertical and horizontal format, as depicted in Figures 1 and 2. Sufficient space should be allowed around the perimeter of each sheet to provide for the insertion of adjoining sheet markers. It is advisable to carefully draw one copy of each of your two MASTER sheets and photocopy a supply for actual use which works out at about four pounds per hundred sheets on average, based on current charges.

Each working sheet should be uniquely numbered or lettered for identification during play. It is difficult to advise on the insertion of your FIRST location but a general rule is to commence as near as possible to the centre of a horizontal oriented sheet. This can be adjusted on the layout of your adventure map location sheets.

Figure 2

MAPPING continued

AVAILABLE EXITS

Indicate EVERY possible exit from each location: NORTH - SOUTH - EAST - WEST - NORTHWEST - NORTHEAST - SOUTHWEST - SOUTHEAST - IN - OUT - UP and DOWN on stairs in Figure 3. After entering a directional command, try moving in the OPPOSITE direction to ensure that you return to the previous location - if you don't however, carefully note where this move takes you. It may be the start of a maze (see Maze Mapping notes) or simply that you only appear to move whereas you really stay put in your original location - the 'G.A.' response from the program doesn't help you at this respect! Check the location description carefully and also the exit options and if this is so then mark it as an 'A' in Figure 3. A number of adventures have deliberate ONE-WAY routes so be careful! You should also be aware of the inescapable dead-end trap - again, SAVE your game often!

If you reach the edge of a sheet be sure to show also where your current map is continued on the next sheet.

CONDITIONAL COMMANDS

You may be prevented from progressing in a particular direction until you have satisfied certain pre-conditions such as possessing certain objects, obtaining a defined score or performing specific tasks beforehand. Of course, the simple action of not OPENING a door may also prevent progress! I remember a relatively simple problem, when I first started adventuring, which baffled me for hours - that of trying to actually move in a direction when all that was required was the command 'GO DOWN' or 'GO BUILDING' ... Scott Adams you might see!

A 'conditional' exit should be indicated on your map by a broken or dotted line to differentiate between these and 'normal' directional exits. You should also show any precise wording necessary, e.g. 'GO ENTRANCE', 'BUILD UP', etc. Believe me, it is all too easy to miss this important point come test time!

COMPASS HEADING

Your master sheets should include a simple compass system and your location directions should strictly comply with this. It may be necessary, to economise on space or avoid using a completely blank sheet for just one location, to disobey this rule slightly, in this case always state your directional line correctly and add the true direction letter, as shown in Figure 4.

A small problem may arise by using this method, where a further location is, to use the example, directly East. You can by-pass the location you have chosen as shown. To keep things tidy always 'book/cover' a route when it crosses the path of another. A complex map can be easily condensed within a small area this way yet still remains clear to the eye.

SHEET NUMBERING

Simply number (or letter) your map sheets in sequence. Show EXACTLY where a map route leaves one sheet and, more importantly, where it joins another. If you are taken to a distant part of the adventure as you move off the current sheet then indicate which sheet you will progress to. Similarly on the 'new' sheet show where you come from ... all this is very basic stuff but can save hours of frustration when you return to your adventure in a few days!

Try to keep all directional routes in a 'true' line, e.g. NORTH as in Figure 5.

RANDOM ELEMENTS

All the previous map-making comments will apply to approximately 80% of adventure games, however you will also encounter, sooner or later, the infamous 'random-choice' element! A good example of this type of adventure is 'Worms In Paradise' (Level 7) which can be extremely confusing, even when you believe that you have mastered the John Transport System. This is because certain elements of this adventure are randomly generated upon EACH loading! This gives a different set of conditions each time you play, in certain locations of the game.

BASIC MAZES

The best way to cover this aspect of adventure mapping is to use what is commonly referred to as 'Standard Procedure' referred to in Figures 6 to 8. First it is noted that some mazes may be randomly generated and are therefore impossible to map accurately!

So, what is a MAZE? Essentially it is a group of locations incorporated into an adventure in a usually successful attempt to confuse the player's sense of direction and current whereabouts! Sometimes you may be lucky and discover that movement in the opposite direction to your last move places you exactly where you were previously. This type is, therefore, not so much a maze on a set of similarly detailed locations.

The true maze places you in a completely different location when you reverse your previous directional command, sometimes quite a considerable distance from where you thought you were! Once you have established where a maze may first encounter, go through your game once more and SAVE just prior to that stage, taking careful stock of your current inventory.

The simplest way to successfully and accurately map a standard maze is to DROP one of your 'colours' (or 'worms') items in each location as you progress, collecting them again by following your own map when you have completed the maze section of your adventure.

You may only be carrying four or five items at this stage but,



Figure 6

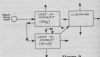


Figure 7

usually, this is enough. Be especially careful to **RETAIN YOUR LAMP** as it may be dark in there and if it isn't then maybe night will fall while you're in there! Also, any fragile objects may need some form of 'cushion' before you drop them to prevent accidental breakage.

Let us assume a hypothetical situation. You are carrying a sword, stick, knife, key and lamp. You are also wearing a cloak. The maze consists of a (see last) unknown number of locations. When you reach your first maze location, **DROP** the KEY and write the location description in your location box - penciling in the key for now. Indicate ALL the visible exits from this location (your first maze location should now be as shown in Figure 6). Incidentally, this 'maze section' of your map should be constructed on a **SEPARATE** sheet of paper to avoid confusion!

Now, leaving the KEY where it is, move **WEST**. Oh, great! We're lost! Or so it seems. Note the description of this new location and we find it to be exactly the same, but without a key. Draw in this new location and note the visible exits. (Your map should now conform to Figure 7). Now **DROP** the STICK and write it down - again in pencil - in this new location. You do not need to know the exits as this mapping method works either way - we simply try to move in every possible direction, indicated or otherwise, until successful!

Assuming that you cannot move West, let's try **NORTH**. If you see a KEY then simply draw your directional line to join the first location. For the purpose of this example we see not a key but a **STICK**. You really haven't moved out of the location or still! Show this fact, leaving the stick where it is, on your maze map and try another exit. (Figure 8).

Now try **NORTHEAST** and you find a convenient Clearing. This, so far, is a completely different location description and there is no need in this case to drop an item in this location. But, you should **STILL** note all the visible exits. (Figure 9).

Continue around the maze using the adopted procedure until ALL maze locations have been shown and ALL possible directions followed. Our hypothetical maze now conforms to Figure 10. Looks quite complicated doesn't it? But study it closely. It really is quite simple! You see, you could have been wandering around for quite a while - getting hungry and tired, lamp

running low - yet there are only four 'Lost In Forest' locations!

Now follow your new map and collect your dropped items, erase the pencilled notes, and continue with your quest.

I only wish every maze situation was so simple on this - sometimes it appears more daunting than it actually is! Although not an Atari adventure, the 'Maze Of Hidden Billions' (sic) contained in 'The Shadow Of Mordor' (Melbourne House) contains just THREE LOCATIONS! (Figure 11). You can see that the majority of directional commands do not actually take you anywhere! As a point of interest this particular maze was mapped by adopting the standard procedure, before the necessary action was taken to move the legs, whilst the 'start' maze in this same adventure was similarly tackled but with the various permutations of matches and crystal to provide light!

In the maze, mazes are extremely difficult to map, with other factors to contend with, such as:

- Limited number of moves
- Darkness
- Randomly generated directions - remember the first spell in 'Colossal'?
- Four dropped objects being covered by mist or smoke...even washed away!

NOW SOLVE YOUR OWN ADVENTURES!

In these you have a personal view on getting to grips with adventure mapping. I would stress that this article is NOT intended to teach you all you need to know about adventure mapping. It is merely a collection of my own personal methods and offered as a basis for individual adaptation according to needs. Hopefully these methods will help you to reach the end of an adventure you may be stuck on, there is nothing better than having solved a good hard adventure!

Finally, remember your adventure map is only as good as the next time you need to use it, so compile it with care and attention.

MAZE MAPPING



Figure 6



Figure 7

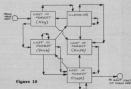


Figure 10

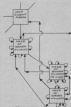


Figure 11

850

Split Baud Rates With Any Atari RS232 Interface

by Geoff McHugh

Did you know that it is possible, despite what the "experts" say, to obtain split baud rates on the Atari 800 or similar RS232 interface - including PR connection? Not familiar - did I, until very recently.

It all started when I received a copy of the source code for the RS232 handler which I use with my Datatalk interface. While I was looking through the listing, it dawned on me that it should be possible to get the handler to operate at split rates (which it was not originally intended to do) by using a few direct POKEs from within a terminated program. Since at the time the expert opinion was that the 850 interface was totally incapable of split baud rates, I naturally assumed that this would only work with the Datatalk interface, so I constructed some program patches for two versions of the Amibros terminated program (Amibros and Amibros7), labeled them as being for use with the Datatalk interface and the RMAD2 RS232 handler (which I use) and uploaded them to my favorite BBS, The ARS. I was naturally cautious as to whether this would work with the 850 interface, so I asked the sysop to try it out, and thought no more about it, until I received a message from a fellow user to the sysop claiming that the patched program had worked with his P-R Connection (apparently more-or-less identical to the 850 interface).

I was, of course, very interested by this, so I asked the sysop if he would try it with his 800 interface. Imagine my surprise when I next logged-on to find that my patch was being mailed as the greatest discovery in Atari 8-bit communications! Apparently, the patch had worked on the 800, and the sysop (James Fontaine) was quite understandably excited. I hardly need to tell you that I was just as excited as him! The repercussions of this discovery should strike far into the world of Atari 8-bit owners, since everyone will thought it was impossible, until shown otherwise and, as far as I know, even Atari themselves do not know about it, otherwise they surely would have capitalized on it. Maybe now the Atari will benefit from a widely available, ViewData compatible terminated program.

That's the story behind the discovery, so if I now get down to explaining how to obtain split baud rates on your humble Atari 800 interface (Mach)!

Ok, where should I start? I suppose a very basic explanation of what happens in your interface handler is as good as any. The handler, basically, sets up the baud rates using the POKED hardware timers, which are stored in the Radio Frequency registers ADRF1 - ADRF4 (locations 14300, 14301, 14304, 14305).

I discovered that ADRF1 and ADRF2 store the timer value which represents the transmitting baud rate (i.e. the speed at which your Atari sends data out), and that ADRF3 and ADRF4 store the timer value which represents the receiving baud rate (i.e. the speed at which your Atari reads data in).

The timer values are stored as two-byte integers (i.e. have a value of between 0 and 65535) and the values corresponding to each baud rate are shown in Table 1.

Let's take an example. Say you wanted 1200/75 split baud rates to access your favorite Bulletin Board (obviously The ARS). So, your transmission speed is 75 baud, and your receiving speed is 1200 baud. Look at the table, the timer value corresponding to 75 baud is 11425, and the timer value corresponding to 1200 baud is 739. Set your other parameters, parity, translation mode, word length, etc. first and when you use the MODIFY command (or if you are using my's then when you call CRO with the enable bit) load the baud value as 0 (CRD) - this is simply for convenience. After you have entered COMMANDS (if mode (X) #405 then POKI or equivalent, depending on your programming language) the timer values into the POKED registers ADRF1-4.

In this example, the addresses and values to be stored are as follows:

Memory Location	Byte Stored
14300 (ADR1)	149 (75B)
14301 (ADR2)	66 (1200)
14304 (ADR3)	227 (75B)
14305 (ADR4)	2 (1200)

The values can be explained like this:

$$\text{Tx rate: } 149 = (250/408) \times 14921 \text{ (75 baud)}$$

$$\text{Rx rate: } 227 = (250/75) \times 739 \text{ (1200 baud)}$$

That's about all I am quite proud to have discovered this seemingly unknown use of the 850 and I hope that it will allow all Atari owners into coming to gain a little more enjoyment from their favorite Bulletin Board or even try others they previously thought were inaccessible.

I would like to thank some people for their help and inspiration. First of all, thanks to James Fontaine and his Bulletin Board, The ARS. If it were not for both James and The ARS BBS, I would never have made this discovery, for it was from this source that I obtained the Source listing for the RS232 handler. I would also like to thank an ARS user who I know only as MTRAM (or Martin), who continued James to try the patch out on his 800 interface. Last, but certainly not least, I must thank Page 5 magazine, who have REALLY supported the Atari 800s, when others have only pretended. If it were not for Page 5, I would not even have found The ARS BBS, which has featured so prominently in this breakthrough.

To remember, even if you are told something is impossible, the chances are that it's not or has been demonstrated in PAGE 5 on other occasions!

Timer Value Baud Rate

2976	300 Baud
19641	45.5 Baud
17891	50 Baud
15727	56.875 Baud
11925	75 Baud
8128	110 Baud
6666	134.5 Baud
5958	150 Baud
2976	300 Baud
1484	600 Baud
739	1200 Baud
490	1800 Baud
346	2400 Baud
179	4800 Baud
86	9600 Baud

Table 1 - Timer values for specific baud rates

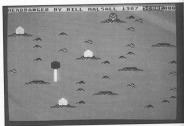
HEADBANGER

If you have been up to Blackpool lately, or other seaside resort, you might recognise Headbanger. The object of the game is simply to knock down the funny heads as they pop up from the creases. You can't keep them down for long though and they'll pop up for more again and again until your time runs out or your joystick breaks. To get more time knock more down.

To clutter a funny head use your joystick to position the club to the right of it with the base of the shaft about the same level as the top of the head. Then press the button to drop the club head directly on the top of the funny head. If you get a direct hit the head will pop in. If however the club is too low or too close or too far away it will be a miss. With a little practice you'll get it right - and practice is one thing you will get as they pop out and stick their tongues out of you!

Game play starts as soon as the game loads. Subsequent games are started by pressing the joystick button.

by Bill Halsall



TYPING IT IN

Cassette and disk users should type in Listing 1, SAVE or CREATE a copy, then RUN the program. The program will check each line of data and inform you of any errors. Correct any errors you may encounter and RUN the program again until all errors are eliminated. When this is done answer the cassette/disk questions accordingly to create a boot tape or binary disk file.

Cassette users should load the boot tape created by firstly removing all cartridges and then turning on the computer while holding down the START key (M) and M1 covers should hold down OPTION as well. Press RETURN and the tape will load and run automatically.

Disk users should type in Listing 2 and save it on the same disk as the binary file created by Listing 1. RUN the Listing 2 program with the disk in the drive and the game will load and run automatically.

A special note for disk users - if any other programs have been used prior to Listing 2 being loaded it is recommended that the computer be turned off and on again before the program is run to ensure that the game isn't corrupted by any data left in memory.

HEADBANGER

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Listing 1 - Main Game

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Listing 2 - Disk Loader



The new Atari Games Cen

It's what every computer games player has been waiting for. Hundreds of brain-bolting software titles that'll push your skill and judgement to the limit. All under one roof. When it comes to pecking hardware, Rambo's got nothing on us. Everything from the

INGRID'S and John Sweeney's fool enough to take her on again!

BAC



Ingrid's Back! is a text adventure (with excellent pictures on the ST) in which you play the part of a rather accident-prone Game Master named Ingrid Bottomlow, who will be no stranger to those of you who have played Game Ranger! The adventure is in the standard Level 9 format - you enter your commands in English through the keyboard telling the computer what you want Ingrid to attempt, and the screen displays lots of text telling you what happens.

To be slightly more accurate, Ingrid's Back! is actually THREE text adventures. They all take place in the village of Little Manning, and follow on from one another to make a single story. Back can be played independently (and, more important if you are console-based, can be loaded independently) which is very useful if you happen to be stuck in one part of the game.

The plot involves Jasper Quiddick, the money-grubbing lord of Rabby's Manor, and his plans to demolish the game-well village for an estate of yuppie homes. In Part 1 Ingrid, aided and abetted by her trusty dog floppy, has to find and persuade all of the locals to sign a petition against the planned evictions. Despite her success at this, Jasper continues with his steam-rolling and Part 2 starts with a superb tribute to parody of the opening steampunk sequence of the Hitch-Hiker's Guide to the Galaxy, complete with a hangeron and flying bricks (arrange in this order). Once you succeed in stopping the steamroller you will find yourself being chased by seven trolls. Fortunately Level 9 have been kind enough to provide you with eight traps, so you don't actually have to solve all of the puzzles to finish the game.

In the grand finale (better known as Part 3) Ingrid has to rescue Jasper's fiancée and escape with enough proof of Jasper's evil ways to prevent any further nothings on his part. This time Ingrid gets help from her cousin Daisy, unfortunately she is not so bright as she might be and you are probably better

off with the dog!

LEVEL 9'S CONTINUING ATARI SUPPORT

In creating a game of this nature, one of the first decisions which the developers need to make is what is their prime target environment? Many companies are now targeting on the 16-bit machines and if they bother to produce an 8-bit version of all it may only be on disk and may be as degraded (eg. response times) that it is unplayable. Naturally we all want progress, and those who can afford the new machines certainly deserve to get bigger and better games - it will be even better when the majority of the developers actually work out how to USE these new machines - but there are lots of people out there with 8-bit machines, and there is still a lot of potential in these machines.

Level 9 have staunchly continued to support the 8-bit console systems while using every technique at their disposal to achieve a sophistication which not long ago would have been deemed impossible on such a machine. The breaking down of such game into three parts may seem a little artificial at times, but it frees up memory which enables Level 9 to provide far superior games. The parser (the bit that tries to work out the meaning of your requests - idiosyncratic as they may be) is a little limited compared to what can be achieved on a 512K, 16-bit machine, and the vocabulary, squeezed into a

tiny part of a 64K memory, is obviously rather smaller than can be achieved with a 360K disk! Once you accept these limitations however, and the occasional frustration they cause, Level 9's parser and vocabulary are more than adequate to provide a very enjoyable game. In fact, once you overcome yourself to the limitations, you may find less frustration with this kind of parser than with some of the supposedly clever ones which pretend to understand everything you enter - sometimes with disastrous results!

LOTS OF GOODIES

As well as the standard features, Level 9 have also implemented lots of goodies, even on the 8-bit machines, to make the game more fun to play: UNDO takes you back a step if you did something stupidly; SAVE GAME allows you to save memory - a bonus for console users; SAVE ON saves all accessible data to be displayed at each location; REM SCENE takes you to remote locations at high speed, and so on.

Ingrid's Back! is great fun to play, there are plenty of places you can get to easily and burnish all your skills, not just in the descriptions of the games and the locations but also in the order of the characters as they carry on their own little lives around you. Little things like the amusing responses you get when you ring off the



Graphics with the ST - 8 bit version is text only

'S ACK

members in larger blocks show the care and attention to detail which Level 9 have put into the storyline. Unfortunately that care does not always seem to extend to the program itself, on a number of occasions I tried something straightforward (e.g. CLIMB LADDER or FLOOPY GO NORTH) and it was rejected or misinterpreted, but when I reread the game card I find again it worked! Maybe I played too long of one string? And I wanted a good ball four taking greens to sign my pretties when in fact all you have to do is show it to them.

I find sequences like the following extremely frustrating:

> JELLY, SOUP THE POTION

Jelly says he is the best way to do that. >

SOUP POTION TO JELLY

Jelly gladly signs your pretties.

NOT SO CHALLENGING?

Ingrid's book seemed less of a challenge than some of Level 9's earlier adventures; it was more like playing through a story - as long as you explore everywhere, examine everything and make notes of all the clues there don't seem to be all that many real challenges. Still with three separate games covering over 140 locations you will find plenty to do and a number of the problems really are excellent - as long as you explore everywhere, examine everything and make notes of all the clues there don't seem to be all that many real challenges. Still with three separate games covering over 140 locations you will find plenty to do and a number of the problems really are excellent - it is nicely packaged, complete with the old 'LV' pattern all round the box now the Level 9 can do their own distribution again, including creative twenty pages of funnies in the form of Ingrid's diary - the second Castlefield Journal. If you can stand all the puns you will definitely get many hours worth of enjoyment.

The extra money on the ST gets you pictures (mono or colour) to complement the story, recall and editing of previous commands, multiple UNDOs, optional large text (for TV sets) and lots of extra text, most of it hilarious.

INGRID'S BACK

LEVEL 9

ST £19.95 (with pictures)

XL/XE £14.95 (Cassette or Disk)

(text only)

LANCELOT

John R. Barnsley takes a look at the new adventure from Level 9 available on both ST and XL/XE machines

Lancelot is, as you would probably expect, closely based upon and around that most famous of the Arthurian Knights from the legends of the classic book - 'Ivan O'Arthur'. The language and style of the adventure has been cleverly adapted to suit the latterday 20th century, and certain elements of the game itself have been 'created' (made up). Thankfully, these elements are few with only slight changes made from the original legend, such as the initial meeting with King Arthur, Galathea's plight on the stake and how to kill Gorlon, the inevitable Knight.

I would think changes to the original story have been made to ensure initial involvement in the game, to avoid repetitions and to make a decent puzzle out of scenarios that could otherwise have been somewhat boring when implemented in an adventure! Having said that, it does adhere very closely to the legend - and it's a refreshing change to view events from Lancelot's point of view (instead of Arthur's or Merlin's). Lancelot leads a fuller and more active life than some of the game's more virtuous knights!

The adventure is divided into three parts - 'LANCELOT', 'LOGRIS' and 'THE QUEST FOR THE HOLY GRAIL'. As you would expect, Part One is set in and around Camelot, while Part Two is set further afield and involves the rescue of knights - with more multi-player aspects. Part Three is the familiar Quest for that Grail! The player can start directly with the Grail quest but to enter Part Two you need to walk around and explore for a while.

Puzzles and problems are scattered fairly evenly and are very imaginative in some places. The gameplay of 'Lancelot' can best be described as 'very active' and takes place over a large map area, hence the use of the new standard GO TO/BEH TO command will prove invaluable and speeds up the game considerably. Another couple of useful 'standard' features of Level 9 games now are the GO/PS and BANISH commands - well used, I can tell you!

While the XL/XE version is text only, the ST has added graphics. These are a strange mixture - from coloured and pretty to a couple of areas where the pictures seem a bit cumbersome - perhaps that's not entirely fair a description, but it DOES seem that some graphics have been produced by different artists! However, as with all Level 9 adventures, it's the text that counts and in this particular case, we're in for a treat! The language takes you back to the days of yore, and atmosphere oozes from the screen! The text has been well adapted from the original book and, on an ST, can be changed to a larger typeface for players who need it - reading through the playing guide informs you that this 'text changer' feature can also be applied in the earlier two adventures: Knight One and Cassius Ranges, so that's an added bonus!

The number of non-player characters is modest, but they are controlled - unlike the likes of those infamously characters in Knight One! Each character has it's own task and is blessed with reasonable intelligence.

The paperwork accompanying the game, offers the usual availability of the Level 9 Cheatbook - provided you append the little coupon to your M&S. The really BIG bonus with 'Lancelot' has to be the opportunity for purchasers to be able part in a national search for a real HOLY GRAIL - in SOLID SILVER - and valued at FIVE THOUSAND POUNDS! The adventure is used as a basis for the clues offered in the real quest and full details are included in the packaging together with an ancient map of England and France.

If you haven't bought 'Lancelot' yet, go and do so - NOW!

LANCELOT - Mandarin/Level 9

Available for ST and XL/XE

ST with graphics £19.95

XL/XE text only £14.95

Version reviewed - 37

Jeff Minter creates a new art form

reviewed by
John S Davison

some of the time but generally adding emotion and atmosphere to the visuals. I guess it sometimes comes into the category of 'music that was not music' mentioned earlier, here designed to fit the moods or sections of the storyline, it uses non-traditional electronic sounds to suggest things like the bone-chilling cold of the Ice Planet or the mystical, alien nature of the fractal forms on the planet Iota. The first half is more melodic than the second, using swirls of synthesized orchestral textures and chords ringing woefully above an intricate, rhythmic backing. It's not the sort of music that forms itself into the memory as fast as other, but it does grow on you the more it's heard. The soundtrack is available separately on CD, vinyl disk, cassette, and DAT tape, but I can't help feeling it would lose something without the visuals. It's certainly synergistic at work, I guess.

The graphics, too, require several screenings to appreciate fully. They range from the 'reality' of digitised pictures (planets, ships, etc.) through 'isobatic fantasy' of moving starfields and the spacecraft's main display, through the pure fantasy of the strange fractal trees of Iota and even stranger rotating ice structures on the Ice Planet, to the startlingly complex and colourful partly abstract patterns of the galactic core. There are touches of Minkowski fractalism too, often through the use of real overlaid on other graphics.

This video is a superb demonstration of Trip-A-Tour's capabilities. Don't think you can really produce identical results though. Jeff used four MDD linked Mega ST's, with their combined graphics output going through an expensive video mixer to achieve some of the effects. He also spent a small fortune in video studio time to produce the quality of rendering he required. Even so, I found parts of the display, particularly text, difficult to see clearly.

I've watched the video several times now, and like it more with each viewing. Overall, it makes a refreshing change to the usual TV/video fare and Jeff and Adrian are to be congratulated on taking this first step into what could become a new art form.



by androids impervious to its hypnotic powers. Merak is the super-scientist created to lead that expedition. The incredibly complex neural net from which his (her?) brain was constructed has spontaneously become sentient, giving every impression that Merak is alive and has a 'soul'.

The video presents the story mainly in abstract terms, both visually and aurally, and it's not always easy to determine what's actually happening from what your eyes and ears

tell you. In many ways it's a bit like watching a modern ballet; knowledge of the storyline establishes the context, and allows you to better interpret what you see and hear. It's essential you read the scenario notes that come with the video, otherwise you'll have few clues as to what it's all about.

There's not space here to give a detailed description of everything in a brief overview will have to do. Anyway, just how do you describe something which is essentially abstract in nature? It all becomes very subjective and wide open to personal opinion.

The first half of the work, running for about 25 minutes, covers the period from the start of the mission through to Merak's demise. It consists of six 'tracks', representing major events in the life of the mission. They cover initial launch, the journey through hyperspace in the galactic core, the visit to the next by planet Iota (populated by Jeff's favourite breeds of aliens) escape into space and the subsequent encounter with the alien space fleet the skull through deep space; and the final landing of the dying ship on the Ice Planet. The second, of similar duration, brings resolution of the real nature of the galactic core and what subsequently be comes of Merak's soul.

I found the music rather like film

MERAK - The Video Music Suite/Llamasoft £12.95

Now for something completely different! This isn't a computer game, it's a video, so what's it doing in this magazine, you ask? Well, it contains entirely of computer graphics generated by Trip-A-Tour. Jeff Minter's brilliant light synthesiser software (mentioned elsewhere in this issue) has written Trip-A-Tour so can be enjoyed by anyone whatever system they have. The spectacular graphics are Jeff's own visual interpretation of Adrian Wagner's music, which itself was produced electronically using a bunch of synthesisers.

It tells the story of Merak, a 'frame-worked' android who's been given the remarkable task of penetrating the strange regions of the centre of the galaxy from alien orbits. The galactic core has been found to consist of a large nebulous cloud of proto-matter which radiates energy in all known forms and frequencies. To human senses it's perceived as a pulsating, interlaced world of pure colour. From which it's been nicknamed 'Colourspace'. Now where have I heard that before? The radiation can also be heard - in a form described as 'music that was not music'.

However good you are experiencing the bizarre effects of Colourspace, so the only way to protect the core is to send in a specially armed ship (named

MAKING A START

Basic programming on the 8 bit machines has always been just that, basic. The built-in interpreter is adequate for learning to program, but has points in terms of ease of use, understandability, and time to write very complex looking code to solve even the most basic of problems.

There have always been alternatives to Atari's standard basic (such as Microsoft Basic, Basic XLIVE etc.) but these have tended to be both expensive, and difficult to obtain. However, if you are lucky enough to own an XL or SE machine, plus a disk drive, you now have a cheap alternative in the form of Turbo Basic. Cheap is perhaps slightly misleading, as the language comes free, and is available from most PD sources for a nominal fee, including the Page 6 Accessory Shop.

Turbo Basic is an alternative to the built-in basic and, like any other machine code program, should be treated from disk whilst holding down the OPTION key. It is completely compatible with Atari's basic, so all your old masterpieces can be run in Turbo Basic with no changes. The name Turbo Basic is in no way misleading, your programs will run a LOT faster under TB than they used to. The language is not only faster, it is also compact, taking up less memory than the original basic and (here's the bit you've been waiting for), TB gives you a results of error commands, immediate error messages, and it structures your programs automatically (most of this later). All this for free! The author of the package is a German by the name of Frank Olszewski, who later went on to produce the superb GFA Basic for the 32 machines, which has several similarities, and many enhancements.

You will be completely at home when the blank screen appears after booting, as TB is an interpreted Basic as per the Atari original. This means that you can, among other things, type commands at the keyboard, and these will be executed immediately. As a bonus, the same disk also contains a Basic compiler, which will convert your Atari Basic and TB programs to machine code, so enabling them to run at much higher speed. Basic compilers for the 8 bit used to cost upwards of £50, so this is an absolute steal!

Enough of this preamble. This column is intended to be an introduction to programming using Turbo Basic, making special reference to the new commands. This may seem pretty vague at the moment, but if you want me to talk about a particular topic in future articles, don't hesitate to let me know. Anyway, I guess I'd better start somewhere so here goes. I'll try and make the

columns as informal and interesting as possible, as I don't want to lose any of you!

YOUR FIRST STEPS

As you may have noticed earlier, since TB is a machine code program calling DOS from within TB means that you have to retype the language after finishing your disk operations. At first sight, this seems like a major flaw, however TB contains disk accessing commands which means that, in many cases, you need not enter DOS at all.

DIR, DELETE, RENAME, LOCK, UNLOCK, BLOAD and BRUN.

To obtain a list of files on disk, the command DIR may be used. It is equivalent to the DOS option A. Used on its own, the command lists all files on the current drive. Wildcards can be used, along with drive identifiers, by enclosing them in quotes, following DIR. As in DOS, "*" matches any number of characters, while "?" matches exactly one, and the drive identifier is given as "D:" where n is the drive number.

- DIR "D:",*** List all files on drive D
DIR "D0:",*?* List all files on drive 1 with extended ending (?: any character followed by ? followed by ?)
DIR "D04:",* List all files on drive 1 which start with the letter A.

The **DELETE** function erases a file on disk, the file being identified by "filename", where n is the drive number, and name is the name of the program to delete. Multiple deletions can be done by using wildcards, as demonstrated above in the DIR examples.

- DELETE "D:\fred.txt"** Deletes the file "fred.txt"
DELETE "D:",txt" Deletes all files ending ".txt"
DELETE "D04:",??" Deletes all files on drive 1, ending with "?" followed by any character, followed by "?".

The **RENAME** command works similarly, with the constraint that the files are on the same drive. (Should to mean, really!) The format is: **RENAME "filename, destination"**, where n is the drive number, and source and destination the name of the file to be renamed and what it is to be called.

- RENAME "D:\fred.txt, john.txt"**
 Changes the file "fred.txt" on drive 1, to "john.txt" (Wildcards can be used, as in the above examples.)

LOCK/UNLOCK are equivalent to DOS options F and G respectively, and protect files from writing, and vice versa. File names are handled as in previous examples, i.e. **UNLOCK "filename"**.

Finally, **LOAD** and **RUN** allow you to binary load and run a file respectively. The format is as before (**LOAD filename**), and these commands correspond to DOS option L with the option to RUN on or off.

STARTING TO PROGRAM

Although TB has many similarities to Atari Basic, and even, at its simplest level, is used in a faster version of the latter, there are many fundamental improvements that you should try to use. The language allows you to structure your programs. I won't go into a full discussion of the merits of structured programming, as this has dealt with admirably in the last issue of Page 8 by Roy Goring. Suffice to say that, by making use of the new program flow commands, you can greatly improve the readability and understandability of your programs, whilst simplifying the writing of programs by allowing you to deal with bits of a problem, instead of attempting to enter the entire program in one go. (How? Why bother, you may ask. Well, put simply, have you ever tried to understand and perhaps change an even moderately long program, weeks or months after you wrote it? If so, you will know that it is often difficult to understand what a certain piece of cryptic code does, and what happens if you do such and such, and then what if I do this, then what? ... and so on.

If you use a lot of GOTO commands in your programs, it becomes difficult to work out afterwards where all these jumps lead. Perhaps to other jumps which in turn ... This results in a phenomenon known as spaghetti coding. Programs should be written with as few GOTO's as possible, and the extra commands in TB make this possible. Also, if BASIC can't understand your own code, then what chance is there that anyone else will know what you meant?

Before I move on, I should point out that it is possible, in Turbo Basic, to remember a program. This is useful where you are tinkering out of lines and need to separate something in between, say, lines 41 and 42. **RENUM** a, b, c will start remembering your program from line a, with numbers starting at b, and increasing by c each time. So

```
RENUM 8, 18, 20
```

will renumber your entire program, making the new version start at line 18, and all subsequent lines 20 greater than the last.

As I was saying, it is often difficult to remember what you were trying to do when you wrote a program, or what some other programmer means. It is a good practice to get into using REM statements to add comments to your program. In this way, you at least have some idea what is going on. If you have a list of program which puts some data into order, include a line with a **REM** saying so. In Turbo Basic, if you type two dashes (--) after a line number, and press RETURN, the computer will put in 20 -- signs. This is a special kind of REM, and is useful for separating out bits of your program, to make it more readable.

INDENTING

One way to make your code understandable is to indent your program. This way, it is easy to work out what bit of code refers to which loop, and so on. For example, you will have, at some time, used a FOR loop in your BASIC programs. By typing the following, you can in Turbo Basic:

```
10 FOR L=1 TO 10
20 B=L*L
30 PRINT L, B
40 NEXT L
```

This is a bog standard Basic program, which prints out all the

numbers between 1 and 10, along with their squares. Now type LIST. Hey presto! The code has been automatically indented.

```
10 FOR L=1 TO 10
20   B=L*L
30   PRINT L, B
40 NEXT L
```

As I'm sure you'll agree, this is easier to read, although it is a rather trivial example. Imagine you had many nested FOR ... NEXT loops, though, and the indented version is much easier to read AND understand.

INDENTED

```
10 FOR A=1 TO 10
20   D=0
30   FOR B=1 TO 10
40     PRINT A*B+C
50     C=C+1
60   NEXT B
70   PRINT "EDITED LOOP"
80 NEXT A
```

NORMAL ATARI Basic

```
10 FOR A=1 TO 10
20   D=0
30   FOR B=1 TO 10
40     PRINT A*B+C
50     C=C+1
60   NEXT B
70   PRINT "EDITED LOOP"
80 NEXT A
```

So? Turbo Basic AUTOMATICALLY does the indenting, and this alone makes your programs more structured than their Atari Basic counterparts. This is all very well, but TB offers many control structures which indent the commands associated with them, just as the commands in each FOR ... NEXT loop above are indented.

STRUCTURED COMMANDS

IF .. ELSE .. ENDF

The **IF** command can be used as it is in Atari Basic. That is, IF followed by a condition followed by a list of things to be done if the condition is true. In Turbo Basic these commands, however, have to be on the same line number. Not so, however, in Turbo Basic. If you have a few commands to be done, then these can be written on separate lines, by putting on the first line 'IF condition' on its own. Notice that the word 'THEN' does NOT appear when using this form. ALL LINES after that point will then be interpreted as being executed ONLY if the condition is true, until the program comes across a line with the command 'ENDIF'. Take, for example, the following program in standard Atari Basic.

```
5 M=0
10 FOR L=1 TO 10
20 PRINT L, M
30 IF L<=8 THEN PRINT "L IS LESS THAN 8" M=M+1
40 NEXT L
```

```
1000 REM THIS IS A RATHER SELF PROGRAMM
1001 PRINT "L SQUARED IS ", L*L
1002 RETURN
```

This could be rewritten in Turbo Basic as follows. Remember, the tabspaces are generated by TB itself when the program is listed, you don't have to type them.

(continued overleaf)

```

5 M=5
10 FOR L=1 TO 10
20 PRINT L, M
30 IF L=5
40 PRINT "L IS LESS THAN 5"
50 M=M+1
60 PRINT "L SQUARED IS ", L^2
70 NEXT L
80 NEXT L

```

So, as you can see, all the code between lines 20 and 70 is indented, and is done if L=1. The command **ENDIF** marks the end of the code to be executed under the condition. This method allows you to do many more commands than the single line IF found in Atari Basic. It, however, has more up it's sleeve. What if you wanted to do one set of commands if the condition is met, and another set otherwise? Normally, you would do something like :

```

20 IF L=5 THEN .....
30 IF L=4 THEN PRINT "L IS NOT LESS THAN 5"

```

In Turbo Basic, this becomes :

```

20 IF L=5
30 .....
40 ELSE
50 PRINT "L IS NOT LESS THAN 5"
60 PRINT "SEE HOW MUCH BAKERIER IT IS!"
70 ENDIF

```

It is instantly obvious which bit of code belongs to what. The **ELSE** command is used on a line on its own, instead of the **ENDIF**. To say to the computer that the lines following are to be executed if the test condition on the IF line was **FALSE** (in this case if 1, is NOT less than 5). When the lines with these alternative commands are finished, you use the **ENDIF** statement to finish the IF command. In the generalized form is :

```

IF condition-
  command 1
  command 2.....
ELSE
  command 1
  command 2.....
ENDIF

```

with the **ELSE** being entirely optional. It is entirely up to you whether you want to use the old type of IF, or the new one. It's doesn't force you to use the structured IF, but gives you the choice.

'Nesting' is a powerful concept, which allows IF ... **ENDIF** blocks to appear inside other IF ... **ENDIF** blocks, which can in turn be inside other IF ... **ENDIF** blocks, and so on. This is because the IF ... **ENDIF** construction is treated as being a single block/command, so things like

```

1 IF A=5
2 B=B+1
3 IF B=10
4 PRINT "DUMED."
5 ENDIF
6 ENDIF

```

are quite possible. It is best to experiment with this technique to get to-grips with it, rather than take my word for it. In fact, the IF ... **ELSE** ... **ENDIF** construction is a structured way of thinking. There is one entry point to the IF statement, and only one exit point (**ENDIF**). This is preferable to jumping about

all over the place, and getting totally lost. All the additional control structure follow this concept, and discourage the use of the **GOTO** command. They can also be nested and combined, but more of this later.

REPEAT ... UNTIL, WHILE ... WEND, DO ... LOOP

The **FOR ... NEXT** loop is ideal for doing things a set amount of times. What happens, however, if you DON'T KNOW beforehand how many times you want to go round a loop. Say, for example, you want to repeat a section of code until the user enters the number 0 at the keyboard. The **FOR ... NEXT** loop can't help, as you don't know how many times to loop! In Atari Basic, you would have to make use of the dreaded **GOTO** command, and as we all now know, this is **UNSTRUCTURED**! Your program would look something like the following :

```

10 INPUT X
20 IF X=0 THEN GOTO 30
30 Y=X^2
40 PRINT Y, X
50 REM THIS IS WHERE THE GOTO COMES

```

Even with this small example, it is not instantly obvious what is done, and when. The **REPEAT ... UNTIL** construction allows us to make this problem simpler. The **REPEAT** is on a line on its own, and all the code after this is executed until the keyword **UNTIL** is encountered. The condition following the **UNTIL** is calculated, and if it is found to be **TRUE**, the computer exits the loop, and continues onwards. Otherwise, the program loops back to the first line after the **REPEAT**, and so the process continues. For example :

```

10 REPEAT
20 INPUT X
30 Y=X^2
40 PRINT Y, X
50 UNTIL X=0

```

This says that the code after the **REPEAT** is executed **UNTIL** the value of X is zero. See how much simpler this is to visualize, with no jumps **AROUND** code, as in the Atari Basic example. Notice however that the **REPEAT ... UNTIL** loop calculates the condition at the tail of the loop - in other words, the code contained within the **REPEAT** and **UNTIL** commands is always executed **AT LEAST ONCE**, and the condition is not tested until the end. So, in the above example, X is not tested until AFTER the value of Y is calculated, and the **PRINT** statement executed. So, when the user types 0, the values of Y and X are STILL printed out before the loop terminates, unlike the example using **GOTO**. This is not a failing, but is something you must be aware of. **REPEAT ... UNTIL** checks conditions at the end of the loop, and always executes at least once.

The construction **WHILE ... WEND** on the other hand, checks its condition at the beginning, or head, of the loop. If this condition is found to be true, then the loop is executed, otherwise it is exited. So, the loop is started with the command **WHILE**, followed by a condition on a line on its own. The commands after this are then executed until the word **WEND** is encountered, at which point the computer goes back to the line containing the word **WHILE**, and again evaluates the condition. Unlike **REPEAT ... UNTIL**, this means that the loop may not be executed **AT ALL**, as the condition is checked **FIRST**.

```

10 INPUT X
20 WHILE X=0
30 Y=X^2
40 PRINT Y, X
50 INPUT X
60 WEND

```

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The above code does EXACTLY the same as the example which used GOTO. If you type it at the very start, the loop will not execute, and nothing will be printed. Notice that I have had to put an extra INPUT 3, commented at line 10. I won't tell you why, but, using what you know now, you should be able to work out why it is necessary in this case.

So, now you have at your fingertips four structured commands:

- 1) The FOR ... NEXT loop, which is useful when you know how many times you wish to go round a loop BEFORE you get there.
- 2) The REPEAT ... UNTIL loop, which is useful when you don't know beforehand how many times you want to execute a loop, but want to do it at least once. Repeats UNTIL a condition is true.
- 3) The WHILE ... WEND loop, which is similar to 2) except that it calculates the condition BEFORE entering the loop. Repeats WHILE a condition is true.
- 4) The IF ... THEN ... ELSEIF ... ENDIF construct, which allows you to do certain things if a condition is true, and other things if it is false.

All of the above can be nested and combined, just like the example I gave with the IF ... THENIF construct.

It is up to you to decide which of the looping constructs to use, but the above descriptions should enable you to use the one which is best for the job. In addition, there is a another looping construct. If you place the word GO ON at the end of a line, and LOOP on a later line, then all commands between these will be executed indefinitely - an infinite loop. This may be useful as, for example, a continuous demonstration program, which cycles ad infinitum. The command is made slightly more useful by the addition of the keyword EXIT. This can be included in an IF ... THENIF. The above example can then also be written as follows:

```
10 DO
20 INPUT X
30 IF X=0 THEN
40 PRINT "EXITING..."
50 GOTO 10
60 ENDIF
70 PRINT "X: ", X
80 LOOP
```

ROUNDING OFF

So there you have it - a brief description of the language, and the structured commands available. I realise that the above may be difficult to digest all at once, but persevere, and just spend some time experimenting, until you get the hang of things. This article is rather long, and I apologise if it appears over long. I wanted to get across the basics of the language, and highlight differences, for the benefit of complete beginners, whilst giving something concrete for those already competent basic programmers to work on. I promise that the next article will be shorter, and I hope to deal with subject of Procedures, as well as covering some more commands unique to Turbo Basic.

If you have any queries, or wish me to talk about a certain subject in a future issue, please do not hesitate to contact me at the address at the foot of this article. I'll try and help, and try not to cover the same ground as Mark Hutchinson in his previous first steps columns.

Write with your requests, suggestions and comments to:
Gordon Cameron, 15 Main Bank, Seaton, Porthkerry,
PR3 6EJ, SCOTLAND.

GETTING TO GRIPS WITH GRAPHICS

Len Golding continues his series from Atari User with a look at programming in Graphics modes 3 to 7

We're starting intermediate-level programming this issue, with a close look at the colour 'map' modes - Graphics 3 to Graphics 7. Although these are programmed in Basic, like the text modes 0 to 2, they behave quite differently - it's almost like forcing a new computer to play with. If you've followed the series in the old Atari User, you should have no difficulty adapting to the new rules.

Start by typing GRAPHICS 3 and hit Return. The screen splits into two, with 'READY' printed in the lower window, just as it did in Graphics 1 and 2. So far so good, but now try printing something in the Graphics window:

```
PRINT "HI, "WORLD"
```

What happens? You get a couple of small coloured squares at top-left of the screen. Not a letter in sight! Changing the letters from upper to lower case, or from normal to inverse has no effect - the same orange and blue squares appear. This is lower number case; you can't use text characters to the graphics window in modes 3 to 7.

The computer treats the graphics window as a grid of dots, or 'pixels'. You can switch these pixels on or off, and make them different colours, so it's possible to construct patterns or pictures. Before we look at a typical drawing program, let's examine the screen layout and the basic commands involved.

The five map modes all work in substantially the same way; the differences between them lie in the number and size of pixels, and the number of colours available. Table 1 shows all the relevant information. You'll see that, although there are five colour registers inside your Atari, the map modes can use only four of them at most, and one of these must be for the background colour.

Now, how can we turn a pixel on or off, and change its colour? The theory is fairly straightforward: first we specify the desired colour, using the COLOR command, then we print a pixel of that colour at the desired co-ordinates, using PLOT. But confusion starts to creep in when we try to make sense of the COLOR command, used in this new way.

MODE	SCREEN SIZE	COLORS	
3	With text window No text window	40 x 20 40 x 24	4
4	With text window No text window	80 x 40 80 x 48	2
5	With text window No text window	80 x 40 80 x 48	4
6	With text window No text window	160 x 80 160 x 96	2
7	With text window No text window	160 x 80 160 x 96	4

Table 1: Screen characteristics in the 'map' modes

The best advice is to forget you ever encountered COLOR before, and treat it as an entirely new command which has nothing to do with text characters. In the five map modes, COLOR simply tells the computer which colour register to use when it plots the next pixel. For example:

```
10 GRAPHICS 3
20 COLOR 1:PLOT 80,0
```

This gives you a small orange square roughly in the middle of the screen - columns 20, row 9. If you change line 20 to select COLOR 2, the square will be yellow. COLOR 3 turns it blue, and COLOR 0 makes it by turning it the same colour as the background. Numbers greater than three will select one or other of the four available colours, but it can be a bit tricky to know which one will emerge, so it's best to stick to the recommended range 0 to 3.

Now you might expect that COLOR 1 would select the colour stored in register 1, COLOR 2 would use register 2 and so on, but for some unfortunate reason it ain't so. Instead, COLOR 1, 2 and 3 access registers 0, 1 and 2 respectively; register 3 cannot be accessed in any of the five map modes and COLOR 0 selects register 4. If you find this confusing, join the club. The only way to get things straight is to play around for a while.

Table 2 may help if it shows the registers which are available in each of the map modes, their default colours and the COLOR number which selects each register. For example if you want to plot a blue pixel at top-left of the screen, i.e. co-ordinates 0,0, you would select register 2, using the COLOR 3 command:

```
COLOR 3:PLOT 0,0
```

The registers can be made to contain any colour you like, using the SETCOLOR command which we covered in part 5. For example:

```
SETCOLOR 1,0,14
```

will change the contents of color register 1 from yellow to white. To plot a white pixel at top-left of the screen, you would now use:

```
COLOR 4:PLOT 0,0
```

Why COLOR 2 not COLOR 1? If you're not sure, go back and read the last few paragraphs again. Once you understand the principle, try making the white pixel by plotting the background colour over it.

TIME FOR A PROGRAM!

Now let's have some fun. Is there an Ichiro-Shards in the house? level it back and use Program 1 instead - it will do everything the toy can do, and much more, in full living colour.

Since we're now working at intermediate level, there's no need to keep our programs to their most simple and rudimentary form. Program 1 therefore contains a few little extras which make it easier and more friendly. The text window messages remind you which keys to press for the various options, and remind you which colour register you're currently using. As well as the three foreground colours, the program gives you 'pen-up', move and screen clear facilities.

We start by demonstrating four strings to hold the text messages 'Orange', 'Yellow', 'Blue' and 'Black'. Then we set up the Graphics mode. We've chosen mode 5, to give the best compromise between resolution and ease of use. Very small children might be happier in mode 1, while experienced older users will probably prefer mode 7. It's easy to change the mode - just enter line 38 to set the new screen boundaries, and insert a new starting position at line 40.

Line 58 needs some explanation, since we're not using screen address 194 as yet. This address holds a number corresponding to the last keyboard key pressed. If you press '1', the number returned is 51, while '2', '3' and '4' give you 50, 36 and 50 respectively. Line 59 simply initializes the values for R (Current key pressed), X1 (Previous key pressed) and C (Colour register currently in use), to ensure that the program starts off in 'last-mode'. Line 60 then prints the messages in the text window.

Lines 70 to 90 contain the familiar Boolean joystick routine, and line 100 reads address 194 to see which key was last pressed. If it was the letter 'C' (keycode 10), then the screen is cleared and the program starts again from scratch. Otherwise the keycode is converted into a number from 0 to 3 by the Boolean statement of line 120. (Note that any key other than '1', '2', '3' or 'C' will select the zero mode.) By setting the value of C to zero.

Line 130 checks whether you've selected a new colour. If so, it calls sub-routine 200 to re-print the text window, highlighting the appropriate option. Lines 140 and 150 do the actual drawing on screen. If the joystick trigger is not pressed, the pixel is plotted permanently in its desired colour. If the trigger is pressed, then we use our usual technique to move without disturbing the picture - this is 'pen-up' mode.

Line 160 simply ensures that the 'cursor' pixel will remain visible even in 'last mode', by making it orange. A short time delay is introduced at line 180, which slows down the drawing speed and makes it easier for small children to handle. You can change the value of W, or eliminate line 180 entirely, if you wish.

The calculation of line 200 handles the text messages. If you decide to change the default colours, using the SETCOLOR command, you should also alter these messages to avoid confusing the user!

The program is really just a starting point. Try to add things that you may have learned from other articles and create a program that is yours. In future issues I will give you more programming hints so that you can build up your own programs more efficiently. (See you again!)

```

40 1 000 *****
41 2 000 * De-Luxe Ichiro-Shards *
42 3 000 * by Ian Manning *
43 4 000 * *****
44 5 000 * PAGE 4 MESSAGE - ENDLESS *
45 6 000 *****
46 7 000
47 10 000 0000 0000 0000 0000 0000 0000
         0000 0000 0000 0000 0000
48 20 000000 0000 0000 0000 0000 0000 0000
         0000 0000 0000 0000 0000 0000
49 30 000000 0000 0000 0000 0000 0000 0000
         0000 0000 0000 0000 0000 0000
50 40 0000 0000 0000 0000 0000 0000 0000
         0000 0000 0000 0000 0000 0000
51 50 000000 0000 0000 0000 0000 0000 0000
         0000 0000 0000 0000 0000 0000
52 60 000000 0000 0000 0000 0000 0000 0000
         0000 0000 0000 0000 0000 0000
53 70 000000 0000 0000 0000 0000 0000 0000
         0000 0000 0000 0000 0000 0000
54 80 000000 0000 0000 0000 0000 0000 0000
         0000 0000 0000 0000 0000 0000
55 90 000000 0000 0000 0000 0000 0000 0000
         0000 0000 0000 0000 0000 0000
56 100 000000 0000 0000 0000 0000 0000 0000
         0000 0000 0000 0000 0000 0000
57 110 000000 0000 0000 0000 0000 0000 0000
         0000 0000 0000 0000 0000 0000
58 120 000000 0000 0000 0000 0000 0000 0000
         0000 0000 0000 0000 0000 0000
59 130 000000 0000 0000 0000 0000 0000 0000
         0000 0000 0000 0000 0000 0000
60 140 000000 0000 0000 0000 0000 0000 0000
         0000 0000 0000 0000 0000 0000
61 150 000000 0000 0000 0000 0000 0000 0000
         0000 0000 0000 0000 0000 0000
62 160 000000 0000 0000 0000 0000 0000 0000
         0000 0000 0000 0000 0000 0000
63 170 000000 0000 0000 0000 0000 0000 0000
         0000 0000 0000 0000 0000 0000
64 180 000000 0000 0000 0000 0000 0000 0000
         0000 0000 0000 0000 0000 0000
65 190 000000 0000 0000 0000 0000 0000 0000
         0000 0000 0000 0000 0000 0000
66 200 000000
    
```

MODE	REGISTER AVAILABLE	DEFAULT COLOUR	'COLOR' No. TO SELECT REGISTER
5, 7	0	Orange	1
	1	Yellow	2
	2	Blue	3
	4*	Black	0*
4, 6	0	Orange	1
	4*	Black	0*

* Controls the background colour

Table 1: Using colour in the 'map' modes

JUST AMBLING ACROSS THE KEYBOARD

I have been allowed to indulge myself for the next few hours with a new style of column which just "flows" to you, the everyday Alan lover, and I hope that you will find some of these amblings (or scribbles?) interesting. I have had great problems thinking of a title for this new style column, so can I ask for your help? As you read the column see if you can come up with a suitable name that sums up the "chatty" style and deep me a line. Thanks. Now let's get on with it!

Can you imagine getting up one Saturday, having breakfast at 8 am, then working non stop until a sea of strange faces until 3 pm, grabbing a banana and cucumber sandwich and then back until the sea of faces, surviving until 8 pm before you get going? Sunday going the same way but without the sandwich and ending up with a whole hour spent loading up a van with heavy boxes while the very air about you drops to freezing point? A new PAGE 4 adventure game? Maybe, read on.

Sometimes during the day, it does not matter which day, all the faces blend into one, I suddenly come out of a daze and find myself holding several disks in my trembling hand and staring at someone who is offering me a square of potato. What is this man? Why does he want a receipt? Where am I? Why can I not add up numbers? Panic sets in and I look for help. A nightmarer comes true! EPICORM unleashes another story? No! The ATAM does strike back! Try it sometime. Volunteer for the next instalment in March or April and live your own version of a Hainesian Horror film!

Seriously though, it is very hard work on the stand and I would like to say thank you to all those people who generously with waiting to get their PAGE 4 goodies. John Timoney kindly volunteered for a taste of the action and as I fight in saying that John Davison also volunteered!

I would like to thank all the people who said that it was nice knowing how PAGE 4 came to be. What you read was only part of the trials and tribulations over several years, there is a lot more. ATAM has a tall biography, why not PAGE 4?

As you may know, I have not received much mail these past few months but my last column has stirred the consciences of more than a few. I was able to talk to a few people while I worked (sure I say stirred) on the stand at the Palace. I really do enjoy meeting the readers of the magazine on such occasions but I must take this opportunity to apologise to them. When you get, literally, thousands of people trying their best to get served something must go by the head. Anyway, just to mention a few, how did the ST turn out Linda, I hope you decided to keep the 8-bit Hello Alan, did you decide on the Alan? Hello, Mr and Mrs Cook, I received your letter and I do remember the conversation. I would suggest a commercial program but I cannot recommend one as perhaps you could contact one of our subscribers and ask their advice. Finally, sorry Ian, hope you got the hedge back. P.S. To TCG of the "Games of Home" 885 - about the best in the UK in my humble opinion, I really would like to visit the Tower but the Stormwater really works me hard (do they pay for my meals though).

I have complained heavily about how hard it was to write all you people while I stood on the stand and complained about not getting letters, and in the last column asked what people and their computers do. A couple of letters came in which really did make me think about how important a home-computer com-

be and about how lucky we are to actually attend the readers at the Palace. James Guller told me that his Atari computer and PAGE 4 have helped him considerably over the years so he is handicapped and semi-homebound. The second was from M. Garrow who has a bad foot and who would surely miss his computer. Both these people are in their states in contrast with the usual image of computers, and kind in particular, of the young person playing arcade games. I have always said that computers should be fun and these two people have proved to me that computers can also be worthwhile companions. It does make me feel somewhat guilty complaining about my little aches and pains incurred at the show while I receive such letters.

Whenever I receive a letter I always read it immediately. It is then at least in my computer so it will be retrievable the next time I feel the urge in my fingertips. I write on a printer and store it on disk, sometimes inserting my opinions, often adding to it. Many times it is easier to copy an article from a magazine in my library if I keep them all safe and sound in binders. Once in a while I cannot answer the question fully because it is outside my scope but then I try to point the reader to another person or article that may help. Usually I will print out a copy, read it, mark any errors or notes to be added, then get the final version ready. A copy of this is placed to the original letter and kept somewhere safe and a copy is then sent out with the SAZ.

Many times I have written long articles to people explaining certain points and have never heard if they have helped or not. Did I give enough detail? Too much? Too involved? I do not expect you to reply to my answers, all I ask is that if you are still not sure please write again.

As you should know by now, PAGE 4 has taken over ATAM USER and the magazine is in a state of flux as the editor tries to decide what you want. Thankfully hundreds of people have been good enough to fill in and return the annual survey. For those of you who do not know about this I shall explain. PAGE 4 is run by people dedicated to ATAM, both 8-bit and the ST. We try to give you, the reader, the best we can to do this properly we need to know what you want in your magazine, yes, YOUR magazine, not a one-of-many publication! If you do not have a survey form on, more specifically, if you have previously read only ATAM USER, please write to the Editor and let him know your system, likes and dislikes of the magazine and what you would like to read about in future editions.

Having indicated that there may be a few changes there is a very strong remark that the "Reader's Write" page will be expanded to include more specific queries. Now have a guess who has been volunteered for that job!

By the time you get to read this it will be well past Christmas so I hope it has been a pleasant one for you all.

So always you can write to me at the following address.

Mark Hutchinson,
5, Hollymount,
Erdwile,
Plymouth,
Devon PL7 9GL.

DISK BONUS

COLOUR ENHANCER

a graphics utility by David Blackshaw

Colour Enhancer allows you to create new pictures or enhance existing MicroPaint, Atari Artist and other GEM graphics files. The program will work with files which have been stored in either the normal GEM vector format or in the special space saving compressed format used by Atari Artist. Colour Enhancer allows you to choose from four different colours on each display line allowing 128 colours to be used in the same screen.

Pictures may be enhanced using either a joystick or touch tablet and used a few simple key strokes. The program is intelligent and will automatically load pictures in either normal, compressed or enhanced format. Pictures can be saved in either normal or enhanced format.

Although written to use with other painting programs such as MicroPaint or Atari Artist, Colour Enhancer has both a printing mode in line drawing mode and a fill mode and can be used on its own to create new pictures without the need for any other painting program.

GETTING STARTED

To load (insert) the disk in drive A, and boot as any other disk. The program will operate on 100, 200, 512, or 80 machines but requires a full disk in run. (Hold down the CTRL/OK key when using 512 or 80 machines and removal of all cartridges on other machines. After the title screen has appeared, press **ENTER** to go to the drawing screen.

Initially the program is in joystick mode indicated by a flashing cursor in the centre of the screen. The cursor can be moved around the screen using the joystick, pressing the fire button will cause a line to be plotted as the cursor moves. You may toggle between joystick and Tablet mode by hitting **T** on the keyboard. In Tablet mode the screen is actually blank with the cursor only appearing when the status is touching the tablet. In this mode drawing is achieved by pressing the other button when moving it over the tablet. Any time it coincides with either MicroPaint or Atari Artist will still do as before with Colour Enhancer even though a number of commands have been slightly altered.

An explanation of all of the available commands is given below. (Items mentioned otherwise the action of the command is the same in both joystick and Tablet mode.

GENERAL COMMAND

SPACE BAR - Will toggle between the picture screen and the Option Menu and into many of the command modes. When in touch Tablet mode the Option Menu may also be entered by pressing the status button with the pen on the tablet.

PAINTING COMMANDS

- 1 - Selects the paint pen from which the colour will be obtained. All painting is carried out using solid colours.
- 2 - Allows the colour of each of the four paint pens to be changed. Pressing **C** followed by **T** causes pen number 1 to be changed. After the pen has been selected changes are made by pressing the arrow keys.

UP ARROW - Increases colour one step
DOWN ARROW - Decreases colour one step
LEFT ARROW - Increases luminance one step
RIGHT ARROW - Decreases luminance one step

DEL - This mode by moving the joystick or hitting the spacebar. Colours may be changed on either the paint screen or via the Option Menu. See below for additional instructions for changing colours when in DEL mode.

- 3 - Selects Line Draw mode which is indicated by the Line Draw screen. Clear the points to start your line and press either the joystick or status button. Release the button and move cursor to the point you want the end of the line to be and press the button again. A line will be drawn between the two points using the colour from the current paint pen.
- 4 - Returns from draw mode to plot mode.
- 5 - Screen picture tool using DEL's which have been set. Provided that no other commands have been used the picture may be restored by pressing **T**.
- 6 - Fill mode. Fill an enclosed area with colour from the selected paint pen. Use the **SPACE** key to stop the fill at any time.

- 7 - Toggles between joystick and Touch Tablet mode.
- 8 - Undo. This will undo the last plot, draw or fill existing the picture to its previous form.

Arrow - The cursor may be moved by the arrow keys in the joystick mode. **Keys** - The **RIGHT** press **CONTROL**, or **SHIFT**. Pressing the joystick button at the same time allows plotting to take place. This is useful when greater accuracy is required than can be achieved using the joystick.

SPECIAL DEL KEYS

A - Add or remove DEL colour change points. This option is only available when DEL's have been activated by pressing **V**, whilst in the Option Menu. The cursor will change to an **A** with an arrow through it and can be moved with either the joystick or stylus. Pressing the pen or joystick button activates a DEL colour change point at the cursor position which will be indicated by the DEL marker. Pressing the button whilst pointing in any area DEL will turn it off and the marker will disappear. Use the spacebar to exit this mode.

C - The use of this key is changed slightly in DEL mode since colour changes are made to selected parts of the screen rather than the whole. Each of the four paint pens can be changed but the colours selected will only change in the area of screen between two selected DEL's. Pressing **C** with DEL's activated illuminates the DEL markers and the cursor changes to a **C** with an arrow through it. Move the cursor to the area of picture you wish to change and press the status or fire button to select this area. Colour changes can now be made to the four colour paint pens by pressing **T** - 4 and the four arrow keys. Colours only change between the upper and lower DEL markers in the area of the cursor.

After colour changes have been made to one area of the picture another area can be selected by pressing the fire button again, moving the cursor to the new location and selecting this area by once again pressing stylus or fire button. Exit by either moving the joystick or pressing the Space Bar. An additional command is available to change the top border colour. After entering **C** press **V** and the arrow keys to change the colour in the top border area.

Leave the joystick or press the spacebar to exit this mode.

OPTION MENU

The option menu allows pictures to be loaded and saved or the disk drawing mode read. In addition the DEL mode can be activated and the colours currently in use set or changed as desired. Follow the on screen instructions to use the various functions.

- 1 - Enable or disable DEL's. Note that any DEL's that have previously been set will be erased if this option is used but your drawing will remain intact. A previously saved enhanced picture will switch the DEL's on when loading.
- 2 - Screen picture to fill with most selected file names. Note that an extension is not required in the program automatically adds .PIC. The screen will show what the picture is being saved.
- 3 - Load a previously saved picture with a PIC extension. The picture may be in either standard, compressed or enhanced format. No need to worry which as the program will automatically adjust to the correct format. The screen will blank during the load process.
- 4 - Enable or disable pictures to be displayed. Screen can display one of a time. Use the spacebar to scroll through them. Pressing any other key will exit without reading further files.

Colour Enhancer is the bonus program on this issue's disk and comes with three example picture files. Disk subscribers will have received a copy with the magazine but the disk, which contains all the other programs from this issue ready to run, may be purchased separately for just £2.95. Send your cheque or Postal Order to P4122 A, P.O. Box 24, Stafford, ST16 1NS. Overseas readers should add 50p to cover postage.

MUSIC BOX

by Kristofer Andersson

Sometimes the simplest of programs can be quite a lot of fun, although simple to use programs are not always that easy to write! Music Box is a nice straightforward program that plays what you draw, all you have to do is draw a graph in the box provided and Music Box will turn it into your own special tune!

Type in the program using **TYPE III** to check it as you go and **SAVE** a copy to disk or **CLASS** to cassette. When you start the program, you will be asked for your name and will find a special tune played as the program sets itself up. Now choose between a slow or fast tune with the joystick, press the fire button and you will be presented with a box in which you draw your tune. Just draw away and when you get to the end, your drawing will be translated into a faint Simple, yet great tune.

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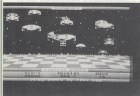
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STAR RIDER



*Admit it! Paul Lay's
latest space shoot out
is just too fast for you
- you are doomed!*

Your planet is being attacked by hordes of alien space craft and it seems you are the last hope of survival. You sit behind the controls of a Surface Runner vehicle which glides over the surface of the planet at an incredible speed. You are protected by a force field and armed with a limitless supply of photon missiles. You are the STAR RIDER.

The object is to blast as many of the alien spacecraft as you can, without letting them get past you. Every time you hit an alien your score is increased and your shields are boosted, however when an alien gets past you it rips your shields making your Surface Runner vehicle shudder.

The game is over when your shields have gone. You will find STAR RIDER fast and furious especially at the higher levels, if you ever get that far!

STAR RIDER CONTROLS

- START** begins a game of wave 1
1, 2, 3, 4, 5 begin a game at levels 10, 20, 30,
40, 50 respectively
T Toggles vertical control of the
joystick
ESC aborts the game
SPACEBAR Pauses/resumes a game

Use joystick in port 1 to manoeuvre the crosshair sights and press the trigger to fire a photon missile.

TYPING IT IN

STAR RIDER is a single player, all machine code cassette style game for any 8-bit Atari with at least 48k RAM and will run from both cassettes and disk. Just type in the listing, using TYPED IN to check for mistakes as you go and save a copy of the listing before you run it.

The program you have typed in will create a boot disk, or tape as you will need a new tape or a formatted disk. Load the program, if it is not already in memory, and RUN it. The listing will check the DATA statements and tell you if there are any errors. You will be asked whether you want to create a Cassette or Disk version, make sure that your cassettes or disk is ready and answer accordingly. A bootable version of the game will be created.

To run the cassette version, rewind the tape and switch your machine on with the START button held down. The disk version can be run from DOS option 1, or the program can be renamed to AUTORUN.SYS when it will run automatically as the computer is switched on, providing that you have written the DOS files to your disk.

HIGH SCORES

If you manage to survive that far, you will be able to enter your name on the high score screen. Moving the joystick left and right will move the cursor in the appropriate direction and moving the joystick up and down moves forwards and backwards through the characters. When your name is complete, press the trigger and your name will be entered. On subsequent high scores, the name entered appears as a default to save you entering your name each time.

9 THE RIGHT TIMING

Ian Finlayson tells you how to slow down or time your programs

There are quite a few aspects of timing which are important to the programmer whether at a simple or advanced level. In many 'arcade action' games, for instance, timing can be highly critical and quite small changes in the speed of response of the computer can change a game from being slow and boring to being so fast it is almost unplayable. Machine-code games are difficult to modify unless you are a highly proficient programmer, but you can experiment with many of the basic games such as those listed in the magazine. I have tried speeding up some foregoing basic games by using Turbo Basic and have even used the Turbo Basic Compiler which gives startling results and usually makes the games unplayable unless careful time delays are inserted. The most critical item is the movement of the cursor or player around the screen using the joystick - this requires plenty of hand-eye coordination which with a typical, fairly insensitive, joystick makes control impossible when speed is radically increased.

To slow down a game it is best to program it initially to be too fast to play and then slow it down with delay functions. The most common sort of delay is a FOR-NEXT loop such as FOR DELAY% TO 10000000 DELAY% - 1: this gives a delay of about 1.2 seconds depending on where it is in the program. Such a loop can be adjusted easily and can be set with different values to achieve different skill levels but remember that this sort of delay will vary with its position in your program listing. The delay will be shorter if it is early in the listing and longer if it is at the end of a substantial program.

If you need very small delays you can use a dummy function to occupy a little computer time. For example DELAY=LOG(10) takes about 0.13 seconds. This may not appear significant, but it is quite a long time in computer terms. Basic's various arithmetic and trigonometric functions provide a range of possible delays.

EVENT TIMING

Injecting delays into a program as described above is useful, but does not provide a suitable method for timing activities as the delay itself fully utilizes the computer control processor - anything else can be going on while the delay is in force. Fortunately the Atari has several timers to control various activities like refreshing the TV screen, timing input/output activities etc. and these timers can be accessed from basic using PEEK and POKE.

The most readily accessed timer is located in memory location 16, 19 and 20 and is known as the Real Time Clock. The clock 'ticks' every 1/60th of a second and this interval is called a jiff. Watch out if you read American books or magazines on this

subject as their computers have a different timing rate - a US jiff is one sixtieth of a second because their TV screens refresh 60 times a second unlike our 50Hz system. The jiff count is in memory location 20 and this goes from 0 to 255. On the next count after 255 (after 8.33 seconds) location 20 resets to zero and location 19 is incremented by 1. Similarly when location 19 increments past 255 (after approximately 22 minutes) it resets to zero and location 18 increments by 1. By the time location 18 is full the clock has been running for about 93 hours, so you are unlikely to need to worry about what happens to your timer when the three registers all reset to zero!

THE LISTING

The real time clock can be used in two slightly different ways. Either you start the clock to zero at the beginning of the timing and read it at the end (like using a stop-watch) or you read at the beginning and at the end of the timed event and work out the difference. I have chosen the former, but the latter could be better if you are timing several overlapping events (as with a split timer), and do not want to reset the clock.

Line 10010 - resets the timer to zero in a one line sub-routine.

Line 10020 - reads the three registers and calculates the total number of jiffies elapsed. If you are only timing fairly short events up to 23 minutes you can simplify the procedure to use locations 19 and 20 only.

Line 10030 - here jiffies are converted into hrs, mins and secs. If you are timing long events you will probably find that the real time clock is not very accurate. You can tell it against a stop-watch and apply a correction factor at the end of line 10040 if you wish. My machine runs slightly slow and '81-8171.0007' improves things a little.

Line 10050 - prints out the elapsed time and then returns to the main program. In a real program you would probably not print your result as part of the sub-routine but return to the main program and use the elapsed time there.

USES

Playing against the clock can make quite ordinary games more challenging - instead of just striving to finish you have to finish as quickly as possible and beat your own best performance. Several players can compete to see who is fastest thus introducing a competitive element into one-player games.

AND FINALLY...

Before I sign off for this issue I must congratulate Les on his terrific effort in keeping Page 8 alive. I also welcome his recent editorial remarks - it is you the reader that keeps the magazine going, and all of us who contribute regularly need the stimulus of your opinions and enquiries if we are to keep the content lively and interesting. You can write to me as follows:

Ian Finlayson,
c/o Commodore Circuit,
East Preston,
West Sussex BN16 8DQ

```

10 10010 DEF FN JIFFS=PEEK(16)+PEEK(19)*60+PEEK(20)*3600:PRINT FN JIFFS:GOTO 10010
11 10020 DEF FN JIFFS=PEEK(16)+PEEK(19)*60+PEEK(20)*3600:PRINT FN JIFFS:GOTO 10010
12 10030 DEF FN JIFFS=PEEK(16)+PEEK(19)*60+PEEK(20)*3600:PRINT FN JIFFS:GOTO 10010
13 10040 DEF FN JIFFS=PEEK(16)+PEEK(19)*60+PEEK(20)*3600:PRINT FN JIFFS:GOTO 10010
14 10050 DEF FN JIFFS=PEEK(16)+PEEK(19)*60+PEEK(20)*3600:PRINT FN JIFFS:GOTO 10010
15 10060 DEF FN JIFFS=PEEK(16)+PEEK(19)*60+PEEK(20)*3600:PRINT FN JIFFS:GOTO 10010
16 10070 DEF FN JIFFS=PEEK(16)+PEEK(19)*60+PEEK(20)*3600:PRINT FN JIFFS:GOTO 10010
17 10080 DEF FN JIFFS=PEEK(16)+PEEK(19)*60+PEEK(20)*3600:PRINT FN JIFFS:GOTO 10010
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19 10100 DEF FN JIFFS=PEEK(16)+PEEK(19)*60+PEEK(20)*3600:PRINT FN JIFFS:GOTO 10010
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27 10180 DEF FN JIFFS=PEEK(16)+PEEK(19)*60+PEEK(20)*3600:PRINT FN JIFFS:GOTO 10010
28 10190 DEF FN JIFFS=PEEK(16)+PEEK(19)*60+PEEK(20)*3600:PRINT FN JIFFS:GOTO 10010
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67 10580 DEF FN JIFFS=PEEK(16)+PEEK(19)*60+PEEK(20)*3600:PRINT FN JIFFS:GOTO 10010
68 10590 DEF FN JIFFS=PEEK(16)+PEEK(19)*60+PEEK(20)*3600:PRINT FN JIFFS:GOTO 10010
69 10600 DEF FN JIFFS=PEEK(16)+PEEK(19)*60+PEEK(20)*3600:PRINT FN JIFFS:GOTO 10010
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118 11090 DEF FN JIFFS=PEEK(16)+PEEK(19)*60+PEEK(20)*3600:PRINT FN JIFFS:GOTO 10010
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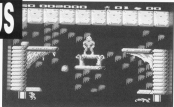
DRACONUS

And now for something completely different ... Forget about all those mediocre 'budget' offerings you've been forced to put up with in recent months - Cognito's DRACONUS belongs to an entirely different class of software that class!

You may not be surprised to learn that the 'Cognito' label is connected with Zepplin Games whose previous Atari releases - Speed Ace and Zylon - have both enjoyed chart-topping popularity. Ian Copeland is the author of DRACONUS but was also responsible for Gun Law, Space Hawks and Transmuter and the project was co-developed by Bruce Johnson who himself has provided the Atari with some top-notch games. Add to this team a wise computer musician called Adam Gilmore plus a graphics genius - Michael Owen - and it's clear that the Cognito label is definitely no exception to Zepplin's policy of providing computer gamers with software of the highest possible standards. In fact, it could well become THE 8-bit label of 1989.

If you haven't already raised off to dust the shelves from your cheapie book then you may be wondering what this widely publicised game is all about. It's basically a fantastic arcade adventure set on a distant alien planet where a stranded astronaut is told to invade. The general aim is to rid the planet of this particular nasty, being that this alien species and tranquillity to mark. We're not told if that's what the alien population actually want, but then, 'writing ingenious plots does not seem to be one of Zepplin's many optated' instructions don't say very much at all so you have to wait for the mysteries to unfold as you undertake a perilous journey through the labyrinthine complex. Termites, Caterpillars and bolts of 'gooey matter' dripping incessantly from the cavern ceilings are just a few of the bewitching monsters designed to hinder your progress by sapping your energy on contact. To help you overcome the numerous problems, many artifacts and magical spells may be collected at various locations, including large Crystals which replace lost strength and a Necromancer's staff (let's hope the Necromancer won't miss them). Knowing when to use these resources to maximum advantage is one of the major factors governing success.

There are two separate and physically contrasting characters to control at different stages in the game. 'Frogman' takes the leading role and much of jumping, walking, punching, ducking and breathing visually spectacular streams of fire



at the adversaries, but as important though is 'Dracoman', an aquatic creature who enjoys blowing water jets to disable the opposition. For the metamorphosis to occur you must first have located a Munch dish and be carrying a Munch Helm. Obviously, when you think about it

Initially, the task of progressing any further than the very first screen seems quite daunting - the quantities and frantic movements of the various enemies are almost overwhelming until you get accustomed to the slightly awkward procedure of spitting fire jets to obliterate them. You rapidly learn to be as quiet as possible with this facility though when you realise that less noise is the maximum allowed before a tank of fiery foam field (by saying that after a few drinks) must be collected to replenish the supply. If you run out completely you dramatically increase the probability of energy loss and only two 'reserve' characters are provided. Movement through the caverns requires good timing, perseverance, a steady hand and above all, a reliable joystick - accurate jumping relies heavily on the responsiveness of the joystick diagonals. From my initial observations it would appear that the game has a great deal of depth to it - a good indication of lasting appeal.

From the moment that the one leading screen appears there is an air of profes-

sionalism that suggests the game is going to be something special. A superb and completely original musical composition accompanies a cleverly animated title page, which provides the first of many stunning scenes depicting the highly cinematic corners of the complex in high-resolution, high quality graphics. As in Zylon, shading and colour have been used to exceptional effect and a huge amount of time and effort has obviously been spent perfecting each individual screen right down to the smallest detail. Animation is in abundance with some really incredible effects such as the graceful bounds of Frogman who himself is brilliantly defined and harmoniously turns his head in custody if you fail to issue a command for any length of time. Feed your eyes on the screen studs and imagine that the display is beaming with hot carbon in glorious colour - it really is great, and sound effects are excellent too!

Zepplin Games deserve every possible success as reward for producing an excellent, challenging and utterly outstanding package. Show Zepplin your appreciation and you will be helping to ensure the future survival of quality software for your Atari. Don't be deterred by the price. DRACONUS honestly is the ultimate value-for-money experience! If you don't get yourself a copy you must be mad!

'an entirely different class'

Title: DRACONUS

Publisher: Cognito/Zepplin

Price: £9.95 cassette/£12.95 disk

Players: 1

Control: Joystick

Reviewed by Paul Rixon

SCRAMBLE ... SCRAMBLE

There's no shortage of "Scramble" clones for the Atari and the majority of those in existence are far from lacking in quality - *AtariStar*, *Laser Hawk* and *The Tail of Beta Lyrae* (an unadapted classic) are of highy recommended games from days of old. *DAWN RAIDER*, Atlanta Software's tenth Atari release, is more or less a helicopter adaptation of *AtariStar* and in contrast with its predecessor, appears to be a completely programmed and highly playable renaissance of the *Scramble* concept.

As you might expect, a relatively guarded subterranean complex, for a covert, even requires infiltrating with a view to destroying some rather nasty sounding Nuclear Missiles belonging to an even nastier Super Criminal who is adding to a twenty billion dollar incentive run to fire them at major cities of the world. Only you can



save the day by piloting your heavily armed but minutely proportional prototype helicopter through the various twisting caverns of the enemy complex, avoiding guards, rockets and numerous other forms of attack on you go.

Joystick controls are reasonably straightforward. Apart from the obvious direction of commands, you can shoot ahead with the fire button or combine this with a backwards movement of the stick to drop bombs on enemy installations. There's more skill required than first meets the eye as it soon becomes evident that your helicopter has a fuel consumption that's measured in tanks per mile rather than star-

vedal. Extra fuel is obtained by hitting "F" symbols (fairly logical but since when did that matter?) and ammunition must also be accumulated by similarly aiming for "A" symbols. The biggest headache, however, is attempting to maneuver the helicopter around the jagged passageways with frequently just millimeters of clearance. For the expert super-pilots there are three alternative levels to master as well.

Graphics aren't brilliant but the nature of the challenge is sufficient to compensate for any lack of resolution. Colors are set randomly each time you play - a nice effect - and the overall display does look much more "professional" than certain other Atlanta games I could mention. *DAWN RAIDER* even kicks off with some musical accompaniment - on Atari's first - but don't get too excited as the rendition of "Bad F" is not one of the most noticeable ones I've heard on an Atari. I'm not sure that the sound of samplings being pulled against a piece of wood is the ideal noise for a revolutionary helicopter gunship either.

Speculation would say not to be one of Atlanta Software's claims to fame but budget pricing certainly is, and £1.99 can only be described as a ridiculously low price to pay for a chance to save the world from global destruction! Be sure to check this one out.

Paul Dixon

Title: DAWN RAIDER

Publisher: Atlanta Software

Price: £1.99 on cassette

Players: 1

Control: joystick

MY NAME IS BLADE



These damn builders never seem to give up, do they? This time, the infamous Cox Bloodfinger has kidnapped six world leaders and is demanding a billion dollar ransom for their safe release. Who could possibly save the world from the clutches of this evil madman? Enter Joe Blade - teenage pin-up and pop idol, trained in a Tibetan monastery, kung fu and karate, his very name strikes fear into the hearts of criminals throughout the land. Yep, you guessed it ... you are Joe Blade!

The 31 screens of *JOE BLADE* was reviewed in PAGE 6 issue 33 and given a fairly unenthusiastic report. Players have apparently made a much better job of the 3rd conversion as the game appears to contain quite enough action to keep even the most experienced anal-retentive occupied. It's an arcade adventure located in Bloodfinger's massive fortified headquarters, consisting of 126 different rooms - many of

them locked - and passages which must be explored in order to rescue the captive VIPs. It's a good idea to map the whole area, although beware that the maze does wrap round horizontally - it took several sheets of graph paper to discover that one!

Apart from fixing the hostages, Joe has also got to find and prime six back-trapped explosive devices. He achieves this by rearranging five characters into alphabetical order within a strict time limit. Not as easy as it sounds, and failure to complete the task in time causes termination of the mission. Once the first bomb has been primed, Joe has only twenty minutes to locate the remaining devices and all of the other hostages. Guards are easily dealt with by a quick round from his semi-automatic machine gun, but bullets are in short supply so in some cases it may be more sensible to make use of his impressive athletic capabilities. Useful capabilities include extra ammunition, life-saving food icons and a very handy "smog suit" giving Joe unlimited strength for a short period. An energy bar above a centrally positioned viewing window indicates the current state of his health. Underneath, a large digital scoreboard and details of ammunition, door keys and time available

are constantly updated.

Many of the screens are graphically simple but sufficient explosion is suitably rewarded with the odd completely different scene - watch out or you could even end up trapped in the WC! As for sound, there isn't really a lot of it to talk about but whether you view this as a major drawback will depend on your appetite for computer generated noise. Personally I found the game quite satisfying without the additional howl(?) of any comic violence.

Players are advertising Joe Blade II as "coming soon" on the cassette tape but whether this applies to the 8-bit Atari version is anyone's guess. Let's hope so as they seem to have found the formula to produce software of the high quality that Atari owners deserve and should expect.

Paul Dixon

Title: JOE BLADE

Publisher: Players

Price: £1.99 on cassette

Players: 1

Control: joystick

COME BACK KING KONG!

"It seemed like any other day at the Goodenough Fast Food Emporium - but three unlucky customers were to get something very much more than their Big Macs. If only the company's Research Division hadn't accidentally shipped some of the experimental food additives ... A wave of nausea, a foul aftertaste, chronic indigestion - everything was normal until George, Lucy and Ralph stepped out of their clothing and into designer fur and wools."

And so begins the amusing plot to RAMPAGE - a frustrating and uncharacteristically poor arcade conversion from Activision, originally from Billy Midway. No more playing "Mr. Coo" - this time you become a brawler and, in the words of the inlay card, unleash monstrous mayhem on an unsuspecting public!

Title: RAMPAGE
Publisher: Activision
Price: \$9.95 cash, \$12.95 disk
Players: 1/2
Control: joystick

Gameplay itself is relatively simple. As fountain-turned-monster you divide to embark on a destructive rampage through city streets in search of alternative entertainment. This involves climbing up the sides of tower blocks and punching holes into the ceiling of likely looking business premises - anything goes really! The aim is to consume various edible objects, avoiding those items such as television and potted plants which don't taste quite so pleasant. The task is made more difficult by troops who fire at you from the windows of some buildings and parasit helicopters continually circling overhead in an effort to prevent the destruction of the city. Damaged buildings eventually collapse and such completely demolished areas is replaced by the next in a series of 180.

Two players may compete and select their characters from a choice of George Goodwill, Lucy (Kluge) or Ralph (Waltman) or the computer will automatically take over for a one player game if it senses the absence of the second player. Joystick response is nothing short of optimal. The controls are clumsy and imprecise - more often than not you'll lose energy waiting for an action that ought to have been



carried out immediately. This does cause subtle damage to the game's playability. Visually RAMPAGE is adequate but hardly eye-opening. Vehicles cross the screen periodically - apparently without purpose - in front of pedestrianly grey buildings superimposed on a black city skyline. Energy bars above provide the necessary status information whilst single colour FMGs form the attack helicopters and other adversaries. Even the monsters themselves are poorly defined and mono-colored - not the sort of thing Atari owners should expect to see gracing their monitors in the late 1980's. Terrible is an apt description of the sound in general and especially the introductory "music".

Regrettably, RAMPAGE isn't anything special at all and much as I feel obliged to congratulate Activision for their support of the Atari, I can only wish that their previously standards would return.

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IT'S ABOUT THE GAME



The ST FILE

Are your games are a loss?

Try **STOS**

see page 52 to see if its any good



BAAZ
Cod of Evil



A rather different
look with **FUSION**



Behind the
wheel in
LONBARD RAC
RACE!



MULL BUNT



What's that strange creature doing at
CardST Arms Park?

ST NEWS

Peppermint, having released only a select few games over the past couple of years, are now expanding with new labels and associations with various programmers. First release on their new Peppermint label is **Baal**, in which the supreme God of Evil has dispatched his army of undead to steal a dreadful weapon of destruction - the War Machine. Those with weak stomachs will be pleased to learn the the game is not quite as gruesome as the advertising! Next up from Peppermint is **Captain Fix Weir's the Blaster-Freaks!**, a two player collaborative game that Peppermint claim is so addictive that they had to ban it from their own offices! Lots of blasting, keys to find, gates to unlock and other adventures with split screen view of each players action. High in action and, at £14.95, low in price ... Next Electronic Arts is a new grand-strategy game called **Fusion** featuring two dimensional parallel scrolling, digitized sound, the lot. Object is to collect nine pieces of a bomb scattered over 13 levels and return them to level 1 via an Assault Cruiser. Doesn't seem to be too much blasting, more puzzle solving such as trying to operate coloured switches to other levels. At least the screen shots look different from what is now becoming almost standard ... then there's **Mull Bunt** from Newagen, following up *Hereditary and Backlash*, not programmed this time by Paul Winkler but by one *Thomas Pinner*. **Mull Bunt** is standard *Mull 'em in* in Colosseum vein but plenty fast ... *Colosseum*, hoping to repeat their success with *BMX Simulator*, have *Bugly Simulator* coming up in which, you guessed it, all those of us who didn't go to public school can vent to the only game without having to lose teeth and eyes in the process! Can't figure out, though, what that giant tortoise is doing on the *BM!* ... plus far too many more to mention between the time of writing and the time of reading, but is the flood of ST software now beginning to abate?

STOS

The greatest thing so far for
the ST or just another program?
Damon Howarth tries his hand
at writing games

Every so often in the life of any computer there comes a program that can only be described as a 'mirac'. Normally this is some form of 'mega game' or highly efficient program, very occasionally an application such as a spreadsheet but I have never thought of a programming language coming into this category. STOS though does it is hard to know just where to start in a description of such a comprehensive package, perhaps the best start is to explain that STOS stands for ST Operating System and expand from there.

The packaging for STOS claims it is a games creator, this is a little unfair since it brings to mind other packages which bear no relation to the breadth of function of this software. There is nothing truly compatible with it and as it's own field of graphics handling and sprite development, it can really compete with most boxes currently on sale.

So what is in STOS? At grass roots level it is a basic programming language that comes as a single sided disk one of which is full of archived accessories, the second with three demonstration games and the third with the actual language

fully debugged menu-command line that would change the mouse cursor and present windows with differing fonts etc. Obtaining this effect in most other languages I have used, has occasioned resorting to GEM calls and complex IF THEN routines. In STOS the command reads 'mouse(1)='MENU';mouse(3), 1)='item 1' and so on as far as you want menu choices. The activation of the menu is 'mouse on;mouse(1) A; c-d then print 'you chose item 'B'. Obviously this is readable and is most user friendly.

The most important part of the program is, of course, the manner in which graphics and sprites are controlled. This is simply effected using nothing more than a, y co-ordinates and the commands move and on/off. The sprites, of which it is possible to have fifteen active at a time, are image driven (without needing in-depth programming) and easily made aware of collisions, boundaries and all

these other useful things sprites need to know in order to function in games. It was so easy to make a sprite pattern that I developed a Wildlife Parks head to bounce around the screen in under forty-five minutes, and thirty-five of that was trying to get the correct curve in it's own since I am no artist!

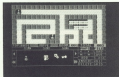
EASY SPRITE DESIGN

Writing pointed out that my artistic talents are limited it was with some relief that I discovered that there was a utility called a sprite grabber with the software that enabled the user to lift their favourite sprite and tinker with it to include in their own programs. Even better there is also a means to store Degas and Neochrome format backing screens in compressed mode

to make multi-screen game creation a possibility. Graphically there is the option of defining two concurrent screens to enable rapid and effective scroll changes, indeed the software even allows for commands to fade the pictures together at whatever rate or style is desired. The example from the manual gives a sort of Venetian blind effect for a slow change, although by a change in control windows this can become instant or explosive. The window controls (up to thirteen on screen at a time) can allow for quite complicated screens to be built and by careful programming and interplay you can almost look like the Master is installed in your machine. Admittedly when there is a great deal of action on the screen at one time things slow down somewhat but not too noticeably and, once more, the manual makes suggestions as to how to keep optimum speeds at any one time.

Once the initial euphoria of creating sprites and being able to control the wayward ST screen wares, the other features of the software become apparent, it is possible to install various accessories into the machine (although this is better with a 5040 which may be activated by function key, help menu or menu bar. Thus it is quite possible to have the sprite editor, assembler, screen compiler and text editor at finger tip command without losing other parts of the current program or programs, since each separate piece of work may be maintained at any one time.

Obviously this eats memory and is not recommended for 500s, although even they can cope with one key development and installed at a time. The really useful thing about all the accessories is that they are written in STOS and are totally extensible, thus they may be loaded from an already in state. It is also possible to create your own accessories to run within the system and run time versions of anything are possible by using a trigger supplied with the package.



itself. The system recommends that it be Auto-booted thereby relocating the ST from the structure of GEM and gaining an extra 32k. In use. The loss of GEM is not so worrying as may at first be thought since the language provides a most user friendly environment. STOS has excellent file select and menu-commands, indeed it took slightly less than half an hour to obtain a

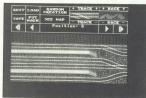
CREATIVE ACCESSORIES

Having discussed the 'built on' accessories it would seem to be a good time to comment on the most important of them. The most exciting areas of creativity are the sprites and map creators. The sprite creator looks like a standard-art package with all the palette functions, and an option to create sprites that will adapt to any of the ST's three modes. All the basic art package tools are included such as semi-circles and lines with the addition that an contractor is incorporated and changes may be saved and worked on with the minimum of fuss. The creator is, like the other accessories, user controlled and, as such, user friendly. The sprites save to a special file which is subsequently called in the program and accessed during run time whenever the Basic calls it, which saves time defining sprites in programs and also allows for modular program creation. Why waste a good sprite control routine when it can be used to govern various banks of sprites. The map maker allows for the laying of static sprites in order to create Guerilet style games. There are some quite familiar landmarks already in the memory and indeed the basic set up almost resembles a Guerilet editor.

ADD SOME MUSIC

There is also the facility to produce music, again interrupt driven, to accompany your game. The accessory is not as sophisticated as some of the most expensive software but it is extremely effective. If the writer has some basic knowledge of music then the system is even more comprehensible, on the other hand it is still a great deal simpler than programming the sounds from other Basic. These files when created and saved, again become executable linked parts of the program so, as with the sprites, your tunes can accompany many of your games. The music is controlled simply by the command music on/off and the predefined sound effects by commands such as bang, zap effects on equally easy to program should the pre-programmed library not fill your needs, they simply require envelope parameters pointing to basic statements and zap - here it is!

There is even a font designer included in the basic accessories which in conjunction with quite excellent antiy handling allows manipulation of any form of lettering, even Egyptian Hieroglyphics. The editor is quite user driven and user friendly and a joy to work with. Many useful accessories include a mouse driver, which allows the user to obtain screen co-ordinates of any



point of a Neo or Dega picture thus allowing the programming of oblongness areas for sprites to enter.

FURTHER ENHANCEMENTS

The idea of accessories that will tack into parts of the program bank means that the system can be upgraded as needed as development dictates. Already there are promises of a compiler and solid 3D additions from Mandarins. These and other such devices will surely enhance this

package. A great deal of thought and preparation has gone into creating this 'all round good egg' and at each it deserves support, which it certainly seems to be receiving. Mandarins offer a help line to all registered users. Surely a better

way to deter pirates than peculiar protocols devised and it seems one can even use Mimeron.

If the system is viewed as only another Basic then its number crunching abilities are not that of, say, its soft although handling acid that the editor on this system is one the most friendly I have come across. Perhaps in comparison with many old time Basic converts I find some security in line numbers and the discarded GOTO statements but the lack of strange windows appearing and leaving being in the wrong place to execute the command I wish on now is a thing of the past. In my mind this makes up for the 'older' approach. As a Basic it fulfils its functions adequately, and is more than competent at file handling especially with its file select and menu commands. Indeed the ability to create sprite accessories may well allow for creating a suitable working environment, perhaps from the, now included, assembler.

STOS is too powerful to be regarded as just a game creator and indeed with its extremely powerful screen handling and mouse recognition could even be used to create adventures in the mode of ChaosQuest or even adventures with action in the style of the Cinema-wars software. The three installable demo-games give good examples of how to use the system in its best advantage and are as playable as many commercial variants. One of the most interesting variants is the Orbit game which bears a distinct similarity to Arkamed and in some respects plays better.

VALUE FOR MONEY

By now it must be obvious that I am most enamoured of the package and feel that it represents extremely good value. If it is viewed only as an upgraded Basic to use instead of the supplied Atari package then it is much cheaper than any other on the market. When it is realized that it also contains the sprite creator, music writer, font creator and the three good-quality games then the whole package is an absolute bargain, and feel that it truly deserves its position in the charts. Furthermore it deserves to become one the leading languages for magazines in the future.

'I cannot recommend this highly enough'

STOS
Mandarin Software
£29.95

B BOOT

by Lawrence Staveley

How many of you have had the problem of adding a 1 Mbyte external drive to your ST only to find that you cannot use double sided disks that have AUTO folders or Accessories? It can be quite a frustration and I developed B BOOT to help overcome some of the problems.

One way to overcome the problem is to physically change the drives over which may only work if the external drive is an Atari one, or to make some hardware changes, both of which will cost your money. A software solution is far less drastic, and although not the whole answer, this program will make your system much more flexible. The program is very simple to use and is written in ST BASIC so that any user can type it in, so dig out that copy of ST BASIC, type in the listing and save it. Now follow these simple steps.

1. Format a disk in single sided so that the internal drive can read it.
2. Create an AUTO folder on this disk ready for the BASIC program to insert the machine code programs into.
3. Run ST BASIC again, load in your listing, insert your formatted disk in drive A and RUN the program. A program will be created in your AUTO folder.
4. Switch off the computer AT THE POWER SWITCH.
5. After a few seconds switch the computer on again with the disk on which you created your AUTO folder and as the boot disk in drive A. You should shortly get the message to "PRESS RESET", if you don't get this then there is an error in the BASIC program, and it should be checked and re-run.

If you have got this far you should now have a working version of B-BOOT. Simply insert a 1 Mbyte disk containing an AUTO folder in an ACF file that you wish to use in the external drive and PRESS RESET. The computer will read the boot sector from drive A, and will then continue the boot with drive B as if it was drive A.

There are one or two problems which the program does not solve. The first is that software that loads from the BOOT SECTOR cannot be run from drive B. This is not very serious as ALL commercial soft-

ware is supplied on full floppy disks. The second problem is that if a program changes the drive handle back to A the computer will revert to drive A. This can often be changed by using a program like ANTE'S DISK DOCTOR to search for filenames and change the drive identifier. The only other thing that might cause a

problem is not really a fault of the program, if there is a DESKTOP.DBF file on your disk that is set up with a window open for drive A then the computer will read the directory for drive A. The only way to solve this is to set up the window with drive B open, save the DESKTOP.DBF to drive B, and then copy this file onto drive B. ■

```

100 REM ORBITAL PROGRAM FOR
101 REM B-BOOT, WRITTEN IN ST BASIC
102 REM
103 REM WRITTEN BY LAWRENCE STAVELEY
104 REM POK PAGE 6 MAGAZINE
105 REM
106 REM ENSURE THAT YOU HAVE MADE AN
107 REM 'AUTO' FOLDER ON THE DISK FIRST
108 REM
109 REM WRITTEN IN ST BASIC - '87 VERSION
110 m=&h0000:follow Sclairw 2.7.7
111 for t=0 to 5 step 2
112 read a:poke n+t,a
113 next t
114 for t=0 to 25 step 2
115 poke n+t,&h0000
116 next t
117 for t=06 to 67 step 2
118 read a:poke n+t,a
119 next t:?"Creating A:AUTO\BOOT.PRG":?7.7
120 leave "a:auto\boot.png",&h0000,68
121 REM ONE DOWN, ONE TO GO....
122 n=&h0000
123 for t=0 to 5 step 2
124 read a:poke n+t,a
125 next t
126 for t=0 to 27 step 2
127 poke n+t,&h0000
128 next t
129 for t=28 to 71 step 2
130 read a:poke n+t,a
131 next t
132 7.7.7 "CREATING: A:AUTO\POWER_UP.PRG"?
133 leave "a:auto\power_up.png",&h0000,78
134 end
135 REM ** BOOT.PRG - DATA **
136 REM *****
137 data &h501a,&h0000,&h0069
138 data &h1177,&h42a7,&h002e
139 data &h0000,&h4a41,&h0d0f
140 data &h0000,&h1044d,&h0001
141 data &h0000,&h1044d,&h107c
142 data &h0001,&h107c,&h000e
143 data &h4a41,&h0d0f,&h0004
144 data &h002e,&h0000,&h4a41
145 REM ** POWER_UP.PRG - DATA **
146 REM *****
147 data &h601a,&h0000,&h0064
148 data &h107c,&h0000,&h0000
149 data &h107c,&h0000,&h4a41
150 data &h0d0f,&h0004,&h4a41
151 data &h0000,&h00010,&h006d
152 data &h4000,&h0000,&h0046
153 data &h0046,&h0040,&h0000
154 data &h0000,&h0000,&h1000
155 data &h0000

```

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Prospero C

for the Atari ST

The C compiler market is an interesting one to join. Obviously C is a very popular language, but the marketplace is already served by a number of well known, professional compilers, like the Lattice and Black Williams compilers. To enter the market now you have to provide something better than is already there and Prospero C does do that - by providing a fully integrated environment (that used in their Fortran), the PROBE integrated debugger, and ANSI standard compatibility.

FOUR MANUALS

Prospero C, hereafter referred to as Pro C, comes on a package containing three single sided disks, and four covered ring bound manuals in a slip case. The disks contain the necessary programs, but some source code files, as well as library header files. The manual explains how to place the files according to your disk drive set up. If you have a hard disk (or 1 disk), you may place them more or less where you like - you can configure the compiler to find them anywhere.

The four manuals each cover a major area - the compiler and utilities; the C language library; GEM ADS and GEM VDS. The latter two are very thorough, giving not only the parameters, but why you would use a function and example code. It is not quite perfect - I notice for example that `vt_load_font()` does not mention that GDS must be resident or it will crash - but they are very good nonetheless and I am pleased to see them.

The main manual covers the installation, compiler and utilities; the language definition; Prospero implementation and options; and more than will be shown by the compiler anyway. Each topic is covered well, though some more obscure subjects could do with more elaboration - I have yet to see an understandable explanation of the new # preprocessing token.

The fourth manual is the Prospero C library reference. This is in two basic sections, the first covers functions by the header file that they are declared in and so is a headliner by classification; and the second section contains function descriptions. I am pleased to see that each function has its own page in the alphabetical sequence - unlike the Lattice manual which lists `printf()`, `printf()` and `sprintf()` under one name. The user is referred elsewhere for full detail, but at least it is easy to find. The C library includes all the old favorites, but also some I did not expect. Features for device drivers, floating, and (hardware), as well as a `deviceop()` to tell you which devices are attached are useful extras. Each function is indicated as ANSI standard or not, so portability may be maintained.

The first program I decided to write was a small utility to run another program and then hang. It may not sound useful, but it allows me to park the heads on my hard disk without having to close the window and run `SHIP.PRG` from a floppy. My first attempt caused the system to boot, and I eventually found out that you must pass at least one parameter (as well as the filename) to the `spawn()` function - something not mentioned in the manual so I presume it to be a bug (not uncommon in any



reviewed by Matthew Jones

large library). The next program was much more complex, and all library functions worked fine, so I suppose it is an isolated problem.

THE PRO C ENVIRONMENT

The Pro C environment incorporates a windowed editor which can manage up to four files to be edited at once. The editor understands many Windows and Macintosh style key commands and is acceptable, but it does have its problems. Mouse integration is not good, as using the scroll bars causes a lot of mouse shape

changing and the re-flow is much slower than the equivalent key command. The biggest pain for me is that when you select a block, the Delete key deletes the single character under the cursor, not the block. It also tend to expect it to work on the Mac and Microsoft Windows etc, and delete the block when I type something else - but it just adds the new stuff to the block. This is a problem of application consistency, and the fact that GEM applications aren't consistent is partly due to the lack of application guidelines that the other systems have. The editor also uses spaces for tabs, which as I have said before is terrible for programming, but no Atari editor yet supports real tabs. Apart from mouse speed and block iterations, the editor is good.

COMPILING

Once you have your file, you can then use menu options to compile and link it (separately or together). Compilation is regulated by a set of options which control such things as strict ANSI adherence, char is unsigned, generate compact code, include printer, tables and assignment checking. Other options allow you to compile a file that is not in the editor (it is also possible to use the compiler as command line driver) - necessary for use of the demo programs due to insufficient memory on my 320; to just check the syntax; or generate a cross reference. One point I found annoying was that the line number shows on the dialog but errors includes lines read from the include files, that the error which it says occurs on line 543 of your source file may actually be on line 47, so noting the line provides no help. It would be nice to see the first line(s) error renumbered so that the compiler could take you from error to error for debugging. At first, I felt it was quite a slow compiler - 15 seconds to compile and 23 seconds to link a simple 'Hello world' program which included `stdio.h`. I compiled it to `Lotus C` and the command line remains identical, and it takes the environment less a slight handicap, probably due to memory overlays. The manual does not mention optimising the output at all, something which is becoming more standard nowadays.

At about the time I started to write this review, the December issue of PCW magazine came out. It has an article by the BSD on ANSI standard compilers, and two short programs to test compilers. Pro C fails both! Obviously in any complex program, there will be some small bugs, and Prospero say that they will continue to tighten the compiler to the specification, correcting

Completed - in triplicate

FORTRAN, PASCAL AND NOW C

For some two years Prospero have provided the complete programming solution to the Atari ST and GEM, provided you wished to program in Pascal or FORTRAN, and indeed a good many of you did. However it was always clear that a hole existed in the market for a top quality C compiler with full access to GEM and an easy-to-use environment. We believe that we have filled that hole.

Completed family.

Choosing a programming language has always been a problem. Each language has its own strong points and you always seem to want those features not in the language you have. Therefore our three languages are fully interchangeable, so you can get the best of each language in the same program. Better still the three products all look and feel the same so you always feel at home with each.

Completely Standard.

Another problem with programming has been that source code is not as portable as you may believe—most C's are the same. We have done our bit to lessen the problem by making all our compilers contain the standards so that if the text book says your compiler should do it then ours will.

Completely Documented.

There is not much point in having a powerful compiler and GEM library if you can't use it, so we provide very extensive documentation. For example each GEM function comes with a definition, explanation and an example. The C version of the manual contains 1000+ pages and stretches to four volumes!

Complete Package.

We've mentioned the 'environment' but people who don't know Prospero might not appreciate the full extent of what we put in, so here goes: Compiler, Multi-window editor, super-fast linker, libraries, source level symbolic debugger, program cross-referencer, documentation, technical hotline support and example programs. For the really busy busy programmer we have hardware floating-point libraries available as an extra.

Complete programming solution.

So we now claim to have the complete Atari ST programming solution in Pascal, FORTRAN and C, and it is all available now off the shelf. Pascal is £99.95, C and FORTRAN are £129.95 each.

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as discrepancies become known. If you find and report a bug you will receive a free upgrade when it is fixed.

LINKING

The linker can be told to link without floating point libraries, with the GEM libraries, or with a control file. The control file allows a program to be made up from more than one source file. It is at this point that I want more from Pro C. Everything that it does, it does competently (it has never even bombed on me!), but I have been spoilt by the Macintosh and IBM PC world. Unlike integrated editor-compilers on those machines, Pro C has no intelligence. I am used to flipping between each of five or more source files, and when I feel ready, choosing 'compile' and having it link and thank 'tanks, he's changed these two source files, so I had better re-compile them before linking'. This principle - the MAKE principle - makes programming easy and fast so you cannot forget to re-compile a module. Because the system has a list (which it helped you build) of the source files, it knows what to tell the linker to do. Such an environment really does help and Pro C is not yet it - but is the next best thing.

THE DEBUGGER I DREAMED OF!

FROM the source level debugger, is something I dreamed of from age, and of that it is possible on the ST. That said, it is by no means up to CODENVY on the IBM, but it has all the essentials. Once you compile your program, generating line numbers and a source listing, you may use PRODB to debug it. Debugging with FROM can be initiated from the environment, or from the desktop. When the program under test starts, you can show the current line (from the listing file). You may then step through the program, tell it to re-execute a number of lines, or tell it to go until it gets to a line. This ability to stop where it gets to a line is very powerful so you may specify a range of lines in a particular file, or a variable changing. The latter may be subject

to a condition, so you can let the program run until the variable 'loop' gets to 999. Such capabilities allow debugging to be much faster, especially on multiple 'debuggers' can be specified. You can also find out the functions calls made to go to the current location, or view the route which the program took to get here (i.e. the most recently executed lines). These answer the age old programmer's question 'but how did it get here?', where basic facilities include enabling or even swapping (so windows etc. can be maintained), on-line help, listing files, profiling (so you can find out which parts are used most - very valuable). PRODB will also work with a machine code debugger if you need it.

Another essential aspect of source level debugging is viewing variable contents in the appropriate form (i.e. as an integer or string, not just a string of hex digits). You can obtain displays of local and global variables (including strings) and change them too. If you don't have source level debugging you should buy this now. For six months I had been using CODENVY on the PC. Then came to work on the ST - and couldn't remember how you debugged on the ST - true! Being able to watch your code execute will at least double your productivity.

CONCLUSION

Prospero C will in future be my compiler of choice on the Atari ST. It supplies what I need in a compiler - ANSI standard, an integrated environment and source level debugging, but there is still room for improvement. I have mentioned compilers on the Macintosh and IBM PC which take integration steps further, but Prospero C is a step in the right direction for the Atari, and it will please to provide us with better yet - I shall pass on my wish list.

Prospero C costs £129.95 and is available from Prospero Software Ltd, 99 Chichester Lane, London SW15 2NL, 01-741-6331

THE LIGHT FANTASTIC

*John S Davison looks at
a year in one man's life*

Remember all those Llamasoft adverts on the back of Page 6 saying "ColourSpace 2 - Coming soon"? Well, our programmer (all Mattie finally delivered it in the form of Trip-A-Tron, his most advanced light synthesiser yet). It turns your computer into an instrument for producing animated light and colour graphics displays, usually as an accompaniment to a piece of music. It's not a sound-to-light converter - MIDI have to do the plotting.

Trip-A-Tron comes on two disks in a very smart, yuppie-type deluxe style binder. The high quality illustrated instruction manual runs to 177 pages and took Jeff longer to write than it did to code the whole of what's on his early game! It's written in Jeff's usual sexy style, making learning the program's features a pleasure instead of the chore it could easily have been.

The program comes with pre-arranged auto-loading demo files, so after just a few seconds familiarisation you can be viewing a breathtakingly beautiful exotic light-show of your own making. You'll produce pleasing results too, as it's virtually impossible to play the visual equivalent of a "burn rate". In fact, one of our was a night design aim, implemented masterly through a series of mouse and control screens the like of which you've never seen before. They're liberally sprinkled with humour, and usually involve horses, sheep, or camels somewhere in the design.

There's enough demo material supplied to keep you going for a long, long time as well as virtually the whole keyboard has been mapped with many colour points, pattern theory, pattern expand, symmetry change, start-field, stroke, and tone effects.

The demos and presets are only a starting point though. You have access to all Trip-A-Tron's control functions, allowing you to customise the whole thing for your own purposes. For instance there's the Colour Cocker for building customised colour palettes, colour rotation, torging, and smooth colour flows from any colour to any other. There's the "Sillyscope" for customising simulated laser dot and line displays by choosing driver waveforms and other parameters. You can even create your own waveforms using the waveform and oscillator editor. You can also edit your own demos, expanders, and line patterns for plotting on screen in response to

music movement. All of the above can be done on any ST, but certain other facilities require a minimum of 1024K memory. In this category we like starfield editor, video sequencer, and event sequencer. As you'd expect, the starfield editor allows you to create your own animated starfield effects. The two sequencers are probably the most powerful features of the program. The video sequencer allows you to load multiple MacDraw, Degas, or RLE (Rain Length Encoded) pictures into a framestore and then manipulate them in many ways. Functions available include rotation in three dimensions, reflection, scrolling, resizing, replication, projection, filtering, texturing, and frame sequencer display to produce picture animation. All this uses memory, so the bigger your ST the better. There's room for only 18 frames in a 1040K, which is a bit limiting, but you can get 130 or more in a Mega ST4.

The event sequencer is a method of creating lightshows events in real time on up-to-eight independent tracks. You can then play them back to they automatically trigger at the right time, allowing you to concentrate on other aspects of a performance. It's similar in concept to sequencers used with sound synthesizers. Events include such things as stroke effects, symmetry changes, and animation sequences.

Trip-A-Tron even has its own built-in programming language. This is RML (Rascal - get it?) or Ray Macro Language. It allows you to write programs to control and automate Trip-A-Tron's multi-

trade of facilities and assign them to triggering keys on the ST's keyboard. You can have up to 128 programs resident at any time and up-to-EGHT running in parallel. RML can read MIDI data from a music keyboard too which opens up some extremely interesting possibilities!

All the customised elements you create may be saved out to disk for later use. There are twelve different file types for this, so the handling can be quite complex. To simplify it there's a good file access menu and a macro-loading system for handling groups of related files.

Jeff Helmer has dedicated a year of his life to creating Trip-A-Tron. It's a massive investment of time and energy, and it shows in the high quality and versatile nature of the final product. Although the program has been reviewed before more of the reviews have really explored the depths of Trip-A-Tron but there's

not really surprising. How can you condense into a few hundred words something that has taken this amount of time and dedication to produce? This time is referred to the relatively high price. ColourSpace owners can get a 10% discount by entering their ColourSpace disk direct to Llamasoft. Trip-A-Tron is a magnificent piece of software, taking the ST into new realms of creative possibilities. Buy it soon and experience them yourself.



TRIP-A-TRON
Llamasoft
£34.95

AS EASY AS ABC

With so little educational software on offer a new series from softstuff looks promising so John S Davidson takes a look to see if this might be the start of something good

There's always been a shortage of educational programs on Atari computers, so I was very pleased to see this new CD release from Softstuff, a new software company aiming to specialise in educational packages.

Predicting a successful educational program, particularly if it's aimed at young children, is not as easy as you'd think. Amongst other things the program has to be friendly and easy to use by its intended audience, it must be able to capture and hold the child's interest, be flexible enough to cope with different skill levels and reinforce but conflict with other means of learning, particularly school work. And, but we should forget, it should also teach something worth learning.

Spell Book tries hard to meet these criteria. It's a simple reading and spelling 'game' aimed at children in the 4-6 year old age group. It's based on the idea of displaying a picture of a familiar object and inviting the child to spell out what it represents. A correct answer results in one of several children's songs being played plus a number of points awarded depending on how many attempts were taken to get it right.

The first thing a child notices about a program is its presentation, John Kinsbury, Spell Book's programmer, has ensured the program's displays are big, bold, lettering and bright, attractive colours. The graphics work (produced by artist Stephen Taylor) is clear and unambiguous, and the prompts should pose no problem in correctly identifying the required words from the pictures. My only gripe about presentation concerns the sound of the program rather than its looks. Tilted screen music and musical rewards use only one sound channel, and the result is monotonous. On that heading even my seven year old son Peter remarked how awful it sounded.

One of the biggest problems with educational programs in their use of the

keyboard, young children are initially taught to read and write only lower case letters, so giving them a keyboard marked in upper case often results in needless confusion. Softstuff have tried to avoid this by



using only the mouse. This is an excellent idea, but only if it can be done easily by the youngest children at whom the program is aimed. Unfortunately, Softstuff have managed to make the mouse operation more complex than it could be. To spell a word you pick up letters one by one from the alphabet grid at the bottom of the screen and place them in the spaces provided under the picture but you have to click the LEFT mouse button to pick up letters, and the RIGHT button to put them in place. If the letter isn't precisely aligned with its space you can't put it down, and if you accidentally pick up the wrong letter you can't put it back and choose another. You have to position it in the word you're building and then click on a background icon to erase it. This all seems rather complex for a four year old child to handle.

Another quibble is that there are only 26

words to spell - one for each letter of the alphabet. This seems rather miserly for a program costing almost £20. Softstuff say they'll be releasing entire word disks of £9.99 each, but this could make the whole exercise very expensive. Also, the choice of some words strikes me as a little odd. Most are OK, being words of three and four letters like AMT, EGG, and BEGG, but for the letter 'O' the word is OCTOPUS. On the other hand, I guess even a four year old kid like the occasional challenge!

The program handles three skill levels - not by using harder words at lower levels, but by giving extra attempts at getting a word right and supplying visual clues as to which letters are wrong in the event of mistakes being made. If the play option is used both players have to use the same skill level, which is a pity.

The total words spelled correctly and incorrectly are shown to each player at the end of the game. These numbers are then presented as a single piece of arithmetic showing number right minus number wrong. It's possible for this to produce a negative answer, in which case the program displays 'More Wrong Than Right'. A score is also displayed, calculated from the number of words spelled correctly with deductions for mistakes. Also by way of review, all the words the child has attempted are displayed in sequence, but the ones correctly spelled then the incorrect ones.

I hate to say it, but Spell Book was a disappointment. It has enough rough edges to put me off buying it, and with its limited vocabulary of only 26 words it doesn't seem good value for money. With a bit more polish and an expanded vocabulary the story could be different. Softstuff have obviously tried hard to produce a good quality product for this difficult area of the market, and we should appreciate them for doing so. I look forward to seeing their future releases.

SPELL BOOK
Softstuff
£19.95

AUTOROUTE

It is quite rare nowadays for a program to come along that is truly unique. Almost every program is a variation on an established theme, another word processor, another database, another cut package or yet another game so when something totally new comes along it becomes quite exciting. In this case the program is Autosroute, which has been around a while on the PC's but now makes its way to the ST. Autosroute is just what the name implies, a route-finding program for the whole of mainland Britain based on over 47,000 miles of Ordnance Survey mapped roads. With Autosroute you need never look at a road map again and what's more it will also tell you how long your journey is going to take.

FORGET THE MAP

In the time it will take you to walk out to the car for the map, you will have Autosroute up and running. The program is very easy to use, no map-reading skills are involved and you don't even have to be able to spell because the program will give you a choice of places for names it doesn't recognise!

Initial choices for set-up are the choice of miles or Kilometres, speed, road preferences and choice of route. All these are simple drop-down menus with the speed on a predefined selection of 20s, Normal, Road Home, GTI or HW. These speeds are all fairly realistic and conform to the speed limits but you can change them if you wish and save your settings for future use. The route selection allows you the choice of: A Selection, Shortest, Quickest or Most Economic and whilst these are convenient headings they do throw up one or two anomalies such as the 'Quickest' route sometimes taking longer than the 'Shortest'. The routes really depend on your selection of road preferences and the 'Quickest' is really the optimum route using your preferred class of road.

Road preferences are made by using slider bars to indicate your like or dislike of certain roads such as Motorways, A roads and B roads. You can also indicate if you like or dislike changing roads. Whilst this certainly works in determining the route chosen, the slider bars don't really give much indication of how the route will be affected unless they are right over to the 'Like' or 'Dislike' markers and this is probably the weakest part of the program. The journey details allow you to record certain locations but this is not quite as flexible as it could be.

LET'S GET MOTORING

The best way to test the program is to enter a familiar journey and so I dropped down the Journey Details menu and entered Stafford as a starting point and Hadleigh as the destination. That will catch it, I thought, as most people know Hadleigh as being in Suffolk but up-popped a selection box asking me to choose between Hadleigh, Lems and Hadleigh, Suffolk. Nice going, but you do need to be careful as entering Hadleigh in Scotland to distance of 4 miles gives you a route of 608 miles! What? Did you know there was also a Hadleigh on the South West coast of Scotland?

After 30 minutes or so of calculating the routes started popping up on a sliding bar gave an indication of the progress of the searches. Quickest Route (17) miles in 2 hours 17 minutes, Shortest Route 167 miles in 2 hours 44 minutes and so on. Four routes in all were given before it was time to Exit and select whether to view the map or the route as text. Clicking on Route Map shows a map of the whole route with all the selected routes down and the main route highlighted by a flashing line. On a

Is there such a thing as a unique program nowadays? Les Ellingham travels the length and breadth of the UK to find one!

colours system this alternates between blue and red and is slightly harder to pick out than on a mono system. At this stage certain keys or the mouse may be used to enhance the map.

Selector boxes allow more or less detail to be shown, whilst keys allow, among other things, auto-rotating of locations to be switched on or off, route flashing to be toggled on the route map to be printed on or on an Epson compatible printer. More and more detail can be added to the map to an impressive extent but with auto-rotating the whole lot rapidly becomes unmanageable. The rotation is in fact auto-rotating-off and select each location with the mouse, place and road names can be switched on or off at will. Any point on the map can be chosen with the mouse and zoomed in upon, again to an impressive extent, right up to something like 2" to the mile!

How did my Stafford to Hadleigh route fare? Quite impressive, it picked out exactly the route I always take and a time that was very close to the actual. One of the other routes given was the route I used to take before the M15 opened and there were also a couple of minor variations that I had not thought of before, neat by then!

VARYING THE ROUTE

When entering the Journey Details you are allowed to indicate that the journey should go via up to four different points with provision for stopping time at each and you can also indicate that you wish to avoid certain places. If for instance you normally take a set journey but fear on the news that Junction 17 on the M1 is closed you can simply enter your route as avoiding Junction 17 and in the time it would take you just to find Junction 17 on a conventional map, a new route will have been worked out. One thing that does not work too well here is that you can't indicate that you want to avoid the M1 entirely, this can only be done with the slider bars mentioned earlier which causes problems if you want to avoid the M1 but join the M6 later. Journey Details doesn't let you avoid the whole of the M1 and the slider bar will normally select a route avoiding all motorways.

Journeys via certain places work very well however and, by using the slider bars and accelerating the route an amazing variety of routes can be selected. The route timing is excellent, assuming no hold-ups and will give you a very good estimation of your journey time given a starting-off time at, better still, you can indicate what time you wish to arrive and the program will indicate what time you should set off.

GOING ON HOLIDAY

Working out routes from one point to another is quite straightforward but what about working out a touring holiday? Let's take as an example a day trip around North Wales starting from

AUTOROUTE



1. The overall route chosen from Reading to Reading, in this case mostly down the Motorway. By using the slider bars on another menu we could have avoided the motorway and selected a route on A roads or even on B roads, in the latter case the journey extends to over 200 miles and takes 32 hours!

Distance	Time	Fuel
100.00	00:00	00.00
200.00	02:00	02.00
300.00	04:00	04.00
400.00	06:00	06.00
500.00	08:00	08.00
600.00	10:00	10.00
700.00	12:00	12.00
800.00	14:00	14.00
900.00	16:00	16.00
1000.00	18:00	18.00
1100.00	20:00	20.00
1200.00	22:00	22.00
1300.00	24:00	24.00
1400.00	26:00	26.00
1500.00	28:00	28.00
1600.00	30:00	30.00
1700.00	32:00	32.00

2. The print out on screen of our selected route. Any of the routes selected can be printed out in full A4 size on any printer. The maps can also be printed out but an Epson or Epson-compatible is required.



3. The holiday route described in the text showing a circuit route through Stourminster in a more Northernly route close to the coast. This route was calculated using the standard settings but an alternative route could have been found using more B roads.



3. Not a very practical exercise in route finding but included to show the level of detail available. This is the same route as above with added detail. Any of the roads or locations can be clicked upon to be identified. If you zoom in on particular locations the level of detail stays the same but with the map at a larger scale it becomes really readable.



4. The start of our holiday route. A circuit route can be selected by giving the same starting point and destination but be sure to give a reasonable choice of places to go into, otherwise you just end up with a route that is the same there and back. Note that stopping times can be given for each location. If you wanted to visit more places it would be necessary to split the route into several sections.



4. If you require more detail on any section of the route, you can simply zoom in on any chosen location. The detail is obviously not as great as would be obtained from a conventional map but is nonetheless quite adequate for monitoring. Notice that the usual GEM slider bars can be used to study adjacent areas.

HAVE A NICE DAY OUT!

SWEENEY'S *NOTEBOOK*

BLOOD BUGS BAFFLE BRITAIN'S BRAINS

Seen Captain Blood on the ST? Great, isn't it? Played it? Pretty good, isn't it? Finished it? NOOO! You didn't give up, did you? You did! Shame on you - well, no, to be honest, actually it is not disappointing at all - if you DID manage to finish it. COULD have been a Captain Bloody disaster: the UK ST version of Captain Blood has a number of significant bugs which make it COME PLATELY inevitable!

But never fear, Sweeney's notebook is here to help you. All you need is a little bit of information and you can bypass the bugs and finish the game (and the last screen is worth seeing - makes your blood start churning again even though you've defeated all your demons). All is revealed below - but don't worry - no claim to spoil your enjoyment, just necessary data!

Your informant is going when he says that the third blooded planet is 15. What he really meant to say was 20!

Woodsy Pitman and Ingrid? Both claim their planet is called 202117 80 - one of them is going. What he meant to say was that his planet is called BAD 12AM!

If Good-Looking Stranger (the Bugger on Radio 2) gives you a set of co-ordinates provided by an 'L' then you may not be able to use them

can give you the correct co-ordinates. Unfortunately, a further bug means that if Good-Looking Stranger is the FIRST alien you meet when you start the game, then Good Stranger (the Migrant) may disappear before he can give you vital information leading you to that other planet, so, if Good-Looking Stranger is your first encounter you should visit that game.

After you have completed a task for the Boss on planet 1228 he will tell you that he will give you some information. Unfortunately there is one combination of circumstances under which he fails to do so. If you let this time go and think of something to do with or say to him, then come back to the Boss.

Occasionally you will be given co-ordinates for planets which appear unimpaired - this appears to be due to a time warp caused by the fact that you haven't done something yet that they assumed you would have done. What you need to do is push down 'I' (add 1) to each letter so as not to spoil the fun for those who don't want cheats!

Is off you go and finish it now!

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AUTOROUTE continued

home (staffed again). If you know which places you wish to visit then they can be typed straight into the journey details, or you can check a conventional map for interesting places that you can fit. Autoroute do almost all of the work for you.

First thing to do is work out a simple route from your starting point to the furthest point you are likely to visit and this will produce a map of the whole area you will visit. Clicking on different parts of the map will show you all of the place names and you can always zoom in for more detail. Any one route can only go via five different places so if you want visit more than that the route will need to be split into two or more sections. So, let's pick a few points. Bangor over on the coast to have a look at the castle, stay there about an hour, then down to Cricklethorpe for perhaps a quick visit to Parliament. Allow another hour for that then on to Devil's Bridge for half an hour before returning home via Hereford. Looks okay for a day, so let's set off at 8 o'clock and see how it goes. A couple of minutes calculation gives us four routes to choose from and a time of just over 8 hours, should be back in time for tea! Study the map for a few minutes, choose your route, print it out and off to the car!

The beauty of it is that you don't need a map in the car and whereas navigating does not need any map reading skills at all - that could save a few quagmires! The route is neatly printed out with details of all roads, the distances between turning off onto another road, the compass headings and the places to look out for on road signs. If you keep a eye on the milestones even the lark could tell you the entire route!

MORE THAN JUST A PROGRAM

Autoroute is great fun just to play with, particularly if you have any interest in maps or travel but it is for more than just another program to play with. If you travel on business, you could find it an invaluable time saver and with a little practice you need never again be late for an appointment. Now can plan new day trips, go to familiar places by routes you have never thought of

or plan a whole weeks touring holiday with customised routes available day by day. In short whenever you need to look at a map before getting into the car a couple of minutes with Autoroute will save you a great deal of time and cost will certainly make your journey easier.

After you have used Autoroute a few times you do begin to wonder "is that it?" because there can be few trials or extras, it does what it supposed to do quickly and simply but isn't that exactly what a good computer program should do? The "bawdy" bits on other programs lose their appeal after a short time but Autoroute will last as long as you keep driving and few other programs will have that sort of life!

GO ON, BUY IT!

Autoroute is a cracking program for anyone who travels at any time but here's the rub - the price is £149.95. Seems a lot but the program will probably appeal mainly to business users who are used to paying that kind of money and it will probably not sell in vast numbers. There is also the fact that the maps are based on Crown Copyright Ordnance Survey material and the rights to use that do not come cheap. Any business user can easily justify the expense but for personal use? Well, you would probably pay a similar price for a couple of applications or half a dozen games and you will certainly get as much use from Autoroute as you would from a word processor or DTP package. Autoroute will run on any ST but the route finding will slow down considerably on a 520 due to the fact that there is insufficient memory to hold all the routes. The penalty is lots of disk swapping but even that will probably be quicker than working out your route from a map. Give it a go, it's not every day that a truly unique piece of software comes along!

Autoroute costs £149.95 and is available from Next Issue, Unit 18, Central Trading Estate, Staines, Middx, TW16 4XL. Telephone 0752 60077.

CHRONO QUEST**Psygnosis****£29.95**

*Reviewed by
Damon Howarth*

This is an adventure game in the style of *The Uninvited* and *Dejo Vu* in so far as it is controlled by icons. It would appear to be *Psygnosis'* last foray into the adventure field and is presented with their normal colourful flair.

The colour picture on the box above is essential for the copy protection scheme, since it is through this and a cue through grid that the predominant colour has to be used to to ensure the game will start. While this sounds simple they took the time to do so on our loading it took the time to do so. The dominant colour of some of the multi-coloured squares, if you happen to be colour blind you can forget *Chrono Quest* altogether! Once I found get the program to run through it was well worth the effort as the artwork of the game is set to rival the best of *Magical Scrolls* and it is also beautiful!

The task that is set is to clear your name



of the murder of your father by finding the evil assassin who has done the dirty deed. The story starts in a French chateau where the adventure needs to discover the just-chance that operate the time machine. This is where the story becomes novel as there is a great deal of B. G. Wells type Victorians to cope with while counting across many strange items. There is a strict order of visitation to the time zones and should that be done wrongly then the quest will fail.

The control system is very friendly with some nice jokes built in the secret room of the chateau and even allows users with more than one drive to direct the drive used for the other 3 data disks. I found that the whole effect best itself to the point the adventure was set to and the game was not too difficult to get in to.

There are the odd spelling mistakes and sometimes the objects that are placed do not always go where they are placed at. The program is somewhat bogging of this and therefore ends in the spirit of the move as opposed to the actuality. Having said that and commending *Psygnosis* on their expertise I still feel that this style of adventure limits the user to the user command and if the handbook is to be believed then ST users do not need or have so many command options as their Amiga cousins. In conclusion *Chrono Quest* has a good plot with a workable control system, effective artwork and better than average game-play. I quite happily recommend it to most adventures of some experience, even to the last only guests who could well find it a refreshing change and a definite relief from *Prozac* hunting!

THE GRAIL**Microdeal/MichTron****£19.95**

*Reviewed by
John Sweeney*



The Grail is a graphic adventure which was the excuse for all its input. It is sort of cross between a comic strip-and-a fighting fantasy-style game. The full screen graphics show the scenery, including you, a powerful wizard, and the characters you meet. The graphics are excellent, fantasy-style hand-drawing. By pointing at the characters you get their dialogue displayed on the screen, just like the word balloons in a comic. On that you very occasionally have to point at an object, but the instructions don't bother to mention that! If part of the dialogue turns black when you point at it, then you can choose to click on it in order to move on through the story. Sometimes there will be multiple sections of black dialogue - then you have to make a choice - just like old-time adventure books filling the steps these days! Your objective is to find the Grail in order

to cure all the lords of the dreaded 'rusty disc'! If you make the right choices (and most of them are fairly obvious if you read the book of the box where it says "the Grail can only be approached by a pure soul", wonder created long enough to meet all the local deities (which takes an UNUSUALLY long time since the picture loads take 18 to 28 seconds every time you enter), and do a small amount of mapping, then you will probably finish the whole thing in three or four hours. On a 16th machine you can create a 384K RAM disk and copy disk 2 into it - this speeds response up to 5 to 6 seconds and you will probably finish a lot quicker!

Make sure you turn the volume up to get the odd sound effect, and read all the little

notes from your companion - a grammar fellow gives to dropping each gem as "Did you see that half-decomposed leggy crawling on the floor?"

Watch out for the *Sore/Station* routine: I met a new character, did a *Sore* (*Flower-market*), and he disappeared! I tried a few buttons (*Find Flower-market*) and he reappeared about 5 or 6 times!

There are too few choices, no real puzzles, and not a lot to do really. Shame, because the pictures are good and so is the concept. The whole thing seems more in the nature of a sampler than a full-price game. If it was quarter the price then I could thoroughly recommend it for the 1640. How can Microdeal publish something like this at the same price as such excellent value games as their *Tanglewood*?

LOMBARD RAC RALLY
Mandarin Software
£24.95

*Reviewed by
John Davison jr*

Lombard RAC Rally from Red Box/Mandarin Software is a realistic simulator of the world famous motor rally. The car in which you must partake (the grunting test is a 800hp Ford Group A Sierra Cosworth). You must complete the five qualifying stages, down winding roads and mud tracks, through forests and over mountains ranges (although I wasn't aware there are a vast number of snow capped mountains near Telford, which is where some of the action is based). As well as these hazards you must navigate your way at night or through thick fog. If you manage to finish a section within a qualifying time you are awarded a cash prize which can be kept or used to put towards the workshop repairs of any damage your car suffers.

Upon loading the game, you are greeted with a fairly ordinary loading picture, by a menu giving you the options to race a full rally, to compete in any one of the five



stages (each consisting of three sections, to repair any damage which has been inflicted upon your car (provided you have enough money) or to participate in a T.V. interview to gain extra money. This 'interview' is in fact a quiz where you have answer certain questions related to the rally in order to win the money. You are awarded cash for each correct answer and you lose money for each wrong answer.

Once actually racing, the view which you have of the rally is from inside the car behind the drivers left shoulder. The screen is about two thirds filled by the view of the dashboard with the remaining third being the three dimensional outside view of the road and the scenery. The instruments on the dashboard all work and are in the positions which you would expect to find them. The outside view is well drawn and animated smoothly with many varying objects by the roadside ranging from sign-

posts to trees and hollards. Also, very occasionally you may meet other cars on the track and these too are well drawn to the point of being recognisable makes and models. The most impressive piece of animation within the game however has to be the driver. Each time you move the steering wheel or change gear his arms move incredibly smoothly and realistically. Considering their relatively large size and the ST's lack of a better this movement is most impressive, particularly when he reaches across to the gear lever to change gear.

The sound in the game is fairly dull and unimpressive apart from the beginning of each section which is considerably more impressive than Red Box's last effort on 'Increasing Wings'.

The game is very easy to control and is really as playable as any other driving game. Overall I enjoyed Lombard RAC Rally as it is a simulator which is not spoilt by going 'over the top' in a way which makes it too complicated to play. The comprehensive manual not only tells you how to play the game but also gives a history of the rally. Mandarin claim that the game was written 'with the help of RAC drivers to guarantee its authenticity', and it shows in the game's realism. Overall a very good game which can certainly be recommended.

HOSTAGES
Infogrames
£19.95

*Reviewed by
John Davison jr*

An Embassy has been overrun by a group of terrorists, and your job as the head of the Terrorist Intervention Combat Team is firstly to place your crack commandos in nearby buildings and then position your team of specialist paratroopers on the roof of the Embassy. After descending the side of the building by rope, protected by the commandos, these paratroopers must infiltrate the building and search for the hostages and their captors.

The game loads with a most impressive animated sequence as the terrorists arrive in their car. The sequence is accompanied by some very good sampled sound effects. The game then moves onto the first section where you must move your team along the dark alleyways avoiding the terrorists' sweeping searchlights and gunfire. If you manage to position any of the three men



in their places you can then give control of the paratroopers as they descend down the side of the Embassy and in through the windows. Once inside you move your men around in search of terrorists and hostages by guiding them from room to room with the aid of a map.

The whole game at first seems very impressive, and as you begin to play the first section it appears to be very exciting with its eerie sampled-drum beat and dark atmospheric graphics, however after many repeated attempts to actually get anywhere with the game the novelty begins to wear off and it becomes tedious when you have to repeat whole sections. Despite this the game is fairly easy to get to grips with in the way of control, although some actions seem fairly clunky at first.

In appearance the game fits into the style which Infogrames seem to have developed for themselves and is very reminiscent of other French games. The graphics are well drawn and suit the game very well, and the sound effects and music are extremely good, being in most cases sampled and of a very high quality. However in my opinion the level of playability could be much higher as the game seems to depend more on its striking graphics and sound rather than its riveting gameplay.

My initial impressions of 'Hostages' led me to believe it was a game of very high quality, however after playing it for some considerable time I had to conclude that there is a certain element missing, that being playability. Without this factor the game is unlikely to have lasting appeal.

POWERDROME

Electronic Arts

£24.95

*Reviewed by
Damon Howarth*

The roar of engines and the flash of scrolling vistas have left an indelible print on my mind. Powerdrome has all the intense excitement of the race track and many of the problems of a flight simulator. My first night of this game was on a demo on a 2.5 disk attached to another magazine and so that it looked fairly ordinary and hardly worth a second look. Thus I was somewhat surprised when I booted up the real thing but if any of the readers of this magazine shared the same magnitude then I am delighted to say that the finished product is a revelation. The care in production and explanation that accompanies the game and the learning modes that are possible for those who do possess Dan Dain's reflexes or Mike Mercury's driving skills make the whole affair more than playable. The game is based on the new futuristic sport of flying high speed, 1000mph aircraft around enclosed circuits in order to win the supreme



championship.

Normally I do not find either Grand Prix type games or flight simulators entirely to my taste but something in the multi-grade structure of this software lured my adrenaline glands and left me playing late into the night. The controls are simple although they need practice to master (I still have nightmares with altitude control) and the in-game play has all the race but there is a definite challenge to experience here. Even as becoming accustomed to the various tracks of the series a variety is apparent, with different settings for spoilers and spoilers, handling needs the tail or brake tracks, all necessary to win races. Each of the sections has been designed with care in an attempt to offer the best atmosphere, feeling for that mode. The pits with their automatic replacement modes and the timing that is possible and the lap times that let you decide on your



optimum speed and then to decide if that is enough to race, all keep the player in a hot seat of excitement and feeling strongly involved. There are even necessary options to name the aircraft for different circumstances such as Methane or main fillets to ensure the engines keep burning. Damage reports and leaderboard positions show on the clear cockpit computer.

There is even a two player mode which involves the linking of two PCs together to allow local to local simulation racing. In this mode only two ships race but the competition is then produced by another error prone device function rather than a pre-programmed chip.

All in all, this is a good quality program that is well worth the time to get into. Only play if you are prepared to devote some time to it and if you are not one of the fly-and-shoot brigade, I bet it is one of the best ST games I have seen recently.

ACTION SERVICECobra Soft/
Infogrames**£19.95**

*Reviewed by
John Davison Jr*

Action Service is a "Commando School Simulation" in which you take your trainee through a grueling test of skill and ability. The game has five different modes, four of which are sections of the game and the fifth is a construction set where you can build your own courses. The four game modes are "Physical" where you must navigate him as quickly as possible among different obstacles without tripping over, "Risk" where you have to steer your skill in handling grenades and bombs whilst avoiding mines and rifle fire, "Command" where you must battle it out with guards either using hand to hand fighting or you can which is filled with rubber bullets, and finally there is the "Construction" mode which is a mixture of the three previous tests in one long setting.



The game itself is basically of the lock-down scrolling variety where you must control your soldier through various actions such as jumping over walls, crawling under fences and so forth. The screen itself is designed to look like the control console of the training school. There is a video screen displayed at the bottom of the screen with which you can control the "action replay" facility which the game offers. First you can record your military exploits and then play them back to analyse where you went wrong. Your view of the proceedings outside of this control pane is made to look like a large video "wall" which makes up the large picture using a number of smaller "screens". This effect does little for the game itself and makes the playing area look very cluttered. The control panel at the bottom of

the screen also allows you to do other tasks within the game such as view high score tables or load and view saved "replays" and score tables.

The graphics in "Action Service" did not impress me at all. They look dated in their style and various objects and characters on the screen tend to become blurred in some instances. The scrolling is relatively smooth although with the rather odd screen layout it is quite difficult to tell. Sound on the other hand is superb with some very good quality speech samples and a dramatic tone using digitised voices on the title screen.

It was not terribly keen on "Action Service" and it is not the type of game which makes me constantly want to play it. However if it does appeal to some people so I advise that you try it out before buying.

MICKEY MOUSE
Gremlin Graphics
£24.95

Reviewed by
John S. Davison

A few years back Mickey Mouse appeared on the 16-bit machines in "Mickey in The Great Outdoors", now he's made it onto the ST. Here he has to relieve Merlin's magic wand, recently stolen by the Oger King and four witches. It's been broken into four pieces and hidden in the towers of Disney Castle, each piece guarded by a witch and hordes of rather unfriendly monsters, ghosts, and ogres. These can be killed off either by a squirt of enchanted water supplied by Merlin or by a spell book or two with a rubber mallet, would you believe? So, armed with a mallet and a waterpistol full of enchanted water Mickey enters the castle to retrieve the wand.

Using the joystick, you control Mickey's progress through the castle. The towers are progressively higher, each having more floors than the last. The floors can be reached by ladders, which Mickey has to climb. Some floors have doors into side rooms through which monsters can enter, so



Mickey has to board them up to prevent this happening. Combat with monsters drains water from the waterpistol, and if it runs out then the game's over. The doors also lead to sub-games, which have to be successfully completed to obtain the materials with which to board up the doors.

These sub-games have Mickey searching out the materials in a maze, blasting boulders with his mallet, hammering a certain combination of cards into holes, and tamping off dripping taps in a certain order - while being continually harassed by various monsters. Failure causes Mickey to be dumped back outside the door minus the key. Additional keys and other useful items (like extra water) may be earned by squinting or lashing monsters.

Once all doors are boarded up he can go onto the battlements and face the witch of that tower. She bombards Mickey with fireballs, which he has to dodge. These hits

from these and if's one fired mouse and Game Over. She can be beaten by checking mollars on her. Mickey's hits and she's done for. Mickey then gets the piece of wand she's guarding, and can go on to the next tower. When he's got all four pieces of wand he tackles the Oger King, who can be transported by Merlin's squirts with the water pistol.

The bad news about this game is the difficulty in beating the witches, as Mickey always seems to get killed off after a few seconds battle with them. There's no Game Over feature, so failure means a restart from the beginning and a replay of all the sub-games - very frustrating. The good news is that the game's graphics are a delight. They're bold, clear, and colourful yet still seem to have plenty of detail. Animation is excellent, especially that of Mickey himself, and I particularly liked the way shadow dance on the wall in the flickering twilight. Sound is best described as adequate, being sound clip generated rather than sampled.

All the Disney based games I've seen in the past have been fairly gentle ones, often aimed at young children. This one's different, featuring a rather nightmarish scenario and involving a level of violence I'm not sure I like seeing associated with Mickey Mouse. However, the kids seem to love it, although their interest could soon wane if the challenge of the witches can't be overcome.

DRILLER
Incentive Software
£24.95

Reviewed by
Damon Howarth

Minot, one of the two moons of Earth, has been colonised by profit hungry industrialists and is set to explode due to a massive build up of gas. It is up to you, in the absence of a large enough pack of grenades, to relieve the internal pressure and save the world. Such is the plot premise behind this 3-D conversion from the B for work.

The game play is fast and furious and the 3-D "telescope" developed for this game is extremely effective, there is certainly the feel of being within the system and the adrenalin rush is present as laser fire screeches across the bows. The game is not overly subtle and till there are problems to be solved, such as how to cross a gas filled chasm or open the secret door, but most of these can be intuitively worked out with deft use of a laser. Your primary aim is to



**"not so much
 shoot 'em up
 but more
 think 'em out"**

plant or teleport drilling rigs onto various sites to obtain maximum gas release and thereby occur one of the eighteen zones. Should a rig be placed in the wrong position then insufficient pressure is released and further progress is impeded.

Copy protection is once more in the form of inputting a relevant word from the supplied manual and this does allow the user the optional luxury of looking up into hard drive (if owned), or more quickly

maintaining a working copy to protect your hard earned investment. The package also contains a small cardboard map which by joining flap A to tab A etc. creates a multi-coloured cube to act on a sort of globe, which seems somewhat essential to finding your way around. It also gave me the feel of something to play with while I was engrossed in the proceedings and forgot to look time!

Game play is strong and uses a mixture of mouse and keyboard to control the mining event, the style is reminiscent of Elite although that just wins out on the quality of it's graphics. The spot effects are adequate but there is no music or other form of soundtrack to distract or entertain the miners. I am not sure if this is a good thing or not since a great deal of thought and fast reactions is needed at various points in the game. My first impression was that a policy of "not shoot anything that moves and if it doesn't, shoot until it dies" was a good one but there are certain locations where this is a distinct disadvantage. Because for example of blowing away the lights in the storerooms, it is also advisable not to shoot the power cables or else your energy supplies rapidly deplete.

All in all I enjoyed this and think it would be an excellent addition to any game collection, it is not so much shoot 'em up but more think 'em out!

ST GAMES ... ST GAMES ... ST GAMES...

STARGLIDER II

Rainbird Software

£24.99

Reviewed by
John Davison *jnr*

The long awaited sequel to the classic shoot 'em up, 'StarGLider', has finally arrived. The new game combines the speed of the original with superb colour filled graphics and a far more complex scenario. The game is set two years after the Egon's unsuccessful invasion of Novesta (the setting of the original) and the wreckage of the invasion force still lies scattered across the planet. The heroes who liberated Novesta now find very separate lives. Jeyson is living it up in luxury and generally enjoying himself whilst Kato is helping Novesta's redevelopment project. One day however, news of another Egon threat reaches the High Council. Jeyson reluctantly joins Kato to fly a mission which will destroy the Egon threat. KAMUS, the latest prototype police cruiser, is commissioned for the two heroes, and the doc blast off...

The game itself is very much more an



'breathtaking speed and smoothness'

primitive than its predecessor. It reminds me of a close between StarGLider with some elements of Mercury Burner in. Unlike the original, StarGLider II is not restricted to one planet, it is in fact a whole solar system in which you can roam about the five planets and their moons. On several of these planetary bodies there are underground buried asteroids where you can be filled out with new weapons. You will also find the parts you require to help build the Newton bomb which must be used to destroy the Egon base on one of the outer moons.

The Egon attack force comes in many different shapes and sizes as in StarGLider, including different types of walking monsters, fighters, colonial StarGLider mecha-

of birds and other assorted craft. As well as these, which flying from planet to planet you will encounter space planets and the large space whales! All of these are three dimensional colour filled objects and move with absolutely breathtaking speed and smoothness.

The graphics within StarGLider II are incredible, all of the animation is amazingly smooth and the objects which you fly past and around cannot be faulted. Each planet's landscape is made of a patchwork pattern which helps to give a greater impression of movement and the large size of the centre of the system rises and sets on each planet with some beautiful skies. The sound in the game is also very good, especially the sampled music (which loads on double sided drives only) on the title screen. This is also supplied in an extended form on a cassette included with the game.

The packaging, as with all Rainbird games, is superb and along with the game disk and the music cassette you will also find a keypad, a playguide and a novella written by James Follen which is both amusing and gives an excellent introduction to a complex game.

Overall StarGLider II is a superb quality product and this review has merely scratched the surface of its impressive features. It truly is a worthy successor to StarGLider.

AROUND THE WORLD IN 80 DAYS

Pandora

£19.99

Reviewed by
Damon Howarth

This game claims 'the fascination of a world tour' and also explains that it is based on the activities of Phileas Fogg son of John Verne's novel and David Nevins's film. The packaging has screenshots of its remarkable quality taken from an Amiga and it boasts 1 disk to fill your machine's R.M. The game, almost needless to say, does not manage to live up to the promise of the box. It loads with a variety of scenic shots of which show great promise in the artwork and even the sound effects start off in a promising manner but then Pandora's box is opened. The object of the game as described on a more too informative slip of paper, is to reach your way



through several arcade games to reach the starting point in London within specified time and money limits.

The graphics which accompany each game include large sprites with collision problems which, considering a few of the games' slow response speed and accuracy, is daunting. In the first game there appears to be a Vixen/True-arcade type game which then devolves into a platform and ladder affair to reach the next sailing point. This game does not rate as particularly exciting and at times is plain frustrating owing to the difficulties in making your character do as the joystick suggests. The interesting option of bribing your steamer owner into more speed or playing Hi-Lo cards to create more capital is pleasant but far from original. The second game of a Japanese balancing act is a

'a collection of weak games'

problematic affair and again suffers from imprecise collision detection and less than effective graphics.

I have not yet plunged deeper into this game since rather the description of the other games see their antecedents fill me with exasperation or the desire to discover more. This is especially frustrating when it is realised that below in any part of the sub-games necessitates a complete restart as no save facility is available. The tediousness of the earlier games becomes magnified and eventually the daunting prospect of having to suffer the indignities of being eaten by Leopards and snakes or dropping converting Japanese Yen into coins comprising and what little chaos the game has starts to pale.

I was not enamoured of this game as it appeared to be a collection of weak games stuck together under an attractive cover at full price in order to cash in on a classic book title. Perhaps on a 'budget' title it may have been excusable but on a full price game it is not. I hope that Pandora will learn from the myth and with their next release let hope out of the chest since I found that this particular effort left me despairing.



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LORDS OF CONQUEST

Electronic Arts
£24.95

Reviewed by
Damon Howarth



There are various forms of computer wargame, those of the Balance of Power style which need deep and long consideration of modern strategic and diplomatic, those of the UNL5 vein which just need fighting and those of the Diplomacy origins which need world conspiring skills.

Lords of Conquest is a sort of Diplomacy game, a realisation of empires, or perhaps Risk with trading in it. This game was described in an earlier issue of Page 6 under a discussion of 8-bit wargames and scored highly but my own impressions of it as 16-bit mode are mixed. The concept of a multi (2-4) player war and trading game is excellent but the machinery that drives the combat system is simplistic and occasionally perverse although nonetheless effective. The graphics are very blocky and not as well defined as they could be, there are sound effects that are reminiscent of

some of the Ultima adventures but they are fortanely evitable.

The presentation of the game shows that only a little thought went into enhancing it for the larger machine. Do not expect the slickness of Balance of Power or the definition of UNL5 but if this is understood then a good game is available under the poor wrapping. The object is to obtain the stated number of cities by good fighting and trading. The combat is very simplistic and can be aided by economic developments creating boats and weapons, or such it is like Risk. The most entertaining thing is the veritable atlas of maps to fight over and with the option to build your own settlements there will be no chance of a lack of interesting terrain. The computer provides a very able opponent for the single player and it seems to have a shrewd idea of the best ground to take but

it is as a multi player game that it excels where as with chess or other strategy puzzles, computers are never the most interesting opponent. Should there be more than two participants then the option to trade for goods to enable your objectives to occur makes many possibilities open, for example is it worthwhile considering the opportunity for you to gain enough gold to build your city by trading raw materials for weapon material? Here the software becomes a proper strategy game with the computer moderating and difficulty levels becoming irrelevant.

Forgetting the presentation the play becomes important and all other criticisms melt in the wake of a solid evening's play with others. If you are a wargamer and wish to see how well a computer can feature in your own club then this is a must, it is mechanically simple but so too is Chess. If you are a solo player then the whole may not be as enthralling but with the paucity of acceptable wargames available on AT then it is still a most desirable option. It can provide several hours of entertainment.

Oh yes there is even an autoboot menu! In the package which enhances playing speed but does not automate the program. As I said a strange package but with a good overall effect.

BEYOND THE ICE PALACE

Elite
£19.99

Reviewed by
Damon Howarth



'strong game play'

In a land far away, many years ago, a group of goodly and wise magicians used holy to combat a scelerous evil which was obstructing the cosmic balance. To obtain this help they applied nationalised industry's prime answer and sent a magic arrow into the air for some unsuspecting citizen to find. This arrow whirled the fender off to fight the evil and save the day. This in a nutshell is the plot behind this much-sent convention, the packaging of which betrays it minute playability.

The loading screen is a copy of the disk box's inlay and is not particularly inspiring, but fortunately this is not the case with the game. The screen comes alive with colour and immediately your small, but beautifully formed, barbarian has to choose his weapon. This is not explained

in the instructions, but the last weapon your figure waddles over is the one prepared - there seems to be no provision to change weapons but more are available on foot. So having picked your weapon (I suggest that the small dagger is not your best choice), it is over a peninsula to hand your willow in its handland. On meeting the first creature it is obvious that all your weapons are useless, this coupled with the guardian pig (oink, wood spirits who will come when summoned acting as a set of overall saved levels).

Your enemies are varied, realistically drawn sprites, the scolding, in all direc-

tion, is very smooth and there are problems to be solved. Granted that many of the problems are basically where to stand to wipe out a specific sort of hostility but there are definitely strategies which begin to suggest themselves as the game progresses. As some problems can prove dead ends there is even a thoughtful abort button function provided, as well as the inevitable provision of user definable keys for spell summoning and pointing. This game is presented on a budget priced game, it seems I find highly relative, but it does offer a strong game play with the feel of excitement and addition. A very strong sense of 'I know that I can get further next time', persists, indeed it can and does put many full price games to shame. I was most impressed by the well formed back-ground and the mainly good ambience imagination, although the hero does at times have an ability to stand on point of this air.

I felt that the game lacked a little by its lack of control of weapon selection, although it does mean that some care is needed in not walking over unarmoured pits also since their penalties and damage potential play very important parts in the game. This game is one I would recommend to any wishing to try concentrating or even to hardened addicts wanting to refresh faded memories.

Klingons on the starboard bow Can you be serious about Star Trek?

John S. Davison looks at

STAR FLEET 1 THE WAR BEGINS

Despite its name, this is a new version of what we Old Timers know as Star Trek. I'm not talking about Star Trek's recent disappointing release with that title, but about the classic space battle simulation. Like the original adventure game Star Trek was first played on mainframe computers long before home games were even dreamed of. Since then countless versions have appeared under various titles, including that legendary 8-bit arcade action version Star Boarder. Star Fleet 1 isn't an arcade game, it's the traditional version, but incorporating a host of new features. Intended as it's the start of a series, hence the title "1" in the title.

The basic game plan is simple - you're the command of an advanced starship; you use it to seek out and destroy a given number of enemy starships within a specified time. You can also call on the support of various starbases for replenishing energy and weapon supplies, and for essential repairs. The enemy will attack starbases, so your secondary objective is to protect them.

After successfully completing your training you can choose to command any of 36 starships. No, the Enterprise isn't amongst them, presumably for copyright reasons. You're then given your orders by Star Fleet Command and sent to patrol a specific region in space. This region is divided into a grid of 6 by 8 quadrants, with each quadrant subdivided into 10 by 10 sectors. Your job is to find and destroy enemy ships lurking here in unknown locations. The enemy aren't the expected Klingons and Romulans, but the wookiee Klingons and their monstrous and elusive Zaldon allies (copyright again!).

INVISIBLE ENEMY

Enemy ships may be located using reconnaissance probes plus your ship's long and short range sensors. These reveal how many Klingon ships, friendly starbases, and star systems are contained in each quadrant. Then using main and auxiliary engines you can speed to the appropriate

quadrant to battle with the enemy using phasers, torpedoes, and mines. A tactical display screen shows details of your current quadrant, indicating graphically



what's located in which sector. Zaldon ships aren't deployed - they use a cloaking device making them invisible to scanners and hidden until I won't spot your loss by hoping how you locate them, but it can be quite a challenge!

Phasers can be set to disable rather than destroy an enemy ship, which may then be towed to a starbase using tractor beams. You can also beam enemies aboard it to capture the crew and transfer them to your ship, however phasers may escape and wreck havoc on any of your ship's freely docks. It's also possible for enemy agents to sneak in while you're docked at a starbase, or for saboteurs to be beamed aboard from enemy ships in space. In all cases you have to locate and capture the intruder before he sneaks up too much of your ship. Damage from whatever cause can be repaired in space or at a starbase, both costing you time and energy.

Control of your starship is highly automated, with much of the tedious mental arithmetic for navigation and weapon aiming required in some previous versions, done for you. Phasers can still use manual input if they wish - in fact there are circumstances where manual control is preferable. And automated systems sometimes do go wrong!

All actions generate entries in the Captain's Log, and these are displayed onscreen and also written to disk if requested. This data Log can be used later to drive the game in demo mode, or for 'action replay' so you can analyze what happened.

The game has many humorous touches. Again, I won't spoil things by telling you what they are, but there were times I found myself laughing out loud at the amusing incidents and mishaps occurring.

A game ends when you run out of time, get destroyed by the enemy, or destroy the enemy as ordered. Your efficiency is calculated based on your Klingon 'kill rate' plus various modifying factors, such as number of Zaldons destroyed, ships captured, etc. Speed of promotion is based on your efficiency, with ten ranks from Lady Caled at level 1 to Admiral at level 10. Ranks correspond to difficulty levels, so the higher your rank the harder it becomes to succeed.

Progress of each player is kept in a 'database' with entries protected by individual passwords, so each time anyone plays they 'log on' to the system and retrieve their scores where they left off last time.

ENTHRALLING!

By whatever name, Star Fleet 1 is the finest version of Star Trek I've ever played. It's kept my whole family enthralled for hours - even my wife plays, so it really must be something special! It's not a graphics or sound showpiece, but the gameplay is superb. If you've played any version of Star Trek before and liked it, then you'll love this version. If you haven't, then give it a try anyway - you've got a real treat in store!

Title: **STAR FLEET 1 - THE WAR BEGINS**
Publisher: **Interstel**
Price: **£24.95**

SUPERBASE PROFESSIONAL

reviewed by
Matthew Jones

Superbase Professional is a relational database program, with forms editor, programming language, and text editor. It is an enhanced version of Superbase Personal, which I reviewed in issue 29 of Page 4 (Sept/Oct 87). It still does everything that Superbase Personal does (they both continue to be sold, albeit at different levels of cost), but has features which are required for 'professional' use. In this case I think professional means 'more demanding' or 'bigger programs can be used for home, office and any database use, but Professional has more features.

THE BASICS

It is difficult to review Superbase Professional without covering ground in the previous review. Thus I shall give a quick review before describing what's new. Both versions of Superbase can store several databases, that is they allow access to more than one database at the same time, using 'related' fields of records. Thus you could have a database of events occurring in a festival, with the name of the venue in the field, and a database of addresses of venues. When you create a report, you could produce a list of events, with the full name and address of the venue being printed - the venue name for the event is used to access further data in the address database.

Both versions of Superbase display the individual records of a database in a window on the screen, in either form, record or table view. To move from one record to the next, a 'next record' button along the bottom, modelled on video recorder buttons, is used. There are also fast forward/reverse, single stepping, full reverse/forward, pause and stop. Additional buttons allow access to the single record facility, a complex 'filter' which is used to restrict the accessed records to a certain range, and the print button which allows display of text and graphics files associated with a record - a feature which makes Superbase almost unique.

A Query filter is used to generate reports, which can have subtotals and totals, headings and can be sorted. The query dialogues use a system used throughout Superbase, that of a pseudo-English command line, which allows you to determine which records are to be displayed/printed/updated. The line 'City LIKE "Glasgow"' would restrict the report to records which have the name 'Glasgow' in the City field. Query can be used for reports, updating, renaming, importing, exporting, printing and the production of labels.



WHAT'S NEW?

The first thing that you will notice is different is the packaging and the manuals. Professional comes in a slip-case, but still uses the spiral binding for the manuals - this time two. The manuals cover the program in two parts: the database and text editor, and the forms editor and programming language. The former manual is very similar to the Personal manual - it has the same basic layout, but a few improvements have been made such as a separate chapter on the Query facility (quite an improvement) and a new disk for later review, with a much improved font and titles. Obviously the Professional manual covers the extra options too, which are summarised in an appendix.

The new features of the database portion include time fields (in addition to dates), multiple input lines, and limiting of text fields to be upper case, lower case, or capitalised. At first I thought this latter option was marvelous, but then I discovered that it limits the first letter to be capital, and then forces the rest to be lower case. Thus the name 'Fred Bloggs' becomes 'Fred blogggs'. This reduces its applicability. Professional has extra functions to support a database designer, including a DBE function which provides automatically incrementing values, LOGROLL is used for file file validation, and a conditional (memory) operator for conditional calculations. In general data input has been improved, but could still be better. It automatically presents you with a new blank record. Unfortunately it now asks you if you are sure you want to save - despite the fact that you just hit the save key - so you have to hit Return too. Another limitation involves the ability to supply defaults for fields, because they do not auto-delete during change, they must be deleted character by character which is tiresome.

TEXT EDITOR

The text editor in Superbase Professional is not good. It is just about adequate for the purposes required, but it could be a lot better. I write a mail merge letter with it, and it is not very compared to basic word processors. It would be good if Professional were to support the format of a full word processor (though it is probably possible to output a file suitable for reading by such a word-processor and mail merge facility). The text editor does support basic bold and underline though. The text editor is used for many purposes: displaying external text files; writing Superbase programs, mail merge texts, and editing of any ASCII file.

THE FORMS EDITOR

Entering data into a Superbase record is done in one of two modes, either the form view or record view. Record view displays the fields in a straight list, form view allows the fields to be moved around on the screen to improve the layout. A set of fields can also be marked as 'open', thus restricting the amount of information viewed, and/or the order of the fields. (The latter



PROGRAMMING THE DATABASE

Superbase Professional includes a programming facility which allows access to all of the capabilities of Superbase, allowing you to create customised reports and operations. You do not need to program, you can still access much of the power of Superbase without programming, but it is there should you ever find yourself up against a barrier created by the menu.

The programming language is modelled on BASIC, and as well as basic facilities like subroutines, WHILE/WEND loops and access to all the standard database commands for reports etc, includes the ability to define your own menus, thus allowing you to create 'mini applications' by replacing the standard menus. Superbase uses the text editor to create and edit programs. When you enter a line, Superbase capitalises keywords and formats it properly. Unfortunately it does not perform any indenting, so large programs are going to become unreadable. It is impossible to give a new programming language a full testing, especially one closely tied to a database, but the language provided within Superbase Professional does appear to be quite thorough. If you intend to use it professionally, give it a good examination to determine if it has everything you need.

The main problem with the language, one that nearly everyone using it will encounter, is the fact that there is no introductory text that is going to help the new user. It is not an uncommon problem, many other language suppliers take the same way out, but they have the backing of readily available books to help the new user. With a simple alphabetical command reference, it is very hard to find what you are looking for. The minimum required is a list of commands by category, and an explanation of all commands as to WHAT you would want to use it, rather than just what it does. The manual does contain a few examples, which point at some of the power of the language. Precision Software should think of writing another book to help new users with the language, otherwise it will go unused.

Superbase Professional also allows the function keys to be programmed with text. According to the context, these may either be Superbase language commands, or straight text to use in the text editor.

SUPPORT AND BUGS

Precision Software offers 90 days free support to Superbase users from the point of registration. Support after that date is charged for. The version of Superbase supported after that date is the 'off-the-shelf' box in copy protected, which is a big inconvenience. Luckily, you are supplied with an unprotected disk where you have registered. This also has a list of bugs that are fixed. Unfortunately, there are still a few bugs left, both Superbase and the Forms editor have been based on an older disk that error caused by telling it I had a page size of zero lines, and using the Undo key subsequently. Other problems I have had are just irritations. I feel a great need to have a keyboard alternative to the in-screen video buttons so that I can move from one record to another easily. Apart from the two bombings, none of the problems I encountered were serious.

CONCLUSION

To sum up, Superbase Professional is a much more powerful version of Superbase Personal, while still maintaining the friendliness of the latter. It still has room for improvement, but it is suitable for using in professional environments, both for users and for applications writers (especially if the forms can be retained continuously). At the price, it is not going to be bought for casual interest, but if you are looking for a serious database, Superbase Professional definitely has to be considered.

Superbase Professional costs £249.95 and is published by Precision Software, 6 Park Terrace, Worcester Park, Surrey, BT4 7JZ. Telephone: 01-338-7544.

ability is important when importing or exporting to ASCII files for merging, and other such reasons.)

Superbase Professional takes this layout mechanism into a whole new world. A separate program, the forms editor, is available from a menu option and allows the database designer to create an input form which is then used to input data. The forms editor is also used to generate complex reports more easily than the query dialogues. The forms editor is based on the principle of object oriented editing, and since you are used to it, achieves the task of creating good looking forms (which can be printed and used for data collection is desired). You may make up your form using text, images (imported Neo or Design files), lines, boxes, and filled boxes. The attributes of such of these items can be changed, to adjust colours used etc. Text forms can be selected from whenever you have available through CTRL- and can be in many sizes. I may say to use once you are used to it because it is not intuitive, and needed quite a bit of reference to the manual before I could do everything that I wanted. For instance, I accidentally created a line which I did not want, but attempting to select it to remove it only created further lines. The only menu item marked delete was to delete a whole page, and eventually I discovered that you must carefully double click on the object, then select the Cut menu (there is no straight delete). Eventually I created a form suitable for my purposes. The forms created do not have to include all the fields of a database. Indeed you do not have to provide enough room for the whole field in the form. If the input starts to exceed the available space, Professional will scroll the line. This is very useful should you decide to alter the size of a field later, as you do not have to change the input form too.

In use, the forms make Superbase Professional look much more impressive. You are able to set the order in which the fields will be processed, so input can be natural. Regardless the use of the form removes the editing ease of the other modes. You are no longer able to click with the mouse on a particular character and edit - you are placed at the start of the line. You cannot use the cursor keys to move lines field to field, only the Return key works, and that is only upwards - to go back you must use the mouse. I also dislike the way that Superbase too easily forgets the fact that a form is in use. If you temporarily use another facility, say editing the file format, it returns you to the record view - you must re-open the form manually. Overall though, forms are well worth having.

The forms editor also allows you to specify a layout of a printed report (but only - no graphics). While not using it extensively, I found this awkward to use. It was easy to create the layout, writing headers, footers, summaries and the record layout for the printout; and to start the printout (you just open it), but I couldn't easily solve the problem I had. I wanted to have page output as is available, but without having a second data split across two pages. Reports are actually programs, which can then be used for modification into more powerful reports.

ELITE

One of the all time classics comes to the ST and John S Davison can't wait to play

Well, here it is - Elite - the game I'd given up hope of ever seeing in 32-bit format. It casts you in the role of a newly qualified trader or pilot to start your career in interstellar trade. You have a basically equipped Cobra Mk II spacecraft, seven light-year's worth of fuel, and 100-Credits to your name. Your police record is Clean and your rating is Harmless, and you're currently docking your heels in the Concho space station in orbit above the planet Lave. Out planets are eight galaxies containing around 2000 planets, which you can visit to make your name and fortune.

Your objective is to survive, and progress through the nine rating levels from Harmless to the coveted Elite status. To achieve this you need to enhance your ship's ability to fight and trade. This may be done by purchasing upmarket weaponry such as higher powered laser guns, energy bombs, mine missiles, and electronic countermeasures systems. Improved non-combat hardware is also available in the form of a docking computer, galactic hyperspace, fuel scoops, and other useful items.

One small snag - all this costs money, which you can earn by trading goods between planets. This would be easy if the trading routes weren't thick with pirates who'd just love to reduce your ship to a mangled hull and make off with your precious cargo. And then there's the Thargoids ...

DOES CRIME PAY?

Law abiding traders can make money by purchasing legal goods on one planet and selling them profitably elsewhere, by destroying pirate ships and earning bounty payments or by asteroid mining. The unscrupulous ones also trade in illegal items, such as slaves, narcotics, and firearms or by becoming pirates themselves, i.e. by attacking other trader's ships and scuttling their cargo. A life of crime may get you richer quicker, but you'll also have the police and bounty hunters chasing you, as well as other pirates ... and Thargoids!

Your ship's systems can tell you brief details about any planet's economy, government, and technological capabilities. This helps you decide whether it's a good bet for profitable trading or not, and



whether it's likely to have the hi-tech equipment needed for your ship. Unfortunately, you can't see the planet's market prices of goods and equipment, you have to actually go there to find out.

After leaving the space station, a hyperspace jump and a space ship or three will bring you close to your destination planet. At this point you're likely to meet other ships, which can be any of twenty different types. Frequently, these include pirates who will eventually attack you. Care is needed when fighting back, as inadvertent firing an innocent trader guarantees the police will start taking an unkindly interest in you. And they don't kill like Thargoids.

FIGHT OR DIE!

Against pirates, attack seems to be the best form of defence. Know them or your best targeted pirates may be located using your ship's 3-D radar system, a critical feature of the main playing screen. Manoeuvring control is via keyboard, mouse, or joystick and takes some getting used to, as you only have pitch and roll control. Buttons, modes offering an interesting experience, anyway.

The combat graphics are magnificent, the smooth 3-D animation of the colourful ships wheeling and swooping around you are truly thrilling. With skill you can cause drastic visual calamity, this being signalled by his ship flying apart in a spectacular explosion. Thargoids just might take a tad more effort, though.

When close enough to the planet your instruments guide you to its space station and another scuttling phase of the game begins. The station spins about on axis passing through its docking port.

You have to align yourself with it then gently move through while toiling your ship at the same rate of rotation as the space station. It's just like the famous docking sequence in the film '2001 - A Space Odyssey'. It's frustratingly difficult, making a docking computer to automate the procedure a priority buy.

Once berthed in the space station you can sell your goods and use the profits to buy fuel, equipment, and other goods for further trading and fighting. Survive long enough against pirates (and Thargoids) and you'll find your rating gradually improves.

NO VECTOR GRAPHICS

The most obvious difference between the ST and original Elite versions of Elite are the space vehicle graphics. The original somewhat confusing fixed-sets-frame vector graphics have been replaced with far superior 3-D colour filled versions which move with commendable speed and smoothness. Strangely, though, other parts of the program are graphically unimaginative. For instance, the credit list used for the game's title, and the flat, single colour planetary disks.

The sound side, too, is disappointing at times. In fact, it's non-existent in places. For example, your spacecraft is launched in total silence, something which I still find oddly disturbing, some sound effects are good, though. I particularly liked the exciting rocket noises produced when your ship takes its way through hyperspace. Title music is Steven's Blue Danube waltz, another affectionate nod in the direction of the 2001 film.

Despite some niggling little faults, Elite's superb mixture of simulation, action, and strategy are enough to capture and hold a player's interest for hours on end. It's probably take weeks of dedicated playing before you achieve that exclusive elite rating, as it's great value for money, too. Oh, and those Thargoids? Play Elite and you'll soon find out about them for yourself!

Title: ELITE
Publisher: Firebird
Price: £24.95

THE RESOURCE FILE

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 10000 17th Ave
 Boulder, CO 80501
 Tel: 303 440 3133

RETAILERS

1234567890
 1234567890
 1234567890
 1234567890

ADVANCED COMPUTER CENTRE
 1000 High Street
 Boulder, CO 80501
 Tel: 477 1566

LANE
 P.O. Box 1000
 Boulder, CO 80501
 Tel: 477 1566

BB

Editor Mike Douglas, 1000 17th Ave, Boulder, CO 80501, Tel: 303 440 3133. Fax: 303 440 3133. E-mail: miked@bb.com

U.S. USER GROUP

Contact: Mike Douglas, 1000 17th Ave, Boulder, CO 80501, Tel: 303 440 3133. Fax: 303 440 3133. E-mail: miked@bb.com

B. G. C. DEVELOPER

Contact: Mike Douglas, 1000 17th Ave, Boulder, CO 80501, Tel: 303 440 3133. Fax: 303 440 3133. E-mail: miked@bb.com

INTERNET USER GROUP

Contact: Mike Douglas, 1000 17th Ave, Boulder, CO 80501, Tel: 303 440 3133. Fax: 303 440 3133. E-mail: miked@bb.com

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Contact: Mike Douglas, 1000 17th Ave, Boulder, CO 80501, Tel: 303 440 3133. Fax: 303 440 3133. E-mail: miked@bb.com

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Contact: Mike Douglas, 1000 17th Ave, Boulder, CO 80501, Tel: 303 440 3133. Fax: 303 440 3133. E-mail: miked@bb.com

LANE (ADVANCED USER GROUP)

Contact: Mike Douglas, 1000 17th Ave, Boulder, CO 80501, Tel: 303 440 3133. Fax: 303 440 3133. E-mail: miked@bb.com

LANE (ADVANCED USER GROUP)

Contact: Mike Douglas, 1000 17th Ave, Boulder, CO 80501, Tel: 303 440 3133. Fax: 303 440 3133. E-mail: miked@bb.com

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Contact: Mike Douglas, 1000 17th Ave, Boulder, CO 80501, Tel: 303 440 3133. Fax: 303 440 3133. E-mail: miked@bb.com

INTERNET USER GROUP

Contact: Mike Douglas, 1000 17th Ave, Boulder, CO 80501, Tel: 303 440 3133. Fax: 303 440 3133. E-mail: miked@bb.com

LANE (ADVANCED USER COMPUTER EXPERIMENT)

Contact: Mike Douglas, 1000 17th Ave, Boulder, CO 80501, Tel: 303 440 3133. Fax: 303 440 3133. E-mail: miked@bb.com

LANE (ADVANCED USER GROUP)

Contact: Mike Douglas, 1000 17th Ave, Boulder, CO 80501, Tel: 303 440 3133. Fax: 303 440 3133. E-mail: miked@bb.com

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