POPULAR Computing WEEKLY

Only 50p.

3–9 April 1987

Vol 6 No 14

NEWS DESK

New machines announced by IBM this week

Mastertronic in Amiga coin op deal

Addictive Games hooked by Prism Leisure

Amiga 2000 – available now

Throne of Fire

SPECIAL supplement

Computers and music

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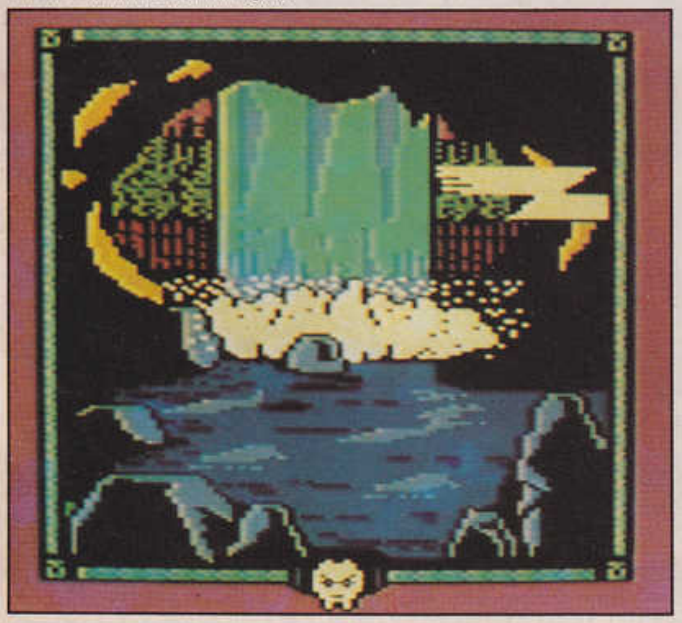
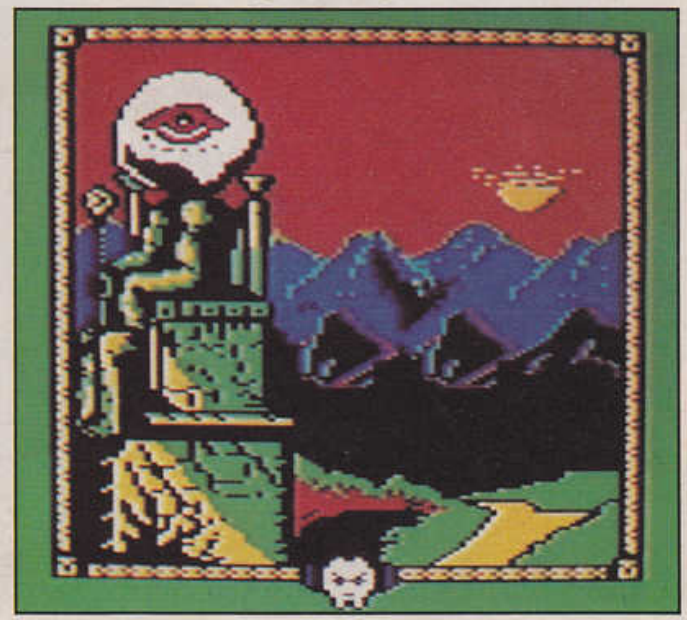
Mike Singleton's Throne of Fire: reviewed page 19

Fast disc drive for the C64

Shadows of Mordor – The Lord of the Rings saga continues

Shadows of Mordor (Lord of the Rings II)





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GREMLIN

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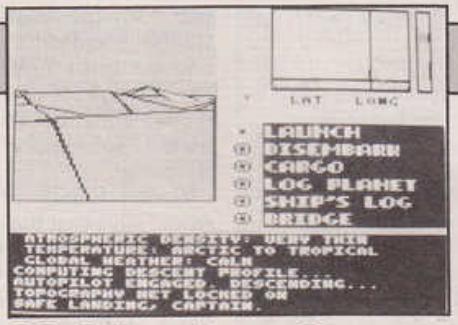

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ABC

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IBM PC2s launched

IBM is expected to launch the long awaited successor to the PC range this week.

The four models in the Personal System 2 range: the 30, 40, 50 and 60 are understood to feature 3½ inch floppy discs, and to use surface mount technology and a new operating system, CP DOS 1.0. This was developed jointly with Microsoft.

The entry level Model 30 comes with single or dual 3½ inch floppy drives, and uses a 7.54Mhz 8086 processor. This is expected to cost around £1,000 including monitor.

The new machines are expected to differ substantially from the existing PC/XT/AT range, and compatibility will be a problem. For example the new machines' 16-bit expansion bus is thought to be a deterrent to clone manufacturers, but is also worrying existing PC range users.

The 40 and 50 are both built around 80286 processors. In addition the range uses the 640 by 480 Enhanced Colour Graphics Adaptor (ECGA). An 80386 based machine is expected at the end of the year.

Amiga B-52 boards – Mastertronic's secret weapon

BALLY is not the only company to use Amiga technology in its dedicated arcade games (see *Popular Computing Weekly*, March 27); Mastertronic has now revealed that its arcade cabinets, launched last week in the US, also contain Amiga 'B-52' boards.

The customised B-52s comprise the 68000 processor, Amiga chips Agnus, Denise and Portia and capacity for up to 1½Mb of code. Mastertronic is marketing the games under its newly established subsidiary, Arcadia Systems.

Heath: working on it

Geoff Heath of Mastertronic says that the games are due to be released in arcades in the UK "in about six weeks time". So far, the games only have provisional titles, although one will almost certainly be called *Road Wars*.

Mastertronic/Arcadia's deal with Commodore means that it is now in direct competition with Bally: "The difference is that they're a multi-million pound company, and we're still working on it," says Geoff Heath.

"The deal means that we also have the rights to convert the arcade titles to home computers, of course," he added. This will not take place, however, until much later in the year. The company has a large number of arcade originals in development, being programmed both in the UK and US.

● Mastertronic is enjoying yet more chart success with its diversion into the record business. Its *Heat of Soul* compilation LP, released under the Mastersound label, entered the album charts at number 96 after just four days on sale.

Microprose plans for '87

MICROPROSE UK boss Stewart Bell last week revealed some of the company's plans for 1987.

There are two major developments following this year's launch of *Gunship*, and the Amiga version of *Silent Service*.

The first is a new game, *Pirates*, due for release next month. As the title suggests, this is a move away from military titles such as *Gunship* and is set on ships sailing the Spanish Main in the 17th century. Further details are expected shortly.

As the game is aimed at a slightly younger market than some previous Microprose products, the target price is expected to be £12.95 rather than £14.95.

The other development is the launch of a new label. Details are very sketchy – in fact it doesn't have a name yet. Microprose was going to call it Eclipse, but that has already been used by Data General. One product Microprose is working on for the label is a flight simulation, using solid '3D' graphics expected later in the summer.

The label is expected to form part of a general diversification for the company. This will not only result in a wider variety of games, but also a move into other software applications, eg, desktop publishing, and even hardware.

Bell: diversification

The company also plans to enter into joint venture agreements with four more US software house, following the deal with Origins (see *Popular Computing Weekly*, March 6). One contract with an as yet unnamed company has, according to Bell, already been signed.

Prism gets Addictive

ALL Addictive Games' products have now been taken over by Prism Leisure Corporation, following the marketing deal signed by the two companies for Addictive's enduring bestseller, *Football Manager*.

Prism has also signed up Addictive's founder and managing director, Kevin Toms, to produce four more games over the next two years. Addictive's newly launched *President* will also now be available from Prism as part of the deal.

As Prism has also acquired rights to Addictive's name and that of its subsidiary label, Silicon Joy, Toms will now be operating as KJT Design Ltd.

This is the first acquisition for Prism, since its Unlisted Securities Market (USM) placing on February 24.

Correction

In our review of the Pace Series 4 modem range (Hardware, March 27), we inadvertently referred to the Series 4 as a Modem House product in one instance. This of course is utter nonsense – the modems are produced by Pace Micro Technology, as stated elsewhere in the article.

'While you wait' test for modems

THE British Standards Institution gave hope to modem manufacturers last week, with the announcement of a "while you wait" testing service at its Telecommunications Laboratory in Hemel Hempstead.

The facility covers all the "signalling, spectral and electrical requirements of BS6305, BS6320, BS6328 and DTI Technical Standard 83/0091," says the BSI. This means that it will enable most of the performance of a facsimile machine, modem or telephone to be assessed in one day.

The service is also sufficient for the needs of the British Approvals Board for Telecommunications (BABT) tests. BABT approval is necesary for any equipment connected to the British Telecom network.

Approved equipment carries a green circle. It is not illegal to sell unapproved equipment which carries a red triangle, but it is illegal to connect it to the Telecom network.

The problem for modem manufacturers has been that once equipment has been submitted for BABT approval, it can take months for that approval to be granted. That delay is a serious problem for manufacturers. Will this service change things?

"The test house capacity is not a limiting factor," says Barry Cartman, Assistant Director of the BABT. He said that over recent months, the Board has opened new test facilities at Kingston-upon-Hull and Harlow.

"I'm afraid a major part of the problem is a shortage of manpower, and we are in fact currently undertaking a major recruitment drive," Cartman went on.

"And it has to be said that it's physically impossible to do all the regulatory testing of a modem in one day.

"But I'm pleased by any arrangement by any test house that moves in the direction of shortening the time taken for testing."

Gremlin Graphics' Canadian connection

SHEFFIELD-based Gremlin Graphics has announced a new tie-in with the Ottawa software development company Acme Animation.

Under the deal, which Gremlin claims represents a substantial and "very firm" commitment, Gremlin's future products will be developed in close cooperation with Acme chief Michael Bate.

"The opportunity of working with Michael Bate gives us the opening into the US market that we have been waiting for," said Gremlin's managing director Ian Stewart.

Stewart told *Popular Computing Weekly* that the first results of the Canadian connection were under way. A flight simulator and arcade game are due for release during November.

"I think I would prefer Gremlin to send programmers to Canada for a period of time to complete the projects, so you could say I'm looking for programmers to travel the world," Stewart added.

"We're looking to expand the Canadian side, by building Acme up. That way we'll have a very strong flow-through of products."

But Stewart also emphasised Gremlin's commitment to its UK operation. In addition to Gremlin's programming studios in Sheffield and Birmingham, a new one in Derby will be ready in six weeks.

Software Hotlines

Melbourne House looks like being busy for the next couple of months or so, with a whole bunch of releases coming up. We mentioned *Doc the Destroyer* and *The Mystery of Arkham Manor* a couple of weeks ago – but after that lot comes *Wiz,* a game of runes and spell casting, written by Simon Price, who co-wrote *Kwah* and *Redhawk* (see screen shot below).

The adventure all the pixies are waiting for, *Shadows of Mordor (Lord of the Rings II)* will be out in June and don't the graphics look pretty?

Problem though — the full interactive graphics will only be available on Commodore disc. Not a graphic to be seen on Amstrad CPC; on Spectrum you load them separately and use them as a Middle Earth gallery but the Commodore tape will have a selection which come up as you play.

Programmed over in Australia, the guys at Beam Software have not let the seriousness of the *LOR* project get to them – their latest goes under the working title of *Street Hassle,* in which a school teacher goes crazy, strips down to his kegs, and starts lashing out at anyone and everyone.

Victims include Hylda Baker look-alikes who retaliate by lobbing hand bags at you, ten to the dozen. On Spectrum and Commodore, with release in the autumn.

Good news for Amiga owners – Frank 'I liked the adventure so much, I bought the company' Herman's **Mastertronic** will be releasing its latest Bulldog hit Feud on that format in May. Bet it's cheap too.

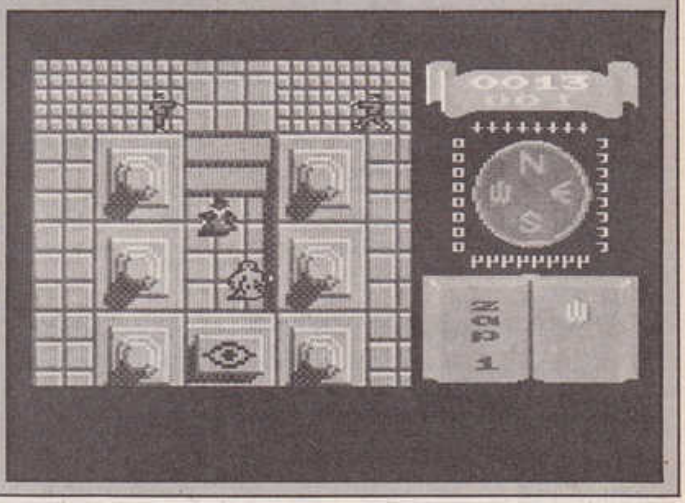
Those nice FTL people are at it again, with a follow up to Sweevo's World called Hydrofool (see screen shot above). Bound to be a classy piece of work, creating a new industry buzzword, "the fabulous yet mysterious", Hydromation.

Attention bargain hunters. In an effort to whip the punters up into a frenzy of excitement, with the imminent release of *Heroquest (Swords & Sorcery II),* PSS is re-releasing *Swords and Sorcery I* for the cut-down price of £2.99. Go grab yourself a copy of the computing world's answer to the Georges Pompidou centre.

Finally, did you know that CDS is sponsoring a Junior Chess tournament which is being run via electronic mail, with the participants remaining in their own homes during the contest?

Another first for modern microcomputing – technology now allows you to watch *Brookside,* play in a major chess tournament and cheat, all at the same time.

John Cook



Supertwist firms in the dark over MOD

THE Minstry of Defence has said it is writing to several computer manufacturers to obtain licensing agreements for its Supertwist technology, used in, among other machines, the LCD display on Sir Clive Sinclair's Z88 portable.

But mystery surrounded the move last week. Sir Clive Sinclair, for one, was unaware of any approach by the MoD, and Epson, which manufactures the display for Cambridge Computer, had not yet been contacted either.

Epson UK's Manager of Corporate Communications Edward Huggins was aware of the MoD's concern, but was surprised not to have been contacted. If and when the MoD did get in touch, how might it affect the Z88?

"It's very hard to say, because it depends on a whole range of things. We'd be very interested to hear from them, because we don't know how they would define the parameters of a licensing agreement, and how we have been infringing those parameters," he said.

Sinclair: Unaware

The technology gives LCD displays contrast nearly as good as VDUs, and has been developed by several manufacturers, particularly in Japan. But it was invented in 1982 by scientists at the Royal Signals and Radar Establishment, based at Malvern in Worcestershire.

Patent protection was sought, and is currently held by the Ministry in the UK, USA and Canada. An MoD spokesman said that they shortly expect protection to be granted for Europe, but a Japanese patent could take 12 to 18 months.

It is likely that adherence to patent protection agreements would affect prices, but the MoD wouldn't, and Epson couldn't say exactly what the effect would be on the Z88.

A2000 ships early

COMMODORE has begun deliveries of the Amiga A2000 to dealers, several weeks before it was due.

When the A2000 and A500 were launched in early March (see *Popular Computing Weekly*, March 13), Commodore said the A2000 wasn't due until April at the earliest. In fact, distributors began receiving A2000 units in the fourth week of March. Commodore UK managing director Chris Kaday claims the move is due to the response by public and dealers to that launch.

"We are delighted to be shipping the new A2000 early following a positive press from this month's launch which has generated a high volume of inquiries from potential users and dealers alike," he said.

"We are now ready to fulfil their expectations."

A Commodore spokesman was unable to give any further details on Commodore's other two recent launches. The expected June shipping date for the A500 still stands,

Kaday: Delighted

and no more light was shed on the PC1, the machine unveiled to everybody's surprise at the Hannover Fair last month.

MORE NEWS ON PAGE 8

Pride wins damages

PRIDE Utilities, the Amstrad software supplier, has won £10,000 damages in part of its legal action against its former French distributor, ESAT (see *Popular Computing Weekly*, 18–31 December 1986).

ESAT had been a large customer of Pride, since France is a lucrative market for utilities. But towards the end of last year orders had been dropping off.

"Payments slowed up, until they owed us £10,000," Frank Severini of Pride said at the time.

When Pride sent an agent to the Bordeaux shop of ESAT, he found that the company was duplicating Pride software on a large scale.

Pride was able to obtain £9,000 in settlement of money owed, before starting legal action for piracy in Bordeaux shortly before Christmas.

The figure also includes costs, and Pride has been told by its French solicitors that ESAT has been given eight days to pay. The piracy action continues.

DIARY DATES

APRIL

11 April
Dragon Computer Show
Ossett Town Hall, nr Wakefield, W Yorks
Details: Software, hardware and demonstrations for Dragon users
Price: £1 adults, 50p children and OAPs
Organiser: John Penn, 04203 5970

24–26 April
The Atari Computer Show
Novotel, London W6
Details: First chance for Atari to show off exciting new strategy
Price: £3 adult, £2 children, £1 discount for advance booking
Organiser: Database Exhibitions, 061-456 8835

MAY

2–3 May
First Ideal Microcomputer Show
Kensington Exhibition Centre
Details: Software, hardware, peripherals for consumer users
Price: £3 on door, £2 in advance
Organiser: RAMCO International Exhibitions, 01-906 3363

8–10 May
The Electron & BBC Micro User Show
New Horticultural Hall, London
Details: Software, hardware and peripherals for Acorn's micros
Price: £3 adult, £2 children, £1 discount for advance booking
Organiser: Database Exhibitions, 061-456 8835

JUNE

12–14 June
Commodore Show
Novotel, Hammersmith
Details: First public showing of A500 and A2000 Amigas.
Price: £3 adult, £2 children
Organiser: Database Exhibitions, 061-456 2991

Prices, dates and venues of shows can vary, and you are therefore strongly advised to check with the show organiser before attending. *Popular Computing Weekly* cannot accept responsibility for any alterations to show arrangements made by the organiser.

TAKE 2!

Arena and Brataccas now available together at £34.95

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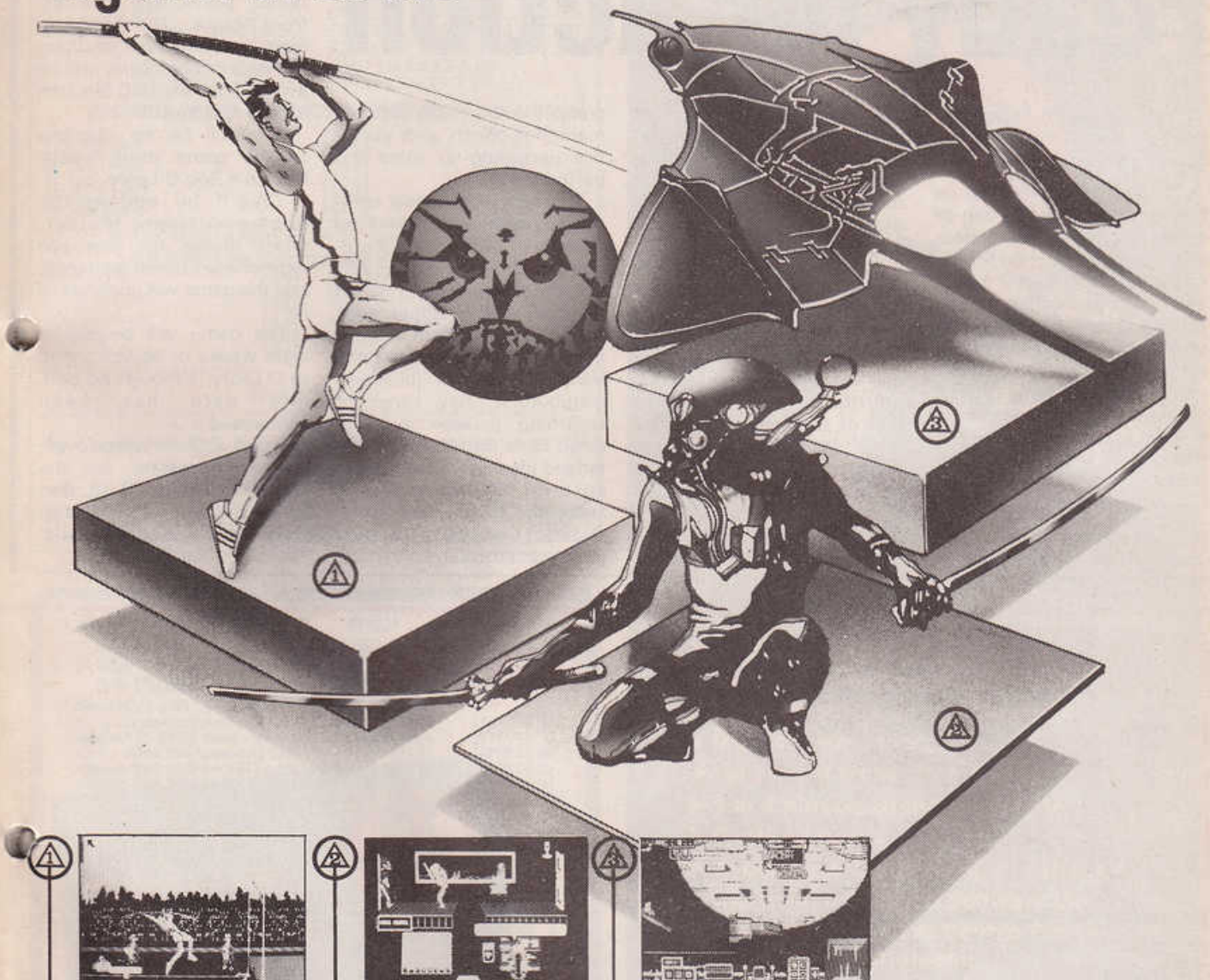

ARENA

The classic sports simulation. Humour, competition and multi-player rivalry, enhance what can only be described as graphics of unsurpassed realism. Become an athlete, compete with your friends, only the most skilled will ultimately win. No other product has managed to capture the 68000 processor to achieve this level of graphical sophistication.

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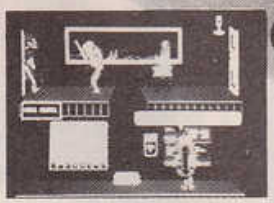

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▶ Brataccas	£34.95
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S E E I N G I S B E L I E V I N G

Industry body ready for action

THE British Micro Federation held its first Annual General Meeting on March 25.

The Federation was set up last October with the aim of creating a cohesive and effective trade organisation for the whole microcomputer industry. The organisation encompasses hardware manufacturers, software companies, distributors, retailers, 'service sectors' (eg, Gallup, which compiles the software charts, and tape duplication companies) and the computer press in both business and leisure markets.

Representatives from 65 companies attended the meeting to hear reports from working parties set up at October's inaugural meeting, suggest ways of progressing, formally take out membership of the BMF and elect the committee proper.

The BMF has several main objectives. It will act as a forum for discussion between different industry sectors, and establish a code of practice among companies for both their own protection and that of the consumer. I also aims to act as one voice to government and national press and media, to fight against piracy, to raise the professionalism and credibility of the industry, and to compile and provide accurate market research and statistics pertaining to sales and performance.

The new committee comprises eight people: Paul Welch of Atari UK (hardware); David Fraser, MD of Microsoft (elected to the chair and business software); Geoff Heath of Mastertronic (leisure software); John Vivian of Softsel (business distributors); Ray Laren of Lightning (leisure distributors); Clive Booth of Computerland (dealers); Simon Treasure of Gallup (service sectors); Christina Erskine of *Popular Computing Weekly* (press and media).

Robico's 'Village' in 'Chaos'

ROBICO Software has signed the rights to *Village of Lost Souls,* previously available from Magus. The new version, entitled *Realm of Chaos – Village of Lost Souls,* will be available for the BBC Electron for the first time.

"There'll be no changes to the game itself," says Robico's Rob O'Leary.

"We'll be adding the Robico Advance Parser, which means the user can type in any English sentence, and the game will understand it."

The game will be out in eight weeks or so, according to O'Leary, although no definite date has been announced.

Realm of Chaos will be available on cassette for the Amstrad CPC for £9.95, disc for the BBC at £12.95, and on disc for the eight-bit Atari "probably" at £14.95.

AT LAST . . . the magazine ST owners have been waiting for

The magazine devoted exclusively to the Atari ST – ST graphics, ST music, ST programming, ST games and ST software.
In the pilot issue you'll find:
Special feature on ST flight simulators
Introduction to programming the 68000
Four word processors compared
Six graphics packages reviewed
N-n-n-nineteen of the very best games
Dozens of music packages appraised
Nearly 300 software packages detailed
(No partridge in a pear tree but . . .)

Special offers worth £17

Exclusive to readers of ST Update: save £12 on the cost of Aaronfay's excellent Datacom communications software and £5 on the price of Metacomco's MCC Assembler

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AMSTRAD PC1512 D/D COLOUR	£838.35	£765.00 (a)
Bondwell PC BW34 640K RAM dual ds 360K 5¼" drives 12" green monitor Bundled MS DOS-GW basic	£769.35	£631.100 (a)
Bondwell PC BW36 Specifications as BW34 except single drive + 20Mb Winchester hard disc	£1263.85	£1099.00 (a)
Amstrad DMP 2000 inc. FREE cable for CPC	£169.00	£150.00 (b)
Amstrad DMP 3000 inc. FREE cable for PC1512	£194.35	£185.00 (a)
Amstrad DMP 4000 inc. FREE cable for PC1512	£401.35	£343.85 (a)
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Letters

Shake it up? Maybe

I was interested (for obvious reasons) to read what you wrote about our magazine *Shake!* in your excellent Spectrum Supplement in your March 20 edition.

However, I can't imagine that some of the acts who have been featured so far on the audio side of *Shake!* will be too pleased with your description of them as 'amateur bands'.

Admittedly none of the acts featured in the first few issues of SHAKE! are exactly household names (yet), but Kevin White . . . (*Shake* 5), runs his own record company, whilst The Lelu/Lus . . . (*Shake* 3) have already been featured on Channel 4's *The Tube* and look likely to be storming the pop charts in the near future!

Certainly I wouldn't describe either of these acts as 'amateur' and I can only hope that your comments don't lead to hordes of irate musicians converging on Little Newport Street!

Incidentally . . . I took your advice and grabbed hold of a copy of *Smash Hits,* but although I've managed to cut it up into little strips and got it to run through my cassette player, I've yet to get any decent sound out of it!!! Can you please inform me where I'm going wrong?

Roger N Foster
Editor, Shake!

The copyrights and wrongs

Would you please supply me with some information concerning software copyright?

Is one allowed to call a program one's own if it is a modification of someone else's program?

What about a longer program which incorporates someone's design?

And is it OK to call a program your own if it is a conversion of someone else's program written in another language, eg, converting Amstrad Basic to Sinclair Basic?

A M K Vaughan
Fetcham, Surrey

The answers are: no, but it depends; perhaps, but it depends; no, but it depends.

What it all depends on, in this case, is where the original programs are published (commercially or as magazine listings) and what you intend to do with them.

If the original programs are commercially produced, then a longer program incorporating someone else's design would breach copyright if it was substantially similar, or a substantial part had been used. In the other two cases it would be an infringement of copyright.

With magazine listings, the copyright becomes the magazine's, and permission is granted (by implication of the listing being printed out) for typing in, modifications, conversion, etc. But if you then try to sell your adulterated version to others, it becomes a breach of copyright.

● ***Popular* will be dealing with the thorny subject of copyright in a feature article in the next two to three weeks. Watch this space.**

Memotech speedy

Bench Tests are the criteria by which micros should be judged. The Graphic Demo (Letters, March 20) compared the mathematical speed of the 16-bit PC1512 against the 8-bit Spectrum: 56 secs against the Spectrum's 6 mins 54 secs. Agreeably impressive, but the Spectrum is hardly an adversary.

I typed the Spectrum program as listed (minus the extra ')' error) into my Memotech 512. It returned 2 min 54 secs. Suddenly the 16-bit seems less impressive! Had Memotech been allowed to set the '8-bit standard' rather than say, Sinclair, the 16-bit designers would have needed to 'pull their socks up a bit' to claim viably significant improvements.

A further example is this simple Spectrum listing which fills 16K bytes with random numbers and checks the match on re-run. The Memotech differences are shown in *Rems.*

```
1 POKE 23674,0: POKE 23673,0:
  POKE 23672,0: REM CLOCK
  "000000"
2 RANDomize 1000
3 FOR A=30000 TO 46384
4 POKE A,INT(RND*256)
5 NEXT A
6 PRINT INT((256*PEEK
  23673+PEEK 23672)/50): REM
  PRINT TIME$
7 RANDomize 1000
8 FOR A=30000 TO 46384
9 IF PEEK A <> INT(RND*256)
  THEN PRINT A: BEEP 0.5,24: REM
  PRINT CHR$(7)
10 NEXT A
11 PRINT INT((256*PEEK
  23673+PEEK 23672)/50): REM
  PRINT TIME$
  BEEP 0.5,24: REM PRINT CHR$(7)
```

The Spectrum completes in 14 mins 21 secs. The Memotech takes just 3 mins one sec!

George Payne
Watford

The Elite Cheat latest

Can anyone help please? Does anyone know the name and address of the maker or distributor of a cassette called *Elite Cheat II,* which allows the player to set up *Elite* in a way to suit the player?

In my opinion, it broadens the appeal of the game, much like *Silent Service,* which has various 'switchable' parameters built into a menu.

M F Thienel
Romford

Puzzle

Puzzle No 252

Here is a multiplication sum in which the digits have been replaced by x's. Each of the ten digits, zero to nine, have been used once, and once only. As you can see, the position of one of the digits, the '2' has been indicated.

```
  x x x  (times)
    2 x
-------
x x x x x
-------
```

Can you determine: i) The value of the other digits? ii) Two other sets of values if the 2 is exchanged for a 6 and a 7 in turn. (Each of these digits must still be in the position shown – ie, the 'tens' position of the two digit multiplier.)

Solution to Puzzle No 247

My first throw scored single 10, single 3, and treble 12. My second throw scored single 15, single 19, and treble 5.

On a dart board, if we exclude the bulls, there are 60 different sections of the board, the single, double and treble scores for each of the 20 sectors. Each of these possible scores is stored in the array, the three extra values being a repeat of the first three to facilitate counting 'one place clockwise' from each of the sectors.

The three loops evaluate all possible scores obtainable with three darts. This is computed as T1.

The corresponding segment of the board one place clockwise is actually found by adding *three* to the subscript of the array (as each score, double, and treble, are in consecutive positions in the array).

Therefore, line 140 computes the score obtained from positions one place clockwise. If this score matches the first, and is equal to 49, the values are printed out.

Winner of Puzzle 247

This week's winner is Nigel Parsons, of Cardiff, who will receive £10.

Rules

The closing date for Puzzle 252 is April 24. Answers should include a program listing if possible.

```
 10 DIM S(63)
 20 FOR N=1 TO 61 STEP 3
 30 READ Z
 40 S(N)=Z:S(N+1)=Z*2:S(N+2)=Z*3
 50 NEXT N
100 FOR A=1 TO 58
110 FOR B=A+1 TO 59
120 FOR C=B+1 TO 60
130 T1=S(A)+S(B)+S(C)
140 T2=S(A+3)+S(B+3)+S(C+3)
150 IF T1=49 AND T1=T2 THEN PRINT
    S(A),S(B),S(C):PRINT A,B,C
160 NEXT:NEXT:NEXT
1000 DATA 20,1,18,4,13
1010 DATA 6,10,15,2,17
1020 DATA 3,19,7,16,8
1030 DATA 11,14,9,12,5
1040 DATA 20
```

The fastest computer around

Reference Graphic Demonstration (Alastair Watt, March 20). In his letter he says that the same program on the Spectrum and PC1512 took six minutes, 54 seconds, and 56 seconds respectively. He also said that Basic 2 has a reputation for speed and what a dramatic example of the Amstrad's capabilities.

If it's speed he wants he ought to try the ST as the same program using Fast Basic took only 12.8 seconds so compared to the ST the 1512 looks like it's going backwards.

R W Hogarty
Plymouth

"It's the Amiga technology that attracts them"

Garbled programs

My short program in *Popular,* February 26, was indeed garbled as J McCarthy notes (Letters, March 20).

There were ten misprints, but the only serious ones were in lines 100 (colon for 'equals') and 110, where the underscores were meant to be decimal points.

The formula is a text book one for the sum of the logarithms; Stirling's usual approximation omits the last term, but my QL is not so lazy.

C R Oswin
Christchurch, Dorset

2 to the rescue

After purchasing your magazine (March 20) your listing on page 31 for the Spectrum called Software Rescue has a large problem in it.

If you look at line 33 and 34 you should notice that two of the numbers have an 'r' in front of them. If you type in this listing and run it the program comes up with a fault.

The answer is simple, just find out what 'r' should be. But it's not quite so simple for people like me, who do not know machine code and cannot possibly guess 'r's value.

Gareth Smith
Market Harborough

The 'r' is meant to be a '2'.

Right of reply

Comments on Chris Jenkins' overview of *Fleet Street Publisher* (Software, March 20).

With regard to ease of use, our testers found the Guided Tour in the manual was extremely helpful in getting to grips with the program's more sophisticated features.

With regard to output, our sales of the basic dot matrix product indicated there is a demand at this level; 24-pin and laser drivers will be available within the next six weeks.

With regard to the inclusion of photographic illustrations, as you will know, photographs are normally pasted into blank picture blocks after type paste-up.

With regard to price, word processors for the ST are around £50–£60, and *Fleet Street Publisher* does a lot more than a word processor!

Pat Bitton
Marketing Director Mirrorsoft

The Hanover debate

In your latest issue, March 13, your reviewers, as always, are admirably keen on spelling accuracy.

Perhaps you could get them to have a look at your 'Hannover', which you have spelt consistently that way for the last 12 months.

F C Sanderson
Derby

Actually, it was deliberate. Hanover is the English spelling; Hannover the German spelling. So it became the Hannover Messe (Fair) in Hanover. Not a very neat solution, I agree.

Colossus calls check

We've now completed move 14 in Game Two of our Readers vs *Colossus* chess tournament.

In Game Two, the Readers are playing white and have voted this time to move their queen's rook to square d1.

Colossus, playing black, has countered by putting the Readers team in check with the knight, moving from d4 to e2 to take white's bishop.

Now get out of that

Which is the best way to head off *Colossus* now? Send your suggested Readers move to *either* Inter-Mediates (*Popular* Chess), Freepost, Sawbridgeworth, Herts CM21 9YA (you do not need to use a stamp with this address), *or* *Popular* Chess, Unit 2, The Maltings, Sawbridgeworth, Herts CM21 0PG (with a stamp).

Please note that if you use Freepost, your entries must be posted promptly – Freepost is slower than paid-for mail. All entries must reach either address by Wednesday, April 7.

The move which gets the most votes will be entered into the game. Results and *Colossus*'s response will be published in two weeks' time.

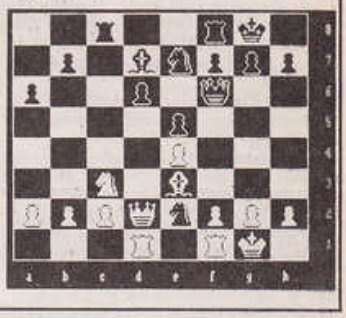
Prizes

A British Museum reproduction Arran chess set will go to the person suggesting the most accepted moves at the end of the game. Five copies of *Colossus Chess 4* (available for most popular micros) will go to the most consistent entrants for the duration of the game.

Next week, we return to Game One, where the Readers are playing black.

Game Two

1	Pe2–e4	Pc7–c5
2	Ng1–f3	Nb8–c6
3	Pd2–d4	Pc5xd4
4	Nf3xd4	Pe7–e5
5	Nd4–b5	Pa7–a6
6	Nb5–d6+	Bf8xd6
7	Qd1xd6	Qd8–f6
8	Qd6–d1	Ng8–e7
9	Nb1–c3	Pd7–d6
10	Bc1–e3	Ke8–g8 o–o
11	Bf1–e2	Bc8–d7
12	Kel–gl o–o	Re8–c8
13	Qd1–d2	Nc6–d4
14	Ra1–d1	Nd4xe2+
15	?	



Future of the Enterprise

I am writing to inform your readers that the IEUG (Independent Enterprise users group) is holding its Annual General Meeting at St Mary's Hall, Hendon Lane, Finchley, London N3. The meeting is on Saturday, April 4, from 10.00am to 5.00pm. Bus routes are 143, 13, 260 and 26; nearest tube station Finchley Central.

All Enterprise owners (or prospective owners) are welcome, not just IEUG members.

A selection of new software will be on show, the future of the Enterprise will be discussed and questions answered, and copies of Private Enterprise, the user group's magazine will be on sale.

If you want more details or wish to join IEUG, contact Neil Blaber on the IEUG hotline, 08926 3890, between 7.00pm and 10.00pm, seven days a week.

Mark S Smith
Weybridge

We're sorry but *Popular Computing Weekly* cannot guarantee to reply to *all* letters requesting a personal answer. It helps us enormously if readers are prepared to have general queries answered on these pages, so, if possible, please do not send SAEs.

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(These figures do not allow for searching)

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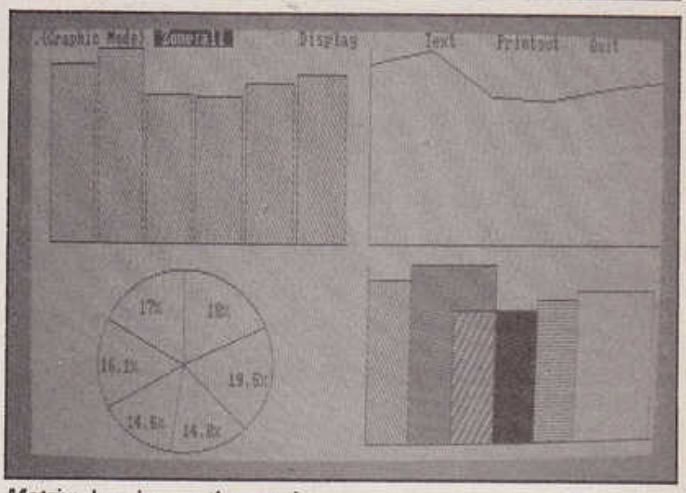

Matrix: **drawing up the graphs**

Integrated packages are becoming increasingly important, causing the traditional margins between different business utilities to disappear. The thinking is that you shouldn't have to leave your current application just to perform a different, simple and frequently necessary task. Databases need to have text editing facilities to produce reports and form letters; word processors need a calculator or the ability to look up names and addresses; spreadsheets, often seen as the most specialist and least accessible of the big three business software tools, are also becoming the heart of integrated packages (including the built-in software of Sinclair's new portable).

Matrix is a menu driven spreadsheet program that has an integrated text editor capable of mail merge, a calculator, and a graph drawing utility.

The spreadsheet itself is fairly standard: it has a moderately useful, but not vast, range of inbuilt functions. Cells can hold numeric, text or formula data and it allows relative and absolute cell referencing in the latter. They can also be named, which makes their use in formulae much easier to remember. Defined blocks can be moved, copied, saved to disc or viewed in isolation. However, if a block is moved any formula adjustment required has to be done manually. Data in specified rows, columns or blocks can be sorted alphabetically or by numeric value, in ascending or descending order.

Numbers can be displayed in integer or decimal formats, with the latter to a specified range of decimal places. Units can be added; such as 'Kg', 'p' or 'cm'. They can also be nominated as degrees or radiants for geometric or engineering work. The final format is a bar type which displays small numbers as a simple form of graph.

The calculator works on a notepad-like window so that previous calculations can be viewed. The calculation can include values taken from worksheet cells.

The notebook is a primitive but useful text editor. It lacks on-screen formatting, but text is tidied up as printed. You can send any Ascii code or printer control code by specifying them exactly which is a flexible if unfriendly method of controlling the text output (keep your printer manual to hand). You can also extract data from specified spreadsheet cells for inclusion in the text. If a range is specified instead of a cell, several copies are printed giving a mail merge or label printing facility. Page width and depth can, of course, be specified. It is also possible to 'print to disc' to produce plain Ascii files of the spreadsheet or notebook.

The graphs options are again reasonable: pie, line, bar and cumulative bar charts can be displayed. They lack auto scaling or the ability to superimpose plots but you can add text or legends and superimpose a grid. Up to four graphs can be displayed on screen at once, but one drawback is that only Epson compatible printers can be used.

No major advances in programming technique are required for integrated packages: the real limitation is the available memory size. So they are rare, or usually cheesey, on small home micros. *Matrix* therefore came as a pleasant surprise. It wouldn't win any prizes at the PC User show but it certainly has some innovative and useful features and, if your ambitions are not too great, it provides a cheap method of buying several utilities together.

Tony Kendle

Program *Matrix* **Micro** Amstrad CPC **Price** £29.95 tape, £34.95 disc **Supplier** Audiogenic Software Ltd., PO Box 88, Reading, Berks.

A handy and valuable discovery

Siren Software has produced some of the most valuable disc utility software for the Amstrad, and *Handyman* certainly does not let the side down.

There are several components to the program. The least exciting is Filemate which will read disc-files to screen in Ascii, Ascii with line numbers, or Hex and Ascii form. This is complemented by a disc file editor which searches for specified data.

For the lazy, or those with a desperate need to be user friendly, there is a utility designed to allow you to quickly create menus for the loading of files from your discs. Transfile is a utility that lets you transfer files from one disc to another – like *Pip* does under CP/M (but with the added ability to read files from formats not normally recognisable by the CPC).

Disc release and disc restore are designed to copy entire discs over on to cassette tape. This is intended to allow you to archive files that you do not use very often, thus releasing the valuable disc space. There is the obvious advantage that you do not have to laboriously copy every file one by one but the really clever part is that all details of the disc, such as the format, can be stored and reproduced exactly as they were on the original. Even many dodgy format discs can be backed up in this way.

The best utility to my mind allows to temporarily change the workings of the disc drive to give you a welcome 207K of free space rather than the standard maximum of 178K. With the proviso that these discs cannot be used under CP/M, or read by any other Amstrad machine that doesn't have access to *Handyman*, this must be an excellent idea.

Discovery + is a tape to disc transfer program that must be the current state of the art in this field, being able to tackle almost all of the strange loading systems seen on current games. Transferring software in this way is not illegal as long as it is intended purely for your own use.

I believe that anyone who has invested in a costly disc drive can not be criticised for resenting the need to go back to slow, unreliable cassette tape. Many anti-piracy devices exist that can be used instead of dodgy loaders, such as *Lenslok* or some form of random documentation check, and these are really the only protection against tape to tape piracy anyway.

Tony Kendle

Program *Handyman* and *Discovery* + **Micro** Amstrad CPC **Price** £12.99 and £14.99 **Supplier** Siren Software, Trafford Technology Centre, 43 Elsinore Road, Manchester.

Who's the spriteliest of them all?

Duncan Evans compares two sprite designer products

Designing sprites for the latest arcade mega blast production is usually an exercise in patience and dogged application, involving copious amounts of graph paper. What is obviously required, then, is a software package to take all the hard work out of the task, by not only allowing you to design multi-coloured sprites, but also allowing for some measure of animation in order to test out how the sprites will look when being used within your own programs.

Pro Sprite Designer from Eidersoft and *The Sprite Construction Set* from Microdeal both offer just those facilities, but with differing degrees of success as will be made clear in this comparative review of both products.

"What is required is a product to take all the hard work out of designing sprites"

Pro Sprite Designer

Eidersoft's package comes in the usual triangular, and none too sturdy, box, complete with disc and a very small 60 page manual (obviously so because anything bigger wouldn't fit in).

Once past the loading screen of a cutaway view of an engine, which can be impressively animated with a separate program on the disc, the screen display divides into a large 32 by 22 pixel grid on the left, and a control panel on the right containing icons representing the various functions and options available.

There are 30 icons, three digital displays and a picture window in the control panel, so reference to the manual is essential until familiarisation is complete. To begin creating a sprite, you simply select a colour from the palette above the graph area, then use the left hand mouse button to fill in the pixels in the grid. While you're doing this your sprite is duplicated in the picture window.

That's all there is to designing a single frame sprite. The full power of the features on offer only become available if you want to animate your sprite by letting it have more than one frame. In fact a single sprite can have over 700 different frames. Obviously this is a bit of overkill on Eidersoft's part, but it does illustrate that there are more uses to the program than simply designing intergalactic starships.

If you use a number of the sprites adjacently and with many frames each, you can set up some very impressive demos. The only penalty for these multi-dimensional objects is, of course, memory, each frame consuming an extra 360 bytes.

Creating a second, or further, frame to a sprite is quite simple. One click on the frame forward icon brings up a fresh canvas in the picture window and design grid, ready to be used. Assuming you want only minor alterations made to the design in the previous frame, then either the frame copy or frame overlay icon will be of use. One copies the contents of a specified frame to the target frame, overwriting whatever was previously there, while the other simply overlays the vein you can also swap frames around, rearranging their display order.

Other options for manipulating the frame design include four way scrolling in case your image is incorrectly positioned, vertical and hori-

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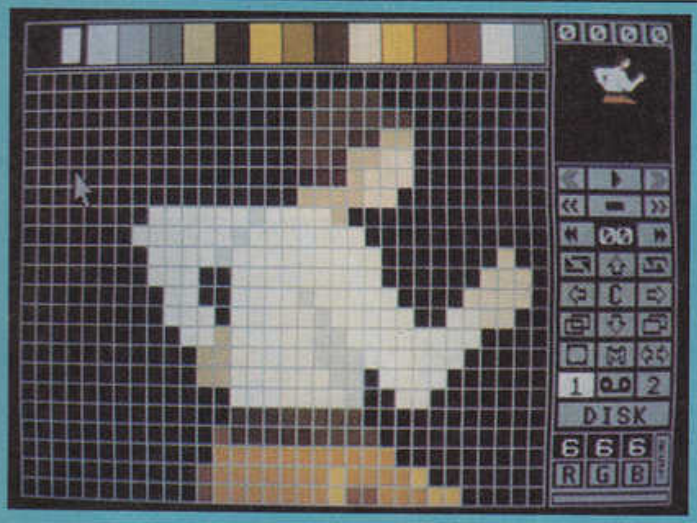


zontal invertion of the image, and clearing it altogether.

Fast forward and reverse, as well as normal play options, not only allow you to watch the frames in sequence (and you can specify the delay between the frames changing to suit), but also allow you to search rapidly for a specific frame that you wished to alter. This is something that you cannot do with Microdeal's product which sports crude viewing options in comparison.

As virtually all sprites are designed as moving objects, displaying a sprite running through its various frames whilst moving horizontally or vertically would be very useful if not essential. *Pro Sprite* lets you do this, the *Construction Kit* doesn't.

Selecting the *'M'* icon clears the pixel grid from the left side of the screen and replaces it with a blank area with the animation options along the bottom. You can set the speed of the sprite moving about and its direction as well as initiating a loop sequence to save setting it all rolling again.

It doesn't really matter if the sprite production facilities offered are marvellous if it is nigh on impossible to incorporate the finised designs in your own programs. After saving the sprites to disc, the vital question of 'what now?' looms. Thankfully *Pro Sprite* makes a good attempt doing the business here and if anything, it's at this point that the gulf between this and *Construction Kit* widens irretrievably.

Using *Pro Sprite* the sprite data can be saved on disc in a format which can be incorporated into ST Basic, Fast Basic, Assembler and C programs respectively.

It should be noted that this is not a sprite movement and manipulation package but, the data files do contain routines for transferring the sprites to the screen. However, in order to utilise these routines you must be fairly proficient in whichever language you are using as they are not the last word in user-friendliness. Personally I would have liked to have seen a complimentary program on the disc that simplified the use of sprites within your own programs so that even newcomers to programming could take advantage of the designs they had created.

The Sprite Construction Kit

The Microdeal offering is packaged in a video style box and comes with an eight page manual. Even if the manual is 2·5 times the size of Eidersoft's, eight pages is still woefully inadequate.

The screen displayed is arranged thus: the zoom and edit screen on the left, palette above and drops down menus above that, an actual size display (called the Actual Window, logically enough), of the sprite being edited to the right, below that a clipboard and on the far right a sliding scale to set the delay between frames when a sprite is run through its animation sequence.

The size of sprite on offer is quite large, facilitating the animation of character sequences as opposed to standard sprites. Because the sprite is so large there are two modes of operation in *Construction Kit*. The first is the Level Actual Window while displaying a close up of only one sixth in the Zoom Window.

The second is the Object mode whereby you can edit and zoom in on one particular section of the sprite, want to swap sections (sixths) of the sprite around in the Actual Window, which is all done very easily.

The method of drawing the sprite in the first place is exactly the same as the method employed by Eidersoft's offering except that it is less responsive when drawing.

Construction Kit's reply to *Pro Sprite*'s frames are what are referred to as 'levels' of a sprite. You can have 27 of them which is perfectly reasonable, it's just that *Pro Sprite* offers an equivalent of 700+.

> *"The method of drawing the sprites in the first place is exactly the same with both products, except that Microdeal's is less responsive"*

When setting up the animation sequence, you can specify which order the frames are shown in first and use the sliding control to set the inter-frame delay. Unfortunately you cannot easily step through the frames quickly to look for a specific frame or to see how things are progressing. You can go to a specifc frame but this involves use of a menu and pressing keys.

As I've already stated, the crunch comes when you want to use the sprite designed in your own program. *Construction Kit* is a bit of a let down, comparatively, here as it only provides source files for C or Assembler programs and gives no information on the resultant file either.

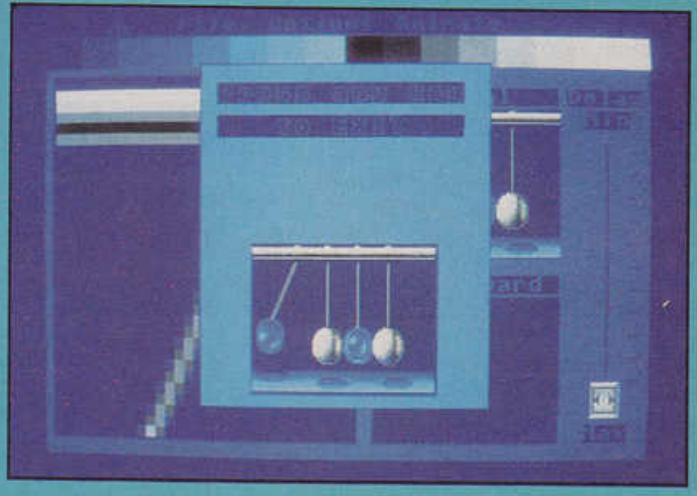
The Conclusion

Despite a few minor criticisms with *Pro Sprite Designer*, such as icons not fading out on the control panel when you can't use them, the product is substantially better than *Sprite Construction Kit*.

Duncan Evans

Product *Pro Sprite Designer* **Micro** Atari ST **Price** £39.95 **Supplier** Eidersoft Software, The Office, Hall Farm, N. Ockendon, Upminster, Essex RM14 3QH.

Product *Sprite Construction Kit* **Micro** Atari ST **Price** £19.95 **Supplier** Microdeal Ltd, Box 68, St Austell, Cornwall PL25 4YB.



In line for an update

Chris Jenkins looks at two ways to upgrade your Commodore 64

Evesham Micros' contributions to the world of Commodore computing become ever more imaginative and valuable. Of the latest products released, one is largely cosmetic but well worth the money, while the other seems like the answer to the heartfelt prayers of many Commodore 64 users.

The Slimline 64 replacement case scores highly for snob-value. As you will know, the aging 64 was recently replaced by the 64C; exactly the same machine electronically, but rehoused in a smart, modern, wedge-shaped case similar to that of the C128.

The Slimline is just such a case, very similar to the style of the 64C. Fitting presents no problems; just unscrew the old case, release the keyboard and main PCB, then refit into the new case, making sure that the power LED, joystick sockets and rear ports engage properly in the slots.

The wedge-shape of the Slimline allows you to rest your wrists on the case while typing, so it's a good buy for word-processor users. Also included are holes for a reset switch or Dolphin DOS switch. Apart from that the only real value is aesthetic, but I think that's reason enough to treat yourself to what will look like a new computer.

More radical is the Excelerator+ (sic) floppy disc drive. For years, Commodore owners have been crying out for a 64-compatible $5\frac{1}{4}$ inch disc drive which is cheaper, smaller, and if possible faster than the despised 1541. Although there have been some attempts made, notably the Enhancer 2000 at around £150 with word processor, the Excelerator+ is the smallest alternative drive to claim complete software compatibility – the original Enhancer could not cope with fast-loaders, although later models were improved.

The Excelerator+, though, seems to cope faultlessly with commercial software, Ascii files or backed-up programs – and Evesham has obviously tested many times more programs than we could.

The claimed 25 percent increase in speed, though, seems only to apply to programs without a disc fast-loader; we found no other speed increase except in formatting a disc, at 55 seconds instead of the 1541's 87.

The Excelerator+ seems tiny compared to the 1541, at 268 × 150 × 47.5 mm, almost half the size. This makes it barely wider than the $5\frac{1}{4}$ inch disc, though due to its sturdy all-metal construction, the unit weighs in at a relatively hefty 2.8 Kg.

The power supply is external. This helps in keeping down the size of the drive, and also reduces overheating problems. The power supply plugs into the back of the unit, next to the two serial ports. Also on the back is the on/off switch.

Beneath the unit are two dip switches which allow the device number to be changed to 8, 9, 10 or 11 without resorting to cutting PCB tracks or using software methods, as you must with the 1541.

There's a single operating LED to the left of the disc slot; this is normally green, and turns red or flashes during data transmission or in case of error. The disc mechanism is similar to that of the 1541C, with a twisting latch, and no spring mechanism to eject the disc.

In all respects, the Excelerator+ operates in the same way as the 1541, offering relative, sequential and random filing, as well as the whole range of Commodore DOS functions. Although this doesn't overcome the inherent operating difficulties of Commodore DOS, the reasonable price (£40 less than the 1541) and increased convenience of the Excelerator+ make it a very attractive purchase. Packaged with the Freeze Frame Mark 4 transfer cartridge, this could be the ideal incentive for any tape user to upgrade to disc.

Hardware *Slimline replacement case, £19.95; Excelerator+ disc drive, £159.95; Excelerator+ and Freeze Frame Mark 4, £179.95* **Micro** Commodore 64 **Supplier** Evesham Micros, 63 Bridge Street, Evesham, Worcs WR11 4SF, 0386 41989.

Jumping for Joycon

Has your closest friend got BO? If so and you're not too keen on sharing a keyboard with them in a two player game then any product which enables you to use a joystick each has to be a good idea. Joycon, from Frel is one such piece of hardware.

Joycon consists simply of a 9-pin Din plug which fits to your CPC and two 9-pin Din sockets which accept standard Atari joysticks.

The price is a very reasonable fiver and better still the unit works as it should. We tested Joycon with a number of games and each gave a perfectly reasonable response with both joysticks attached. What more could you ask for?

Duncan Evans

Product *Joycon* **Micro** Amstrad CPC **Price** £4.95 **Supplier** Frel Ltd, Electronic Design & Marketing, 1 Hockeys Mill, Temeside, Ludlow, Shropshire SY8 1PD.

Toning down your Amstrad

David Wallin explains how to cut down on the glaringly obvious

The Alpha Electronics screen filter for the Amstrad PCW series is one of a new type which uses a very fine fibre mesh rather than glass or perspex. The main advantage of this is that it is far cheaper than a glass one.

Only a few years ago, a screen filter would set you back £50 to £150. Now, the mesh technology has brought the price down to the £10 to £20 bracket – ideal for the home user.

What does a screen filter do? Mainly it reduces reflections and 'glare' produced by direct light shining on the screen. It also blackens the black on the screen. Due to the lack of reflections, the colours tend to be a bit darker, something which I have grown to like.

Filters generally come in two styles. There are the ones which 'stick' around the screen on the plastic of the monitor and those which fit almost flush to the screen itself. Alpha's is the former type, so you can 'see' it's there and its plastic surround is moulded specially to fit the PCWs, in the slightly darker colour of the 8512. It is almost weightless and secured by four small black velcro strips.

"Due to the lack of reflections, the colours tend to be a bit darker"

Naturally, you can't expect quite the same quality or strength from a mesh filter as from a glass one, but I find the Alpha Electronics' one to be of excellent quality. Put simply, after about a month of using the filter I can't bear to use my 8256 without it on.

I have, however, found two problems with it. The first is that I keep forgetting it's there! This means that every time I point at the screen I push the filter and almost break it.

The other problem is that the lower part of the filter does 'shine' and the mesh shows at times. This is only visible when you are very close to the screen and a bright light is shining very near to the filter, but not pointing directly at it – odd.

A bit expensive at £17.95 perhaps, but it does look in place on the 8256 (even more so on the 8512); more than most other filters. A luxury maybe, but if you use your computer regularly it should become invaluable.

Hardware *Alpha Screen Filter* **Micro** PCW 8256/8512 **Price** £17.95 **Supplier** Alpha Electronics, Unit 7, Maple House, 97 Ewell Road, Surbiton, Surrey KT6 6AH.

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Following the Chancellor's well publicised 'giveaway' budget, the corporate body of *Popular Computing Weekly* (in conjunction with Volex Electronics) was spurred into action and so has come up with a fantastic deal which, while not guaranteeing to refloat the economy and get three million off the dole, will certainly keep you better informed.

What can no well-heeled exec be without nowadays? What item of electronic equipment will you see on every wine bar table across the City? Right, a car phone – but seeing as that hasn't got anything to do with computers, wouldn't you rather be the proud owner of a Teletext adaptor?

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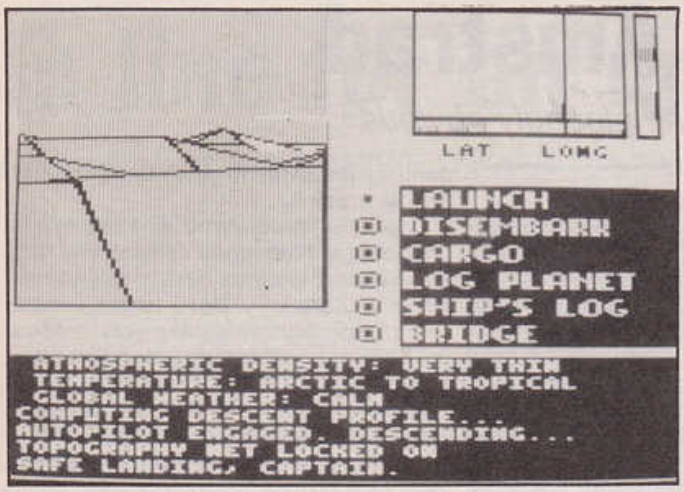


A galaxy awaits in your IBM

Every once in a while a game comes along for a certain computer that fills right-thinking members of society with a desire for that machine.

Elite on the BBC was one, *Gunship* on the C64 another, *Flight Simulator II* on the ST another.

The IBM PC hardly figures on anybody's list as a highly desirable games machine but now the unthinkable has happened: the PC game has arrived.

> *"Starflight puts an entire galaxy into your PC, and the intelligence, imagination, humour and loving attention to detail combine to make this a truly great piece of software"*

The product in question is *Starflight*, from Electronic Arts via Ariolasoft. Unless you're terminally brain-dead, it is one of the most engrossing and impressive games on any computer.

Anyone who owns an Amstrad PC1512, or any of the other clones, should buy this game, and it may be the best argument for buying an IBM emulator for machines like the Atari ST or the Amiga.

It won't, it must be admitted immediately, appeal to fans of the "kill, kill, kill" school of thought.

The scenario is this: your home sun is about to go nova. A team of exploratory starships is sent forth to scour the galaxy looking for suitable worlds to colonise.

To start with you're given a minimally equipped ship, and enough money to train a crew. After that you've got to earn a living.

Not startlingly original, but it's far from the most hackneyed idea. What makes *Starflight* exceptional is the care and attention that has gone into making this a vast epic.

The galaxy contains hundreds of stars, each with an average of four planets.

And each planet is uniquely generated by the computer as to size, atmosphere, global weather, mineral content and biology.

To be suitable for colonisation, the planet must have an oxygen atmosphere, free water, moderate temperature, and reasonable gravity (a planet may be intolerably hot at the equator but inhabitable at the poles).

Not surprisingly, most planets are uninhabitable by humans but you must explore them anyway. Many contain valuable minerals that you can mine and sell – essential for fuel and upgrading your ship's equipment.

Others contain alien lifeforms which can be captured or recorded – again for money. And on some planets you'll find ancient ruins containing valuable archaeological items.

There are also a number of intelligent, space-faring races who you'll encounter on your travels. Some are friendly, some are hostile, but if handled properly all will impart useful information.

One race are religious fanatics: you'll be greeted by the message "Repent, air-breathers, repent. Lower your shields and be saved." In cases like this you'll be grateful for better shields, good armour, first-class missiles and lasers, and fast engines to get you out of trouble in a hurry.

In addition to the humdrum affairs of survival and grubbing a living, there are deeper problems to be solved: who were the Ancients, and what is the menacing Crystal Planet?

Given that we're talking IBM PCs, you'll appreciate that the graphics are not astounding, and the sound effects rather poor. But given the limitations of the machine, the programmers have done an amazing job (the fractal generator used to create the planets is very impressive).

But these problems pale into insignificance against the good points. *Starflight* puts an entire galaxy into your PC, and the intelligence, imagination, humour and loving attention to detail combine to make this one of the truly great pieces of software.

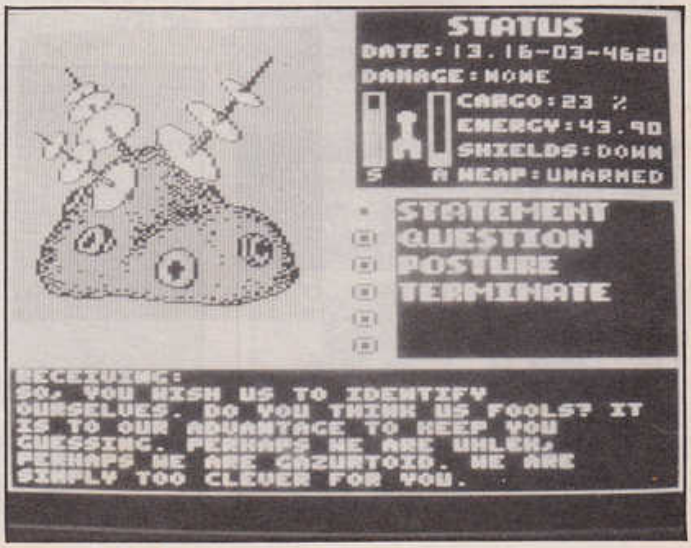
How to get hold of a copy? That's going to be difficult for a month or so while the Ariolasoft (who have sold all their existing stocks of *Starflight*) agreement with Electronic Arts lapses and EA actually get their independent act together in this country.

But whatever, that wait is going to be well worth it.

Popular Appeal ◆◆◆◆◆

Peter Worlock

Program *Starflight* **Micro** IBM PC and Compatibles **Price** £24.95 (from Ariolasoft, EA price as yet undecided) **Supplier** Electronic Arts.



Waging war

The ST has not been particularly well served on the scrolling shoot 'em up front, previous efforts being fairly feeble. Things began to look up with *Typhoon*, an adequate shooter with tiny sprites and peculiar music and effects. Now, the latest and greatest, to date, comes in the form of *Plutos*, from MicroValue, Tynesoft's budget ST label.

In this exercise in mass destruction your reasonably sized ship can fire up to four double sized bolts of . . . whatever it is that these ships fire, at the swirling hordes of small sprites that dance and cavort across the screen.

While the flying foe represents one hazard, another comes to the fore in the shape of emplacements on the ground which range from solid formations to crash into, to beserker extractor fans spewing a hail of missiles.

Also on the ground are buildings and bonus targets worth vast amounts of points, and also the occasional blob which may or may not contain hidden lives (of *Lightforce*). To finish off a level you must wage war against a grim looking face with Basilisk eyes and venomous teeth.

The sound effects are somewhat rudimentary and there's no music to enjoy or complain about, but the action does get very thick if not so fast later on. Around level nine the screen is simply awash with sprites making survival a matter for the gods.

Entertaining though it may be initially, the one player game soon becomes tiresome. However, when two players are involved (both ships appearing on screen simultaneously) the battle becomes a personal challenge and sustains the excitement.

Plutos is certainly the best 2D shoot 'em up on the ST so far, but watch out for Microdeal's *Goldrunner*.

Popular Appeal ♦♦♦

Duncan Evans

Program *Plutos* **Micro** Atari ST **Price** £14.95 **Supplier** Tynesoft, Addison Industrial Estate, Blaydon, Tyne and Wear NE21 4TE.

Pretender to the crown

I don't think the most generous person in the world would call Mike Singleton prolific, but perhaps with two mega-hits like *Lords of Midnight* and *Doomdark's Revenge*, you don't have to be.

Still, it's been well over a year since his last commercial release – and that's a long time to live on a reputation – hence the great interest in *Throne of Fire* from Melbourne House.

Mike wrote the scenario and design for this game, with the coding and graphics being done by Consult Computer Systems. The question is, has the master lost his touch?

You certainly couldn't put *Throne of Fire* in the same 'classic' league as any of his previous offerings – the design just doesn't have the same breadth of scope even though it has been implemented well on to the Spectrum.

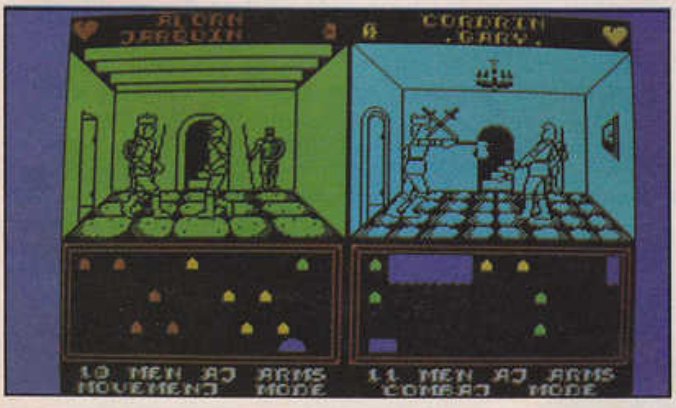
The scene is set in the burning citadel, a circular royal fortress built around the cone of a volcano – obviously one of the earlier experiments in central heating – with three princes (plus attendant cohorts) battling it out for the recently vacated throne.

You take the role of one would-be king, with the computer controlling either both or just a single remaining prince, depending on whether you are playing one or two players. Your prince and his forces (you can only control one man at a time) move through the castle in an attempt to gain control of the throne room (additionally defended by the initially neutral king's guard).

> *"The action itself is played out in very classy style on a vertically split screen"*

One you have done this, the other players lose all control of their men-at-arms, you gain control of the king's guard and the opposing princes are in big trouble. Kill the other princes and the game is won.

The action itself is played out in very classy style on a vertically split screen – one for each player.



This is all very clever, but the bottom line is that the one player game is easy to beat and while the two player game is fun, design flaws mean it lacks the depth challenge of the author's previous work.

Popular Appeal ♦♦♦♦

John Cook

Program *Throne of Fire* **Micro** Spectrum **Price** £8.95 **Supplier** Melbourne House, 60 High Street, Hampton Wick, Kingston Upon Thames, Surrey KT1 4DB.

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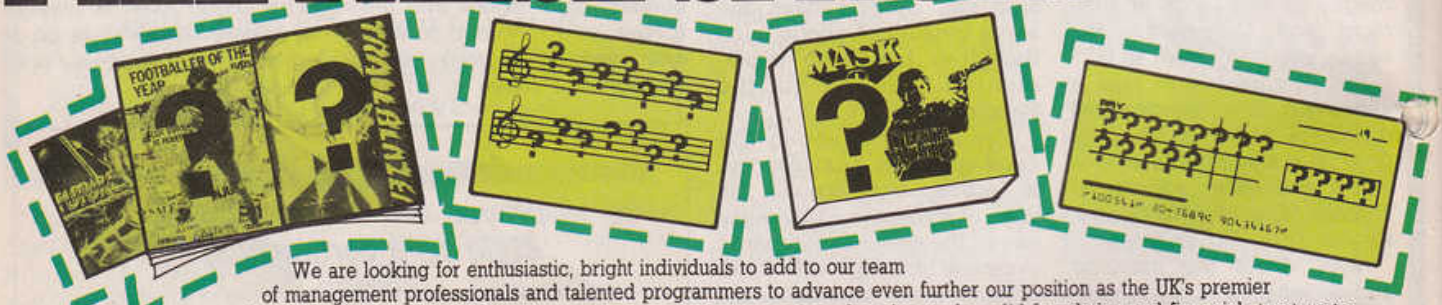

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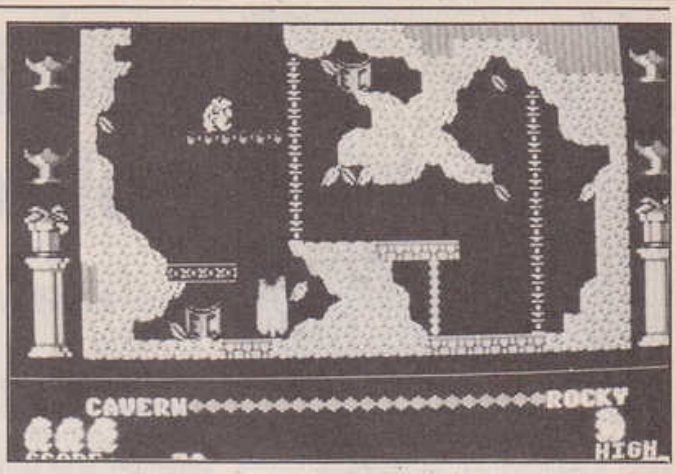
Mole-playing games



Monty Mole, you might remember, was last seen on the run, having been viciously imprisoned for 'borrowing' coal to keep warm.

Now he's lying low in Gibraltar – but there's no peace for the wicked, and as Intermole are hot on his furry little tail, he must flee across Europe, collecting enough money on the way to buy the little-known Greek island of Montos so as he can set up his very own Costa del Crime.

That's the plot then, but does the word 'collecting' ring any bells? If so, you won't be surprised that you must also dodge various animated single colour sprites, jump off sundry platforms and climb the odd ladder or two in your bid to cheat the extradition laws.

Having said that, *Auf Wiedersehen Monty* is one of the classiest of this particular games genre.

Good music and sound effects, some excellent puzzles, leaps that must be timed to the split second and objects that have unpredictable effects make it an enjoyable romp and addictive in the way these things often are.

Sure, it's not bristling with exciting new game or programming concepts, but if you are of the school of thought that believes there's many a good tune played on an old fiddle, you'll like this one. *Auf Wiedersehen* cannot be described as a Strad, but at least it's in tune.

Popular Appeal ♦♦♦
John Cook

Program *Auf Wiedersehen Monty* **Micro** Commodore 64 **Price** £9.99 **Supplier** Gremlin Graphics, Alpha House, 10 Carver St, Sheffield S1 4FS.

Steve Davis dips into pool

For those of you reading in black and white, the blue ball is the object directly behind the yellow. On the PCW, however, it's much easier to work things out. They're all green.

Yes, Steve Davis has finally made it on to the PCW machines and much to the delight of many a day-dreaming office worker, I'll be bound. Booted up via CP/M, the game is up and running in a matter of seconds (ah . . . the joys of a disc system) giving you not just the option to play snooker, but apparently, young Stevie has learned to play pool and billiards as well.

Choose the game, select one or two players, and it's off. The game has been converted reasonably well, with no major control changes for the versions on other formats. Play couldn't be simpler – cursor keys are used throughout (in conjunction with *Return*) as you first place a cursor where you want to aim the ball, then decide the power of the shot, finally finishing the business off with a touch of spin.

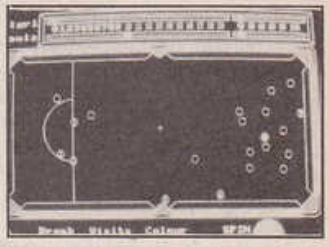
The motion algorithms and animation of the ball themselves are adequate, rather than excellent, but have no major faults. The problem with only having the single colour has been got round by shading the reds and numbering the colours – not amazingly attractive, but it works.

As with all snooker-type games, the one player option is not actually against the computer itself, but is more a practice option.

Still, if you feel the urge to rack up a few frames on the PCW, cue here.

Popular Appeal ♦♦♦
John Cook

Program *Steve Davis Snooker* **Micro** Amstrad PCW 8256/8512 **Price** £14.95 **Supplier** CDS Software, CDS House, Beckett Road, Doncaster House, Doncaster.



Steve Davis Snooker: **adding pad and billiards to the repertoire**

The best collection on the BBC

Old games never die; they simply turn up a couple of years later on a compilation cassette. The company responsible this time is Superior Software which is issuing its back catalogue as two collections. Volume one is fairly dire so let's look at volume two.

For a tenner you get *Overdrive, Crazy Painter, Battle Tank, Missile Strike, Space Pilot, Deathstar, Repton 2* and the previously unreleased *Kix*. As you may have perceived, all the above bar *Repton 2* are versions of actual arcade games, albeit old ones.

Of the eight games only *Overdrive* is actually bad, featuring, as it does, a Roman road to drive down (hardly *Pole Position*). *Crazy Painter, Kix* and *Space Pilot* are all fairly simple and provide a measure of enjoyment, while *Battle Tank* is a cut down version of *Battlezone* which becomes quite tedious after a very short while.

Missile Strike is an entertaining *Missile Command* implementation where you defend your cities from incoming missiles and satellites. It looks its age but is still good fun nevertheless.

Finally, the best two games on the compilation are undoubtedly *Repton 2* and *Deathstar*. The latter is based on *Sinistar* and features four way scrolling over a starfield, mining asteroids for bombs and a frantic chase involving the *Deathstar* when its minions have finished building it.

Repton 2 is one of the best games ever produced on the BBC. Not because of the graphics, scrolling or sound, none of which are outstanding, but from a gameplay and addictiveness viewpoint. If you haven't already got *Repton 2*, then this collection represents excellent value for money.

Popular Appeal ♦♦♦♦
Duncan Evans

Program *Superior Collection Volume 2* **Micro** BBC B/Master **Price** £9.95 (cassette), £11.95 (disc) **Supplier** Superior Software, Regent House, Skinner Lane, Leeds LS7 1AX.

The return to that golden oldie

Tony Kendle passes along an infinite lives poke for Galaxia

I want to send my congratulations to Andrew Hill of Blaina in Gwent, who has won a genuine *Moon Cresta* arcade machine from Incentive Software for his excellent performance on the game. This was the second machine given away by Incentive, the first for those who bought early releases of the game on Spectrum and Commodore, the second to allow late-comers with versions on Amstrad and BBC to try their hand.

The question is, what is Incentive going to do next? It is, understandably, concentrating most of its efforts in promoting its excellent *Graphic Adventure Creator*, and its products, but it did such a good job with the *Moon Cresta* conversions that I don't think we should let them rest on their laurels. More arcade games please, Incentive!

The cheat routine for this week is an infinite lives poke for the Amsoft game *Galaxia*. This was one of several cheats sent in by Leslie Cowley for Amstrad CPC games. We printed the bulk of them a few weeks ago, but this particular routine was too long to include at the time.

Galaxia was one of the very first games ever released for the CPC, and I remember that seeing it running in crystal clear colour on the supplied monitor was one of the major points that sold the computer to me. Unfortunately I have to admit that only about one in ten of the programs released since have come close to living up to that first promise and I still find that *Galaxia* lies near the top of my games pile. Now thanks to Leslie I can really show those flying diamonds what for.

It seems appropriate just to quickly remind everyone of one of the common problems that arise with hacking Amstrad games. Locomotive, in its wisdom, provided the option for users to protect their Basic programs such that they can only be run, they cannot be loaded, merged, or broken into and listed.

Now as it turns out, breaking this protection is a relatively simple process for a good hacker. It is therefore common for people to send in Amstrad pokes that say something like 'Add this line to the first Basic program' or 'Edit the Basic loader program to say' etc. Unfortunately for beginners, getting access to the lines of Basic can be next to impossible.

The alternative approach is to completely replace the existing Basic loader, which is normally quite short, with an exact duplicate routine of your own, but with the appropriate pokes inserted. This new routine can itself do the job of loading and running the main machine code of the program, ignoring the original Basic loader when it finds it.

This is the system Leslie has used for this cheat routine, and I must repeat that if anyone has found some pokes for Amstrad games, please could they have a thought for novice programmers and make the cheats as easy and as obvious to use as possible.

```
10 CALL &BB00:CALL &BB4E:CALL &BBBA:CALL
&BBFF:CALL &BCA7:CALL &BCC8
20 MEMORY &32FF
30 CLS:LOCATE 10,10:PRINT "Loading Please
Wait":count=0
40 FOR i=1 TO 189:READ num:count=count+num-
:POKE &6FFF+i,num:NEXT
50 IF count<>21825 THEN PRINT "Error in data
please check":STOP
60 CALL &70B4
70 ENT -1,=40,1,2,1,4,=30,1,2,-1,4
80 ENT -2,=62,1,1,1,4,=94,1,1,-1,4
90 ENT -3,5,4,1,17,-4,1,15,4,1,6,-4,1,3,4,1
100 ENT -4,5,4,1,5,-4,1
110 ENT -5,=200,1,20,4,1,10,-4,1,20,4,1,
10,-4,1
120 ENT 6,100,4,1
130 ENT 7,100,-4,1
140 ENT -8,20,-1,2,1,7,1
150 ENT -9,6,1,1,6,-2,1,6,3,1,6,-4,1,6,2,1
160 ENT 10,17,-1,1
170 ENT -11,3,2,1,5,-2,1
180 ENT -12,=90,1,20,-2,1
190 ENT -13,5,1,2,10,-1,2,10,1,1,20,-1,1,
15,1,3
200 ENV 1,=9,5000
210 ENV 2,1,0,30,7,-1,10
220 SYMBOL
254,124,198,198,198,198,198,124
230 BORDER 0:INK 0,0
240 LOAD "!galaxia m/c":DIM a(5):CALL
@a(0):POKE 14415,0:CALL &7A58
250 DATA 205,6,185,221,126,0,205,165
260 DATA 187,17,180,112,237,83,178,112
270 DATA 62,8,245,14,1,126,229,33
280 DATA 3,0,17,0,0,6,8,245
290 DATA 161,32,47,241,203,33,41,41
300 DATA 16,245,221,42,178,112,221,115
310 DATA 0,221,114,1,221,115,2,221
320 DATA 114,3,221,115,4,221,114,5
330 DATA 42,178,112,17,6,0,25,34
340 DATA 178,112,225,35,241,61,32,194
350 DATA 24,8,123,180,95,122,181,87
360 DATA 24,201,62,3,17,180,112,245
370 DATA 62,2,245,33,228,112,6,8
380 DATA 26,119,35,19,19,16,249,62
390 DATA 255,33,228,112,213,205,168,187
400 DATA 62,255,205,90,187,209,1,241
410 DATA 255,235,9,235,241,61,32,218
420 DATA 1,14,0,235,9,235,62,10
430 DATA 205,90,187,62,8,205,90,187
440 DATA 205,90,187,241,61,32,192,62
450 DATA 9,205,90,187,205,90,187,62
460 DATA 11,205,90,187,205,90,187,195
470 DATA 90,187,228,112,17,240,0,33
480 DATA 128,171,195,171,187
```

Charts

Top Twenty

1	(1)	Feud	Bulldog
2	(2)	BMX Simulator	Code Masters
3	(3)	Gauntlet	US Gold
4	(8)	Konami's Coin-op Hits	Imagine
5	(5)	Footballer of the Year	Gremlin Graphics
6	(6)	180	Mastertronic
7	(11)	Leaderboard	Access/US Gold
8	(9)	Ollie and Lisa	Firebird
9	(4)	Paperboy	Elite
10	(–)	Delta	Thalamus
11	(10)	Curse of Sherwood	Mastertronic
12	(13)	Bomb Jack 2	Elite
13	(–)	Nemesis	Konami
14	(7)	Ninja	Mastertronic
15	(–)	Arkanoid	Imagine
16	(14)	Big 4	Durell
17	(20)	Short Circuit	Ocean
18	(16)	Gun Law	Mastertronic
19	(19)	Escape from Singe's Castle	Software Projects
20	(–)	Thrust II	Firebird

All figures compiled by Gallup/Microscope

Games from the adventurer of the year

Tony Bridge looks through new releases from Tom Frost's Tartan Company

Although adventure-writing utilities like *GAC* and *The Quill* seem to have cornered the market, there are still a handful of others, chief among which are CRL's *Genesis* and the Basic compiler from Tom Frost.

Tom has often written to me, and each letter contains help in a variety of adventures: he subscribes to many of the professional and amateur magazines, and offers help to other players in a bewildering number of programs. On top of all this, he won, as many of you may remember, the Adventurer of the Year Award for being the first to complete Incentive's *Ket Trilogy*. So he knows what he is talking about. His Adventure-Writing System allows the programmer to input data into a Basic framework, then compiles this into a program that has almost all the speed of a machine-coded program. The main advantage of this is that the author then has control over layout, sound and so on. At £4.95 (£2.50 for the graphics add-on), the package is a quarter the price of others on the market and serves as a good introduction to adventure-writing.

If you're at all concerned about the final results of such a program, Tom's own software, Tartan Company, has just released a bumper bundle of adventures written with the aid of the system, and they should convince anyone that here is something worth looking at.

Prince of Tyndal is a single adventure, and costs just £1.95. In the story, you are Olgarth, the ruler of the mountain state of Tyndal. The rod of wisdom handed down through generations of royal princes, and by which all wise decisions are made, has been stolen by Eldin the sorcerer. Your task, of course, is to recover the rod, with the aid of certain friends, including Arden, who, by a stroke of fantastic luck, is the sorcerer's apprentice. This is the scene-setting at the start of the story, and if there is one weakness in these stories, it is the rather bland and matter-of-fact way in which the adventure is begun.

Although these adventures are initially written in Basic, they certainly exhibit plenty of features usually only seen in more sophisticated systems. For example, *Say Follow* and *Say Leave* are recognised commands in most of Tartan's games, and often come in handy, when, for example, a crowd will succeed where the individual succumbs. The game position can be saved to tape or to memory, while the rather blocky graphics can be turned on or off by the strange means of typing *1* or *2*. The adventure itself is of the usual 'wander about, pick up objects and use them to get out of trouble' type, this time with the added fillip of the occasional bit of magic as well as dragons and demons.

Although most of the problems are logical enough, there is the occasional rather tenuous connection. For example, you'll find a hook, and then you must attach a hook to a pole. The required command is *Fix Hook*, nothing else. Why, I don't know. There are other examples of such word matching, I'm afraid, and the programs suffer from the usual problem of constructions like 'You see a suit of armour – exam suit – you see nothing special – exam armour – there's a lance and a shield attached' and so on.

Again, you enter a kitchen, and though it's a bit much to ask to be able to examine every single item that you might expect to find in your average kitchen, or even those items detailed in the picture (and I know it's devastatingly expensive in memory terms to cater for any likely input), surely there should be something more than 'some seeds' in the kitchen when there are lots of cupboards, pots and pans, utensils and so on, and a bit more response than 'you see nothing unusual', which is a bit of a worn-out cover-all nowadays. However, the flags seemed to be used well, and things seem to happen as they should. Difficulty? About five on a scale of 10, but it has a nice atmosphere and pretty graphics.

Shipwreck and *Castle Eerie* are together on one tape for £2.95; the titles tell all. In the former, you've saved up for the holiday of a lifetime cruising on a luxury-liner in the South Pacific. A small fire starts in the engine room and very soon rages out of control – forced to abandon ship, your only concern now is to find land and get rescued. In common with the other programs, a nice title page leads to the game proper, which has a nice chunky character set, and chunky pictures, too, in the top third of the screen. As some other Tartan programs show, the advantage of writing in Basic is that you can really put them anywhere – but the *ABS* won't help you draw fabulously detailed illustrations. They're quickly drawn, however, and the text appears quickly too (the graphics are redrawn *every* time you visit the location, although there is a discreet little beep when the computer's finished drawing, so you can look away and pick your navel unhindered). Even though this is a Basic game, the compiling effect of the *ABS* means that there is a commendable speed in both input and response.

In the first major puzzle of the present story, you see, in your cabin, an untidy heap of your belongings and you must tidy the cabin to reveal something. I felt this was a little unfair as searching and examining the heap of clothes revealed nothing. Another required command at a later location, *Buy meal* was also a little unfair, as nobody *buys* a meal on board ship! But at least the computer is intelligent enough to prod the player in the right direction when certain commands are tried and not immediately understood.

Meanwhile in *Castle Eerie*, you're Charlie Jones, an extra-special agent working for a secret Government department dealing with unsolved mysteries. You are known as a proper Charlie! Your assignment is to investigate the weird goings on at the eerie castle in Scotland, apprehend the perpetrators (if indeed there is anything substantial to get hold of!) and deliver them to the police. All of the features of the other stories are present in this one, although the character set is a nice easily-read slanty italic. There are plenty of puzzles in this one and a lot of creepy exploring to do. As with all the other stories, there are a few sound effects which however won't give the Amiga much to worry about.

Still, my adverse comments should be seen in their proper light – here's a small adventure label that is run, as they say, by adventurers for adventurers. You'll find nothing particularly earth-shaking, but you will find good value stories . . .

These tapes are available from Tartan Software, 61 Bailie Norrie Crescent, Montrose, Angus DD10 9DT.

Ask also for details of their *6-in-1* compilation tape, which I hope to be looking at soon.

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POPULAR Computing WEEKLY

SPECIAL supplement

1987
3–9 April

COMPUTER MUSIC

INSIDE

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A powerful MIDI sequencer for the CBM 64 from Passport

While the Atari ST dominates the music scene, there's no shortage of new products for the eight-bit micros.

ST software, though, continually breaks new ground. Possibly the most bizarre example yet is X-Alyser, which takes Yamaha DX-7 sounds, analyses their back on samplers such as the Prophet 2000. DX sounds from a sampler? It could only be done by computer!

Meanwhile user groups continue to prosper, as user-friendly packages such as those from Electro Music research capture more of the micro market.

The PC is also being pressed into service, as American products come in to take advantage of the Amstrad 1512's success. It seems that music is a fast-growing application. ◀

NEWS

ST BOOMS

The first sampled drum program for the Atari ST looks like hitting the streets soon. Microdeal's **ST Digidrum** is a software-only system, including fourteen default sound ranging from bass and snare to toms, electro sounds, tambourines and even dog barks.

The software allows you to define 99 patterns, each of four to 32 beats. Song chains can consist of up to 70 entries, including repeating patterns. Patterns and songs can be saved to disc.

ST Digidrum can be used with the **ST Replay** sampling cartridge for better sound quality. This also allows you to use your own samples as drum sounds, although alternative discs of samples are also available.

Price for the standard package is £24.95, while sample discs are £14.95.

Contact Microdeal on 0726 68020. ◀

C-LAB LATEST

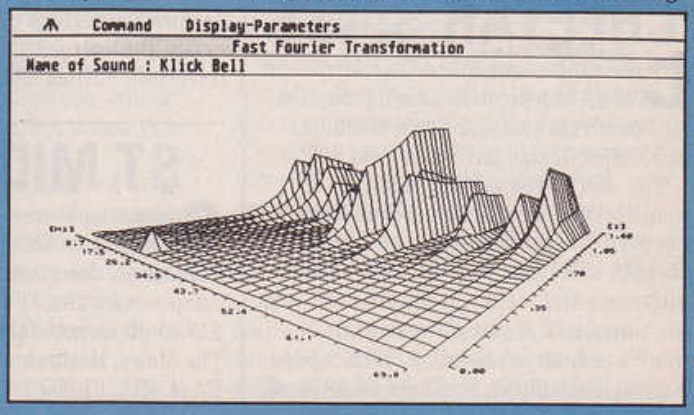
Sound Technology is about to unleash another onslaught of MIDI music software on an unsuspecting world. The **C-lab SuperTrack** program for the Commodore 64 has been by far the best MIDI composer for that machine over the past eighteen months or so, and now it's to be joined by **ScoreTrack,** a music notation package which will sell for £210.

ScoreTrack is capable of uploading Supertrack files and reproducing them in standard notation with flats, sharps, ties and all the other symbols. Music can be printed out on any conventional printer and note correction (quantisation) and transposition are available.

C-Lab is also manufacturing the original SuperTrack composer on a ROM cartridge with built-in MIDI IN and three MIDI OUTs. The cartridge, of course, loads the program instantly at the start of a session without recourse to disc, but if you want one you'll have to contact Sound Technology directly as no importer has been appointed.

Available in the next few weeks are **Creator** and **X-Alyser** for the Atari ST range. Creator is the Atari conversion of Supertrack but contains an advanced Arrange mode rather than a straightforward Song mode, which allows you to process tracks in a flexible manner, for instance when arranging film music. MIDI System Exclusive information is also handled so you can record sounds, samples and drum patterns.

Maximum resolution is 1/786 note (!) and the package offers 64 polyphonic tracks each with 16 MIDI channels, 100,000 note events (on a 1040 ST), software-based MIDI Thru, variable delays on each track, MIDI event filtering



and editing of every MIDI event, timing step and MIDI channel value. Cost will be £285.

X-Alyser stores sounds for the Yamaha DX7 and arranges them into a complete data bank of up to 3000 sounds (1000 are supplied with the package). The package can carry out and display in three dimensions a Fast Fourier Analysis of any sounds, and can dump sounds to a sampler such as the Prophet 2000 in this form (without entering the audio domain).

Simple ADSR envelopes are simulated, and sounds can be output over the Atari speaker in the absence of a DX7; the package can also sort analysed sounds by sound type, and so however they're named you can sort them into a logical, musically useful order. Price is £199.

Sound Technology, 6 Letchworth Business Park, Avenue One, Letchworth, Herts SG6 2BB. Tel: 0462 480000. ◀

ATARI SHOW

The Atari Computer Show takes place at London's Novotel Exhibition Complex (near Hammersmith tube) on 24th-26th April. A special music studio is being created for the show by Syndromic Music, concentrating on 520ST and 1040ST MIDI packages.

Included will be packages for visual editing of the Casio CZ and Yamaha DX synths, semi-professional sequencers and fully professional packages with SMPTE time code synchronisation, the 16-bit ADAF sample manipulation package from Hybrid Arts, and software from Dr. T, C-Lab, Hybrid Arts, Steinberg research, Soundbits, Passport and many others.

Lectures and Demos will be given by well-known musicians and specialists such as Popular's own Mark Jenkins, and synthesisers and ancillary equipment will be represented by Akai, Casio, Ensoniq, Yamaha, Elka, Roland, TOA, Korg and Alesis.

Times of the show are 10am-6pm Friday 24th and Saturday 25th, 10am-4pm Sunday 26th. More information from Vince Hill Associates, 24/26 Avenue Mews, London N10 3NP, 01-883 1335. ◀

AUTUMN is a standard format to allow data for music compositions to be exchanged between software and hardware packages on the Acorn micros.

The Acorn User Tune and Music Notation system, to give its full name, allows a Hybrid Music 5000 File to be replayed on the Music System, for instance. Conversion routines for other systems are being written now.

Details from Tony Quinn, Redwood Publishing, 141-143 Drury Lane, London WC2B 5TF, 01-836 2441. ◀

CHEETAH SINES

Cheetah has announced the formation of an independent user's group for the SpecDrum sampled drum machine. 25,000 SpecDrums have been sold.

The user's group, **Sine,** publishes a monthly cassette magazine, **SineWave,** at 98p per issue including post and packing. Cheetah will be helping the group out with news and technical information, and you can obtain a copy of issue 1 of SineWave from PA Bellamy, "Sine", 304 Walkley Bank Road, Sheffield S6 5AR. ◀

AMSTRAD ACTION

DHCP Electronics has launched several MIDI hardware and software packages for the Amstrad PCW and CPC ranges. We'll be reviewing some of these products over the coming weeks, but in the meantime you can obtain an information sheet with performance data from DHCP.

The packages are a Casio CZ101/CZ1000 Editor; a Casio CZ230 Editor; a Korg DW6000 Editor (£29.95); a CZ sound library and an eight-track realtime sequencer for the CPC 464/664/6128; a hardware CPC MIDI interface (£50); and a User Port programmable for input or output (3×8-bit ports for £25).

For the PCW 8256/8512 there is a MIDI interface (£79.95) with Sync In/Out, a Casio CZ voice editor (£14.95), and conversions of the other software on the way.

There's also a MIDI 1 In-8 Out hardware interface coming.

DHCP Electronics, 32 Boyton Close, Haverhill, Suffolk CB9 0DZ, 0440 61207. ◀

ST MIDI PROG

Silica shop is now importing **MIDI Play** from Electronic Music Publishing, described as a basic music composer for the ST range and costing £49.95. Review to follow. Silica Shop, 1-4 The Mews, Hatherley Road, Sidcup, Kent DA14 4DX, 01-309 1111. ◀

Stocks and shares don't seem to have much place in a music supplement, but American Darryl Gammill claims to have made the link. Using a method he calls **Audio-Optics** (TM, no doubt), Gammill has translated the stock market performance of the top ten American corporations in to musical terms.

Using sundry business graphics programs, statistical analysis routines, MIDI interfaces and synthesisers, Gammill has produced a music tape which represents the "sounds" of the chosen companies as they negotiate the perils of the stock market. Using quantisation techniques to keep everything in tune, the Audio-Optics performances sound like everything from Stockhausen to jazz-funk.

Titles of the finished pieces include "Rhapsody in Big Blue" (IBM-geddit?) and "Decisions, Decisions".

We thought that this was a spoof until we heard the music – what we still can't believe is Gammill's claim that listening to the music helps you to predict stock Market trends. Contact Gammill & Co, One Tabor Center, 1200 17th Street, Suite 2424, Denver, Colorado 80202. Tel: 0101 (303) 629-6200. ◀

MUSIC NET

MusicNet is a US-based modem-linked music information service, which offers advice, hints, and new sounds and samples downloaded through the system. New sounds for the Yamaha DX7, Juno 106, Oberheim OB8, Roland MKS-80, Yamaha PX15, Ensoniq Mirage, Prophet 2000 and others are available, and subscription costs are $75 per year and $5 per hour.

Dialling DATA-914-724-4006 entitles you to 15 minutes free of charge to browse through MusicNet, and you can subscribe on-line. A Ven-Tel 1200 Plus modem is available from the service at $299, which includes a free subscription.

MUSICNET, PO Box 274, Beekman, New York 12570, USA. ◀

THE ART OF NOISE

DATEL'S COMMODORE 64 SAMPLER/DRUM MACHINE HAS BEEN UPDATED WITH EXCITING NEW SOFTWARE OFFERING MULTI-SAMPLING AND MIDI. CHRIS JENKINS DISCOVERS THE ART OF SAMPLED NOISE . . .

While Supersoft's **Microvox** sound sampler remains the most powerful unit on the market for the Commodore 64, Datel's budget unit has just been updated, and now offers improved performance at a more affordable price.

When first released, the Datel sampler/drum machine – two different versions of substantially the same hardware – suffered from being supplied with ambitious but flawed software. Many of the faults of the original have now been eliminated, and new features such as MIDI added.

The Datel hardware can be used with several dedicated software packages. One allows it to be used as a true sampler, recording real sounds through a microphone, then editing and replaying them; another allows the sampler hardware to be used as a digital drum machine, with eight high-quality voices which can be arranged into complex patterns and songs.

The hardware, an undistinguished brown box, plugs into the 64's user port. There's an operation LED on one side, while on the rear are an output volume knob and several sockets. On the sampler, one socket is for the sound input from a microphone; one for line level inputs; while the last is the output to an amplifier, or to the computer's audio/video port to route the sound through a TV.

The sampling software, available on cassette or disc, is menu driven. The first submenu allows you to setup the sampling routine, splitting the sampler storage area into one, two, four or eight areas. Frequency can be set from 1 to 8; this varies the length (but also of course the quality) of the sample from 1 to 2·7 seconds.

The trigger threshold of the automatic recording level is set next, using a visual bar indicator. Lastly, MIDI input to the sequencer can be toggled on or off.

Exiting to the record sample menu, you can perform sampling using the automatic input level function, or by pressing the space bar. The sample can then be reversed, overdubbed with another sample, or can have an "echo" repeat effect added to it, at a rate determined on the previous menu.

The sequencer and editor page allows you to set start and end pointers on a graphic representaton of the sample. In this way you can chop unwanted noise off the start or end of a sample.

It's also possible to copy blocks of the sample, to create rapid repeat effects; set a loop for continuous play; or record simple 80-note sequences using the top two rows of QWERTY keys.

Most excitingly, if you plug a MIDI interface such as the £24.99 Datel unit into the cartridge port, you can play the sampler from your MIDI synth keyboard. The sampler responds only to MIDI channel 1, and only in a two octave range, and will ignore MIDI key velocity information. But for all its limitations, the Datel sampler now represents the cheapest way for CBM 64 owners to get into MIDI-controlled sound sampling.

The sampler software also allows you to use the unit as a live effects unit, offering reverberation, echo and chopping of the input sound. Effect length is set from a menu, while repeat amount is set using the volume knob on the unit.

There are also three waveform displays; 2D, 3D and oscilloscope, which are of little practical use, but which look very pretty!

Datel sampler files can be saved to cassette or disc, and later used as sound sources for the ComDrum drum machine software. ComDrum software can be used with the sampler, or with the cheaper ComDrum hardware unit, whereas the ComDrum cannot use the sampler software.

The ComDrum package is an eight-voice, three-note polyphonic, real or step time digital drum machine program. The quality of the sounds produced is well up to that of similar products such as the Tron **Digidrum** and Supersoft **Rhythm King,** but only with the Datel unit can you use your own samples (prepared with the sampler software) as part of your percussion pattern.

The eight drum sounds can be played live by tapping the number keys, or they can be arranged into patterns using the compose and edit page. This is laid out in a grid form, with a 32-beat bar on which dots are placed to indicate where the drum voices sound, up to three on any beat.

Patterns can be tapped in in real time against the beat of a metronome (which I found impossible to switch off, despite the manual's instructions to hit M). Alternatively, using the cursor and number keys allows you to place beats exactly in place on the bar. Real time patterns can be edited in step time or vice versa.

Time signature and tempo can be varied; the maximum tempo is now pretty fast, an improvement on the original software, in which even the top speed was funereal.

Having recorded a number of patterns, you can arrange them into up to eight songs. Each song can include 16 steps consisting of any of the eight patterns, repeated up to 99 times. Songs can be titled, and saved to tape or disk together with the relevant patterns.

It's also possible to copy patterns from one song to another via the scratchpad facility.

The ComDrum editor program helps you to convert Datel sound samples into ComDrum format, and arrange them into kits for use with the drum software. This is the only system other than the much more expensive Microvox which allows you to do this.

The only real omission from the ComDrum system is MIDI compatibility; you can't play the drum sounds from a keyboard, nor can you clock the rhythms from a MIDI sequencer. Still, you can't have everything.

At the price, the entire Datel system – Sampler, ComDrum software and Editor – represents remarkable value for money. The added sample split, realtime screen plots, MIDI compatibility, user drum sound facility and other improvements make the system an attractive purchase for computer musicians on a budget. ◀

Datel Electronics, Unit 8/9, Fenton Industrial Estate, Dewsbury Road, Fenton, Stoke-on-Trent, 0782 264510.

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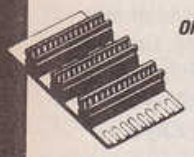

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RHAPSODY IN BIG BLUE

MARK JENKINS LOOKS AT PASSPORT'S EXPENSIVE BUT POWERFUL PC MUSIC PACKAGE

The IBM PC has always been popular in the US as a music computer, but then, they have more money than we do. It's only with the introduction of the Amstrad PC that more than a handful of UK musicians will become interested in multitrack composition programs which run on the PC and compatibles.

Several such programs are now available from Roland, Octave Plateau, and the company we're looking at here, Passport (distributed in the UK by Rittor Music). Prices generally haven't come down in response to the introduction of the inexpensive Amstrad range, but this may yet occur.

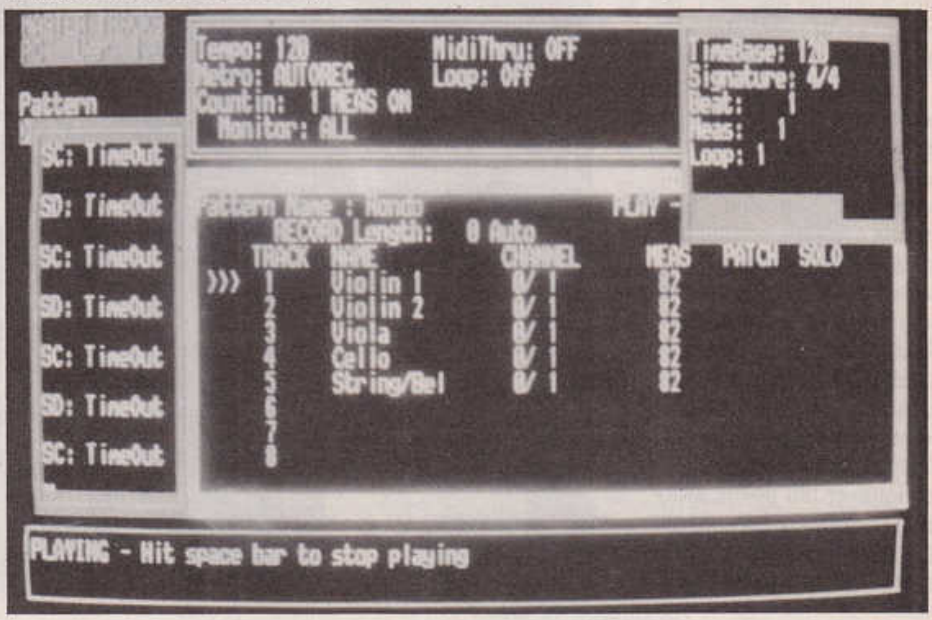
Anyone not yet familiar with the way micros can be used in professional and semi-professional music composition needs a little enlightenment about the MIDI interface. MIDI (Musical Instrument Digital Interface) is now standard on virtually all high-tech music products, and that includes not just synthesizers but digital pianos, home keyboards, effects units, mixers, even some guitars and wind instruments.

One of the most popular applications of MIDI is to use it to control (via a micro) large numbers of instruments simultaneously. Then, just as if you were using an expensive multi-track tape machine (£9,000 for a second-hand Lyrec 24-track to you, mate), you can perform music a piece at a time and play it all back simultaneously. Of course, you need as many instruments as there are parts to play in the piece in order to do this, but MIDI-equipped instruments are becoming ridiculously cheap and some (such as the Yamaha FB-01 module at £245) can play back up to eight parts simultaneously.

Most micros can be fitted with a MIDI interface (the Atari ST has one built in) and the software requires only that binary codes are output to sound certain notes on the correct one of 16 MIDI "channels" with different amounts of velocity, pitch bend and other performance parameters for each synth. What is more difficult is writing a user interface which the average musician finds friendly and approachable.

Having said that, the display on **Master Tracks PC** is not the best seen in recent months. At £299 for the software and output card and £245 for the MPU-IPC MIDI interface, the package with its rather formal appearance suffers by comparison with snappier Atari 520 programs from Dr. T, Hybrid Arts, Steinberg Research and C-Lab. However, it's more powerful in some ways than any of them, being designed for any IBM compatible with 256k (ideally 320k) of memory and offering not 16 but 60 tracks of 16-note polyphonic information including velocity, after-touch, patch changes and so on.

Master Tracks uses Dynamic Phrase Allocation so that all the tracks do not have to be the same length and can loop independently. Notes are entered either in real time from a synth keyboard or one at a time from the computer keyboard.



As on othe MIDI composer packages, you can record an initial track accompanied by a metronome click and then play it back while you add a second track. Tracks can be transposed, merged, edited or overdubbed by "punching in" over a short section and "punching out" again when the correction has been made. Having recorded several short multi-track patterns, these can then be arranged into very lengthy songs.

If you're using velocity-sensitive synthesizers you can edit velocity information to change the volume or brightness of notes played back. In fact every single piece of MIDI data recorded including sound changes, pitch bend and vibrato is accessible for editing if you feel your performance has not been all it could have been.

The titles of the five main operating screens (Pattern, Edit, Step, Edit, Song and Song List) are all fairly self-explanatory except Song List which allows you to record a whole set of songs for a complete performance. Each screen has a main window in the centre with options down the side selected by their initial letters or with the cursor keys, plus a data display at the top and a message window at the bottom. Almost all functions have a Help option which brings up a few lines of useful information in the centre of the screen.

In operation the program often seems slow compared to recent Atari ST packages, taking enough thinking "Time Out" to irritate many musicians. Control from the micro keyboard is much less satisfactory than mouse control, although everything is clearly and logically laid out and well labelled.

If you already have a PC, the addition of Master Tracks and less than £1,000 worth of MIDI instruments could give you a formidable composition system. However, if you're buying a micro specifically to start from scratch in micro music, you'd save time and money by opting for the Atari ST instead. ◀

Rittor Music Europe Ltd, 149 The Broadway, Cricklewood, London NW2 3HY, 01-208 0558.

SCORING ON PAPER

DAVID KEITH ON EMR'S SOLUTION TO GETTING YOUR MUSICAL MASTERPIECES DOWN ON PAPER USING A BBC MICRO

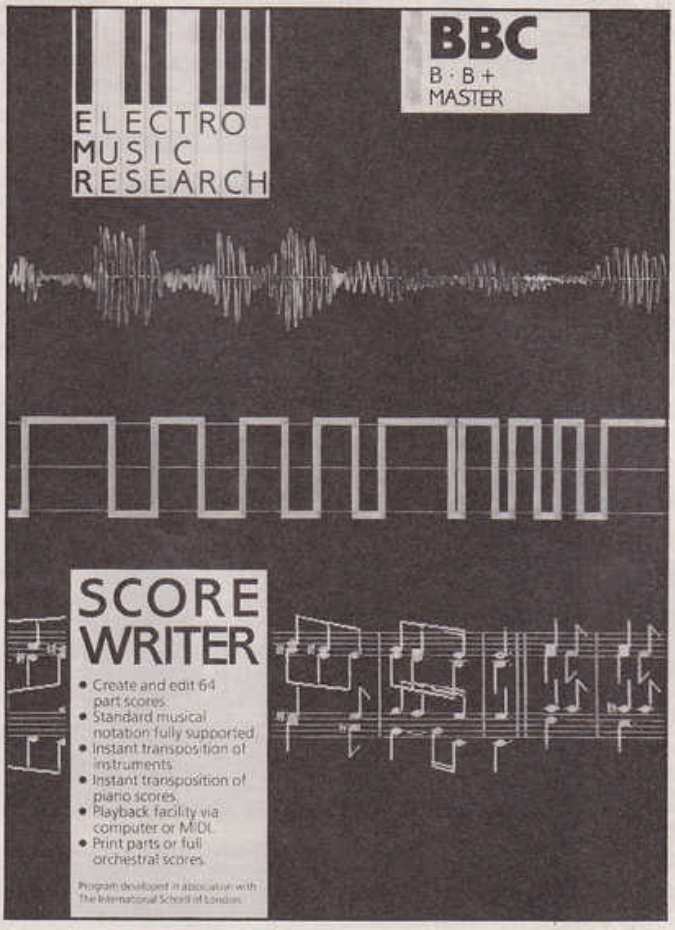
For experienced musicians, nothing is more frustrating than the process of transferring your artistic ideas onto paper. Despite all the advances in music technology, standard music notation remains much as it has been for hundreds of years, and the tedious job of inking in scores on manuscript paper takes up valuable time and energy.

Computer systems to ease this chore, such as Passport's **Polywriter** and **Music Shop,** have recently appeared on micros such as the Apple and CBM 64. The latest such system, though, is for the BBC, and comes from a company with a long pedigree in computer music, Electro Music Reseach.

EMR's experience is based around the BBC and other eight-bit machines, squeezing the best performance out of Amstrad, MSX, Spectrum and other fairly low-tech micros. The **Score Writer** package complements EMR's range of sequencers, notators, sound editing toolkits and hardware units.

Although it's already possible to use the **Notator** package to produce printed music from Miditrack composer files, the Score Writer is far more ambitious. Score Writer comes in the form of a single ROM chip, plus a utilities disc, and versions will be available for the BBC B, B+ and Master.

Score Writer assumes that you have a good knowledge of musical notation. Otherwise, passages such as this might cause some confusion; "When mixing quavers, semiquavers or demisemiquavers it is necessary for you to indicate which way the extra tails should point. With dotted rhythm the semiquaver tail naturally points toward the dotted quaver: with the example below the semiquaver tail points away from the quaver because the two semiquavers form a sort of rhythmic subgroup of their own"!



Score Writer will play multi-part tunes using the BBC's internal sound chip, but, if you try to play a tune with more than three voices using the sound chip, it will "strum" the chords in an attempt to play every note. This is a useful facility, but limited in its ability to reproduce cursor keys, and entering any desired corrections. Returning to Command mode allows you to play the music using any of the four preset chip sounds, or via MIDI using any channel from 1 to 16. It's also possible to redefine the chip sounds, and tempo can be set either in beats per minute, or in crochets.

Music can then be printed out using an Epson FX60, or many other kinds of printer once you have used the printer instal routines.

Having created one track, another can be opened up using NEW from the command page, up to a total of 16 tracks. Each track can be named if you wish.

If you have a complicated score with many chords to enter, you can do it in separate monophonic tracks then combine them using the CONSOLIDATE routine. Conversely, using the TRACK SPLIT facility, you can divide a complete score into separate tracks; but combining them again may not give you the same score as the original.

The disc filing system takes account of the fact that longer scores may run out of memory space. Scores can be filed in segments, or you can save just a section between defined bar numbers. It's also possible to combine entire scores using the MERGE facility, or to lift tracks from one score and incorporate them into another. Obviously, using a twin or double-sided disc system makes life easier.

The printing routines, which are based around a simple screen dump, allow you to vary the spacing of staves and window size so as to produce a neat result.

One problem with Scorewriter is that it does not generate or receiver a MIDI clock pulse for synchronisation with drum machines and other MIDI sequencers. It's therefore quite unsuitable for use as a sequencer, although of course that is not its real purpose.

A more major problem is that entering all the notes from a QWERTY keyboard can be almost as tedious and time-consuming as writing them on manuscript by hand. Surely it would be better to use a system by which note data is entered via a MIDI keyboard?

However, for skilled musicians with a need to create, store and edit complex scores, this package should solve all their problems. ◀

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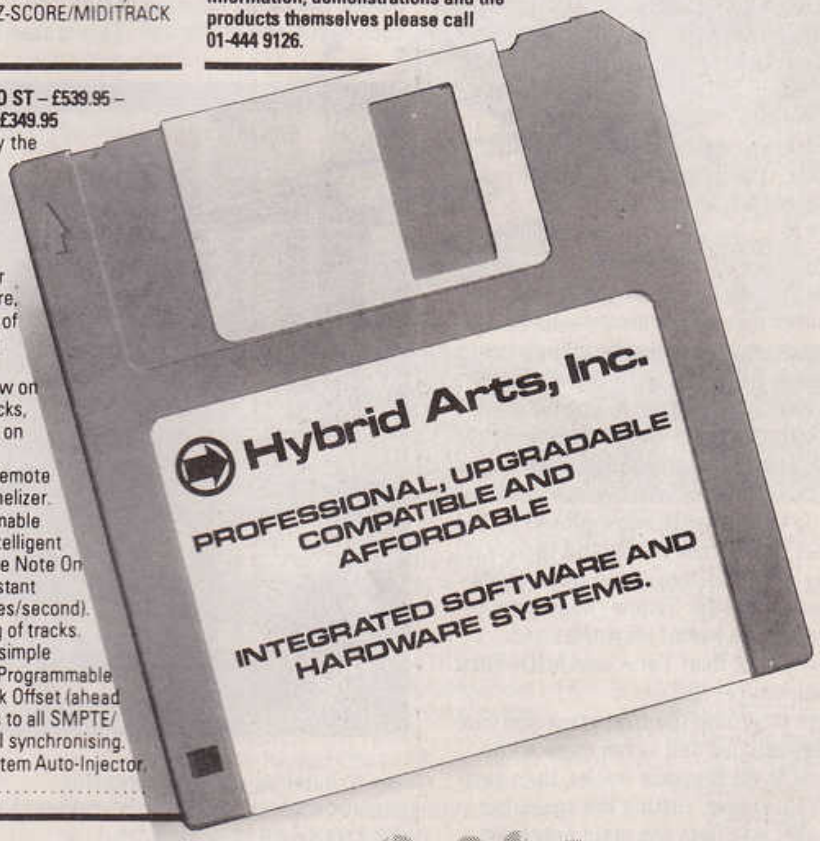

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PASSPORT TO PLAY

THE COMMODORE 64 REMAINS ONE OF THE MOST POPULAR HOME MICROS FOR MUSIC. MARK JENKINS TESTS PASSPORT'S 64 VERSION OF THE MASTERTRACKS PROGRAM FIRST SEEN ON THE APPLE COMPUTER

Being a versatile concern, Passport has managed to make its **Master Tracks** MIDI composition program run on the Commodore 64 as well as the Apple II and IBM PC. The PC version is substantially different from the other two, but the Apple and 64 versions are similar, even sharing a handbook. A sheet of addenda makes it clear that the 64 version uses the F1-F5 keys rather than cursor keys, and that a standard joystick is used for the steptime editing section known as Quikstep.

The software uses a MIDI interface (£109.95) which plugs into the cartridge expansion port and is equipped with three DIN sockets on trailing leads for MIDI In, MIDI Out and Drum Sync. The software copes with eight tracks of polyphonic playing created in real time and edited with Mix, Link, Autocorrect, Punch In/Out and other routines.

Realtime

The Song Mode allows you to link sequences together to create song files, and you can also create step-time recordings using the Quikstep section controlled by the joystick. The realtime display for each track shows track number, On/Off status, MIDI channel, Preset number (the sound you want to come up on the synthesizer played by that channel), and track name, and there's a display at the bottom of the page giving common values for Tempo (which can be changed while you're playing), Transposition, Beat Value and MIDI Thru channel value.

After recording the first track you can add between one and seven more while listening to all previous tracks, then save the result to disk. Hitting the space bar then takes you onto the main operation page, which has the same track display but which lets you get at the song editing options.

The amount of memory used and remaining is displayed and the measure number, beat number and MIDI clock number are also shown. You can mute or solo any tracks while playing back and use the F, R, >, < and Esc keys to simulate the tape recorder-like controls Fast Forward, Rewind, Single Step Forward, Single Step Rewind and Continue. You can also punch in briefly to correct mistakes on any track and freely interchange real time and step time note entry.

Saving songs and patterns to disk is straightforward - compatability with files from the Passport MIDI/4 and MIDI/8 packages is also available - and of course you can correct and edit both individual patterns and whole songs in many ways. On the Edit page you can Autocorrect the timing of your performance to the nearest Quarter, Eighth, Eighth Triplet and so on up to 32nd Triplets, and erase or link tracks, the latter function adding one track to the end of another. This makes it easy to build up complex repeating patterns such as ABCABCABC rather than just AAAAAAA . . .

You can also copy tracks from one channel number to another, merge two tracks together (they can't be un-merged so you may like to keep independent copies of both tracks as well in case you need them), and alter the timebase for synchronised drum machines (MIDI or non-MIDI 24 or 48 pulses per quarter note).

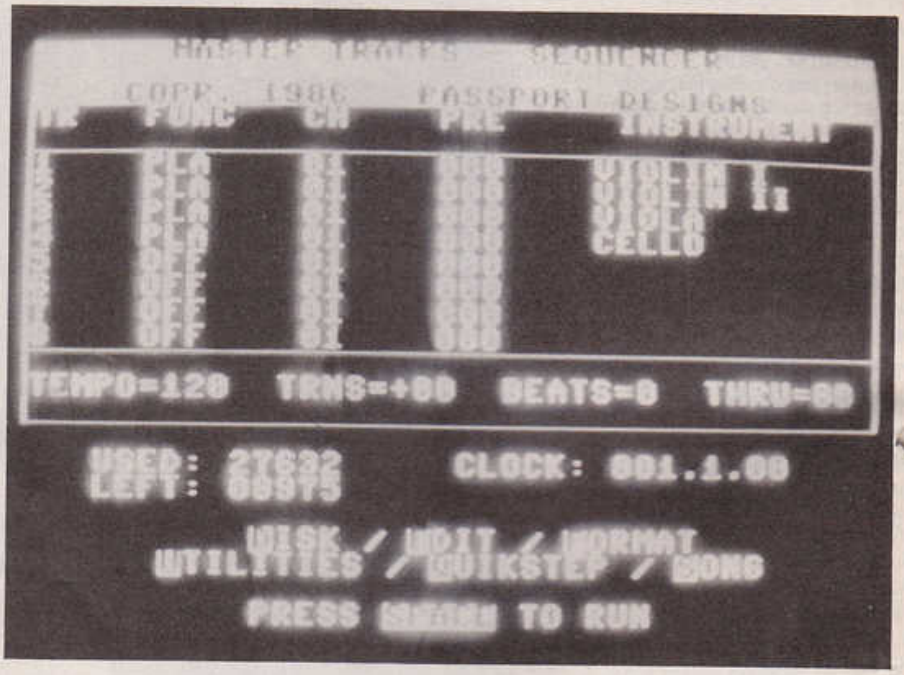
Quikstep uses a grid-like display of note and timing values and looks complex but is probably very powerful. You can convert real time to step time files, and of course this is useful if you want to enter just one note or MIDI control code such as patch change, pitch bend and so on into a passage. The Song page is simply a list of the sections you want to play back in the correct order, although it does usefully list the memory size occupied by each section as well as allowing you to name them.

The Active Tracks mode selects different sets of tracks to play back in each section during Song Play mode, so you can make different mixes of a song quite easily. The handbook includes brief summaries of how to use this and all the other facilities, as well as example routines for different jobs which you're likely to want to carry out such as transposing a single track, delaying a track, and so on.

With such a powerful array of features and such a reasonably-priced host computer, the prospects look good for Master Tracks 64. However, there's no point pretending that it's particularly cheap at £189.95, and the worse news it that it doesn't run on cheap interfaces such as the £29.95 Datel - you have to use the £109.95 Passport effort.

Still, it's worth going into your local music store for a demo of Master Tracks, and if you want to look at a similar package for comparison, C-Lab **Supertrack** remains my personal fave.◀

Rittor Music Europe Ltd, 149 The Broadway, Cricklewood, London NW2 3HY, 01-208 0558.



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Lightshow

John Whyte

This program for any Spectrum is a real time sound to light converter which produces appropriate symetrical patterns depending on the input at the ear socket. The machine code can be loaded back in by entering *Load ""Code 32000* and *Randomize Usr 32019*.

Spectrum 128 owners will gain maximum benefit from this program as the music from a cassette recorder can be heard through the television.

You may redesign the character that appears on screen by poking the data into locations 32010 to 32017.

If you have a Kempston 'E' Centronics interface remove it before loading the program as it may interfere.

Loader Listing

```
 5 LET x=0
10 FOR f=32000 TO 32241
20 PRINT f;":";: INPUT y: PRINT y
30 LET x=x+y
40 NEXT f
50 IF x<>20649 THEN  PRINT "Error in d
ata": STOP
60 PRINT "ALL DONE. PREPARE TAPE": FOR
f=1 TO 200: NEXT f
70 SAVE "Lightshow"CODE 32000,242
```

Data Listing

32000:0	32024:125	32048:119	32072:42	32096:125	32120:125	32144:6	32168:125	32193:0	32217:126
32001:88	32025:205	32049:40	32073:4	32097:35	32121:42	32145:125	32169:33	32194:211	32218:18
32002:31	32026:224	32050:1	32074:125	32098:34	32122:2	32146:1	32170:160	32195:254	32219:35
32003:88	32027:125	32051:52	32075:119	32099:4	32123:125	32147:16	32171:90	32196:33	32220:19
32004:160	32028:243	32052:16	32076:42	32100:125	32124:1	32148:0	32172:34	32197:0	32221:16
32005:90	32029:6	32053:245	32077:6	32101:42	32125:48	32149:237	32173:4	32198:88	32222:250
32006:191	32030:11	32054:58	32078:125	32102:6	32126:0	32150:66	32174:125	32199:17	32223:201
32007:90	32031:197	32055:18	32079:119	32103:125	32127:237	32151:34	32175:33	32200:1	32224:62
32008:0	32032:6	32056:125	32080:42	32104:43	32128:74	32152:6	32176:191	32201:88	32225:2
32009:0	32033:16	32057:230	32081:0	32105:34	32129:34	32153:125	32177:90	32202:1	32226:205
32010:255	32034:197	32058:7	32082:125	32106:6	32130:2	32154:193	32178:34	32203:255	32227:1
32011:129	32035:62	32059:23	32083:35	32107:125	32131:125	32155:16	32179:6	32204:2	32228:22
32012:129	32036:0	32060:23	32084:34	32108:193	32132:42	32156:130	32180:125	32205:119	32229:1
32013:129	32037:33	32061:23	32085:0	32109:16	32133:4	32157:33	32181:251	32206:237	32230:192
32014:129	32038:8	32062:203	32086:125	32110:179	32134:125	32158:0	32182:255	32207:176	32231:2
32015:129	32039:125	32063:247	32087:42	32111:42	32135:1	32159:88	32183:62	32208:201	32232:62
32016:129	32040:119	32064:42	32088:2	32112:0	32136:48	32160:34	32184:127	32209:33	32233:144
32017:255	32041:6	32065:0	32089:125	32113:125	32137:0	32161:0	32185:219	32210:10	32234:215
32018:0	32042:7	32066:125	32090:43	32114:1	32138:237	32162:125	32186:254	32211:125	32235:11
32019:205	32043:62	32067:119	32091:34	32115:16	32139:66	32163:33	32187:31	32212:17	32236:121
32020:192	32044:127	32068:42	32092:2	32116:0	32140:34	32164:31	32188:218	32213:88	32237:176
32021:125	32045:219	32069:2	32093:125	32117:9	32141:4	32165:88	32189:26	32214:255	32238:32
32022:205	32046:254	32070:125	32094:42	32118:34	32142:125	32166:34	32190:125	32215:6	32239:248
32023:209	32047:203	32071:119	32095:4	32119:0	32143:42	32167:2	32191:201	32216:8	32240:201
							32192:62		32241:0

Splitcol

T Bratley

Have you ever wished you could have four colours in Mode 2, eight in Mode 1 and all 27 in Mode 0? With Splitcol you can, although the screen has to be treated as two halves.

Run the program and save the machine code with *Save ''Splitcol'',b,40000,109*. Set *Himem* to 39999 before loading back in and activating with *Call 40000*.

To use the routine you must supply it with two sets of 17 colour numbers for the *Inks* in the following layout.

Upper screen *Ink* vector table (&9C8B to &9C9B).
Byte 0: Colour for border.
Byte 1: Colour for *Ink 0*.
To byte 16: Colour for *Ink 15*.
Lower screen *Ink* vector table (&9C9C to &9CAC).
Byte 0: Colour for border.
Byte 1: Colour for *Ink 0*.
to Byte 15: Colour for *Ink 15*.

```
10 REM ** HEXADECIMAL CODE LOADER **
20 REM
30 REM
40 REM
50 MEMORY 39999
60 address=40000
70 FOR a=0 TO 10
80 sum=0:READ code$,sum$
90 FOR b=1 TO 19 STEP 2
100 n=VAL("&"+MID$(code$,b,2))
110 POKE address,n
120 sum=sum+n:address=address+1
130 NEXT
140 IF sum<>VAL("&"+sum$) THEN PRINT "Da
ta error in line ";160+a*10
150 NEXT a
160 DATA 21789C068111519CC3D7,454
170 DATA BC21789CC3DDBC11889C,585
180 DATA CD25BD3E03328A9C2181,3EA
190 DATA 9C068111679CC3E0BC21,4B7
200 DATA 8A9C35C0119C9CCD25BD,513
210 DATA 21819CC3E6BCF9B7FBB7,705
220 DATA 0081519CFF0000000000,26D
230 DATA 81679CAB00141404151C,28C
240 DATA 181D0C050D1606171E00,0A4
250 DATA 00000B0B001F0E070F12,06B
260 DATA 02131A191B0A030B0000,07B
```

Key Definition

Sukhbir Singh Ranu

This program enables you to define the function keys and also give definitions to control-F key combinations.

Simply run the program and enter the definitions as prompted. Note that you can only have a maximum of eight characters assigned to any key and that if you want the entry to be automatically interpreted then use a left facing arrow as the last character.

To disable the defined function keys press *Run/Stop* and *Restore*. To enable the definitions once more enter *Sys 38600*.

```
1 REM ********************
2 REM *                  *
3 REM * FUNCTION KEYS    *
4 REM *     DEFINED      *
5 REM *                  *
6 REM ********************
7 REM
8 REM * LOAD M/C DATA *
9 PRINT"□PLEASE WAIT..........."
10 FORI=38600TO38719:READD:T=T+D:POKEI,D
11 NEXT
12 IF T<>17179 THEN PRINT"ERROR IN DATA":END
13 REM *** M/C DATA ***
14 DATA 120,169,220,141,20,3,169,150
15 DATA 141,21,3,88,133,56,169,0
16 DATA 133,55,96,234,234,72,138,72
17 DATA 152,72,165,197,197,251,240,78
18 DATA 133,251,234,162,0,173,141,2
19 DATA 168,192,0,240,9,138,24,105
20 DATA 32,170,136,24,144,243,224,96
21 DATA 48,2,162,96,234,234,165,197
22 DATA 160,3,132,254,197,254,240,17
23 DATA 200,232,232,232,232,232,232,232
24 DATA 232,192,7,208,237,76,54,151
25 DATA 234,138,133,252,169,150,133,253
26 DATA 160,0,177,252,153,119,2,200
27 DATA 192,8,208,246,132,198,104,168
28 DATA 104,170,104,76,49,234,0,255
29 PRINT"□"
30 READ KEY$
32 PRINT"ASSIGN WHAT TO ";KEY$;:INPUTN$:L=LEN(N$)
33 IF L>8 THEN PRINT"□8 LETTER MAX. PER KEY□":GOTO 32
36 FOR Y=1TO8
37 IF Y>L THEN P=0:GOTO 39
38 P=ASC(MID$(N$,Y,1)):IFP=95 THEN P=13
39 POKE 38399+Y+X*8,P:NEXT Y
40 X=X+1:IF X>15 THEN GOTO 90
41 N$="":GOTO 30
80 DATA"F7","F1","F3","F5","F8","F2","F4","F6"
81 DATA"C= & F7","C= & F1","C= & F3","C= & F5"
82 DATA"CTRL & F7","CTRL & F1","CTRL & F3","CTRL & F5"
90 PRINT"KEYS NOW DEFINED":SYS 38600:CLR:END

READY.
```

Save Utilities

S W Booth

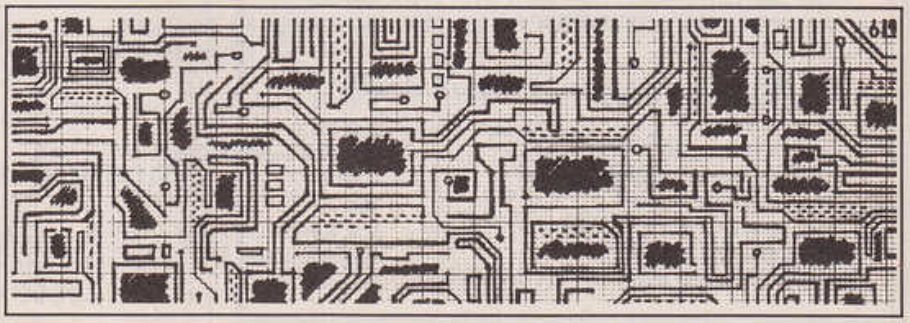
This utility program for the QL allows you to save and load screens in a compressed format. To save the current screen enter *Save_Scr "Mdv1_Screen"*. The compression technique reduces a typical screen from 32K to about 12K.

To load the screen back in again, and it doesn't have to be a compressed one, enter *Load_Scr "Mdv1_Screen"*.

```
10 LET start=RESPR(332):LET checksum=0
20 FOR f=0 TO 331
30 READ datum
40 LET checksum=checksum+datum
50 POKE start+f,datum
60 NEXT f
70 READ parity
80 IF parity<>checksum:PRINT "ERROR in data.":STOP
82 SBYTES mdv1_compress_bin,start,332
86 STOP
90 DATA 67,250,0,12,52,120,1,16,78,146,112,0,78,117,0
100 DATA 2,0,30,8,83,65,86,69,95,83,67,82,0,0,176
110 DATA 8,76,79,65,68,95,83,67,82,0,0,0,0,0,0
120 DATA 0,52,120,1,22,78,146,65,246,152,0,114,255,118,2
130 DATA 112,1,78,66,74,0,103,2,78,117,18,60,0,222,54
140 DATA 60,255,255,112,5,78,67,38,124,0,2,0,0,120,1
150 DATA 52,19,215,252,0,0,0,2,58,19,112,0,215,252,0
160 DATA 0,0,2,183,252,0,2,128,2,106,78,186,66,102,10
170 DATA 82,4,12,4,0,255,103,20,96,224,18,4,54,60,255
180 DATA 255,112,5,78,67,74,0,102,50,120,1,96,16,18,4
190 DATA 54,60,255,255,112,5,78,67,74,0,102,32,66,4,50
200 DATA 2,54,60,255,255,112,5,78,67,74,0,102,16,112,5
210 DATA 224,66,18,2,78,67,74,0,102,4,52,5,96,160,34
220 DATA 0,112,2,78,66,32,1,78,117,52,120,1,22,78,146
230 DATA 65,246,152,0,114,255,66,131,112,1,78,66,74,0,102
240 DATA 224,112,1,118,255,78,67,12,1,0,222,102,60,42,124
250 DATA 0,2,0,0,66,68,112,1,54,60,255,255,78,67,74
260 DATA 0,103,4,112,0,96,188,83,1,24,1,112,1,54,60
270 DATA 255,255,78,67,74,0,102,172,28,1,112,1,78,67,225
280 DATA 65,18,6,58,129,84,141,81,204,255,250,96,202,42,124
290 DATA 0,2,0,0,56,60,127,254,26,129,82,141,118,255,112
300 DATA 1,78,67,74,0,102,128,81,204,255,240,112,0,96,0
310 DATA 255,120,26047
320 REMark  ************************************************
330 REMark  *     To use load the code in future, type:    *
340 REMark  *          10 start=RESPR(332)                 *
350 REMark  *          20 LBYTES mdv1_compress_bin,start   *
360 REMark  *          30 CALL start                       *
370 REMark  ************************************************
```


Multi-save

A W Pryer



This week features the final part of the useful Multi-save utility which also features a printer utility. No more shall hours of programming go down the drain when someone trips over the lead.

```
1800 EQUB(3)
1810 EQUB(7)
1820 EQUB(131)
1830 EQUS("2...DOUBLE WIDTH PRINT")
1840 EQUB(31)
1850 EQUB(3)
1860 EQUB(8)
1870 EQUB(131)
1880 EQUS("3...DOUBLE STRIKE PRINT")
1890 EQUB(31)
1900 EQUB(3)
1910 EQUB(9)
1920 EQUB(131)
1930 EQUS("4...ITALIC PRINT")
1940 EQUB(31)
1950 EQUB(3)
1960 EQUB(10)
1970 EQUB(131)
1980 EQUS("5...SUBSCRIPT PRINT")
1990 EQUB(31)
2000 EQUB(3)
2010 EQUB(11)
2020 EQUB(131)
2030 EQUS("6...SUPERSCRIPT PRINT")
2040 EQUB(31)
2050 EQUB(3)
2060 EQUB(12)
2070 EQUB(131)
2080 EQUS("7...UNDERLINED ON")
2090 EQUB(13)
2100 EQUB(131)
2110 EQUS("   8...UNDERLINE OFF")
2120 EQUB(31)
2130 EQUB(3)
2140 EQUB(14)
2150 EQUB(131)
2160 EQUS("9...EMPHASIZED")
2170 EQUB(31)
2180 EQUB(3)
2190 EQUB(15)
2200 EQUB(131)
2210 EQUS("R...RESET TO DEFAULT CHRACTE
R SET")
2220 EQUB(31)
2230 EQUB(9)
2240 EQUB(20)
2250 EQUB(131)
2260 EQUS("ANY OTHER KEY TO END")
2270 EQUB(31)
2280 EQUB(0)
2290 EQUB(22)
2300 EQUB(132)
2310 EQUB(157)
2320 EQUB(141)
2330 EQUB(135)
2340 EQUS("          ENTER OPTION")
2350 EQUB(13)
2360 EQUB(132)
2370 EQUB(157)
2380 EQUB(141)
2390 EQUB(135)
2400 EQUS("          ENTER OPTION")
2410 EQUB(255)
2420 .key
    \CHECK FOR KEY BEING PRESSED
2430 JSR &FFE0
2440 CMP#ASC"1":BEQ J1
    \AND BRANCH TO REQUIRED ROUTINE
2450 CMP#ASC"2":BEQ J2
2460 CMP#ASC"3":BEQ J3
2470 CMP#ASC"4":BEQ J4
2480 CMP#ASC"5":BEQ J5
2490 CMP#ASC"6":BEQ J6
2500 CMP#ASC"7":BEQ J7
2510 CMP#ASC"8":BEQ J8
2520 CMP#ASC"9":BEQ J9
2530 CMP#ASC"R":BEQ reset
2540 JMP end2
2550 .J1 JMP 01
2560 .J2 JMP 02
2570 .J3 JMP 03
2580 .J4 JMP 04
2590 .J5 JMP 05
2600 .J6 JMP 06
2610 .J7 JMP 07
2620 .J8 JMP 08
2630 .J9 JMP 09
2640 .reset
2650 LDA #RST MOD 256:STA &74
2660 LDA #RST DIV 256:STA &75
2670 JSR send
2680 JMP key
2690 .01
2700 LDA #CD1 MOD 256:STA &74
2710 LDA #CD1 DIV 256:STA &75
2720 JSR send
2730 JMP key
2740 .02
2750 LDA #CD2 MOD 256:STA &74
2760 LDA #CD2 DIV 256:STA &75
2770 JSR send
2780 JMP key
2790 .03
2800 LDA #CD3 MOD 256:STA &74
2810 LDA #CD3 DIV 256:STA &75
2820 JSR send
2830 JMP key
2840 .04
2850 LDA #CD4 MOD 256:STA &74
2860 LDA #CD4 DIV 256:STA &75
2870 JSR send
2880 JMP key
2890 .05
2900 LDA #CD5 MOD 256:STA &74
2910 LDA #CD5 DIV 256:STA &75
2920 JSR send
2930 JMP key
2940 .06
2950 LDA #CD6 MOD 256:STA &74
2960 LDA #CD6 DIV 256:STA &75
2970 JSR send
2980 JMP key
2990 .07
3000 LDA #CD7 MOD 256:STA &74
3010 LDA #CD7 DIV 256:STA &75
3020 JSR send
3030 JMP key
3040 .08
3050 LDA #CD8 MOD 256:STA &74
3060 LDA #CD8 DIV 256:STA &75
3070 JSR send
3080 JMP key
3090 .09
3100 LDA #CD9 MOD 256:STA &74
3110 LDA #CD9 DIV 256:STA &75
3120 JSR send
3130 JMP key
3140 .RST
3150 EQUB 5:EQUB 2:EQUB 1:EQUB 27:EQUB
1:EQUB 64
3160 .CD1
3170 EQUB 5:EQUB 2:EQUB 1:EQUB 27
3180 EQUB 1:EQUB 15
3190 .CD2
3200 EQUB 7:EQUB 2:EQUB 1:EQUB 27
3210 EQUB 1:EQUB 87:EQUB 1:EQUB 1
3220 .CD3
3230 EQUB 5:EQUB 2:EQUB 1:EQUB 27
3240 EQUB 1:EQUB 71
3250 .CD4
3260 EQUB 5:EQUB 2:EQUB 1:EQUB 27
3270 EQUB 1:EQUB 52
3280 .CD5
3290 EQUB 7:EQUB 2:EQUB 1:EQUB 27
3300 EQUB 1:EQUB 83:EQUB 1:EQUB 1
3310 .CD6
3320 EQUB 7:EQUB 2:EQUB 1:EQUB 27
3330 EQUB 1:EQUB 83:EQUB 1:EQUB 0
3340 .CD7
3350 EQUB 7:EQUB 2:EQUB 1:EQUB 27
3360 EQUB 1:EQUB 45:EQUB 1:EQUB 1
3370 .CD8
3380 EQUB 7:EQUB 2:EQUB 1:EQUB 27
3390 EQUB 1:EQUB 45:EQUB 1:EQUB 0
3400 .CD9
3410 EQUB 5:EQUB 2:EQUB 1:EQUB 27
3420 EQUB 1:EQUB 69
3430 .send
3440 LDY#0
3450 LDA (&74),Y:STA &8F
3460 .send2
3470 INY:LDA (&74),Y:JSR &FFEE
3480 CPY &8F:BNE send2
3490 RTS
3500 .commands
    \PRINT OUT COMMANDS
3510 LDY#0
3520 .printcommands
3530 LDA commandtext,Y:CMP#255:BEQ done
3540 JSR &FFE3
3550 INY:JMP printcommands
3560 .done JMP end
3570 .commandtext
3580 EQUB(13)
3590 EQUS("M U L T I   U T I L I T Y")
3600 EQUB(13)
3610 EQUB(10)
3620 EQUS("(C)1987 A.W.Pryer")
3630 EQUB(13)
3640 EQUB(10)
3650 EQUS("*AUTOSAVE (filename)")
3660 EQUB(13)
3670 EQUS("*NOSAVE")
3680 EQUB(13)
3690 EQUS("*MENU")
3700 EQUB(13)
3710 EQUS("*COMMANDS")
3720 EQUB(13)
3730 EQUB(10)
3740 EQUS("VERSION 1.00")
3750 EQUB(13)
3760 EQUB(10)
3770 EQUB(255)
3780 ]
3790 NEXT
3800 FOR A=MAIN TO P%
3810 SUM=SUM+?A
3820 NEXT
3830 SUM=SUM-?&1417-?&1418-?&1419-?&141
A
3840 IF SUM<>108578 THEN PRINT"CHECKSUM
INCORRECT-CHECK PROGRAM":END
3850 OSCLI("SAVE M-UTIL 1300 "+STR$~(P%
+1))
3860 CALL &1300
3870 *COMMANDS
3880 END
```

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To complete the package all INSTRUCTIONS can be called onto SCREEN while the program is running. To obtain a copy of THE ASIRUS SETTLER, fill in the form below, together with a remittance of £20.

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Message Scroller

Simon T Goodwin

This short routine for the Amstrad CPC's allows messages to be smoothly scrolled across any row between 1 and 25.

The syntax is *A$="message": Call 42300,@a$,row.*

The message can be up to 255 characters long. The routine was designed for Mode 0 but can be used in Mode 1 if you change the 14 in line 150 to 28 and the 04 in line 170 to 02.

```
10 REM ----------------------------
20 REM          MESSAGE SCROLLER
30 REM        by ST Goodwin 1987
40 REM ----------------------------
50 REM
60 MEMORY 42299
70 FOR n=42300 TO 42409
80 READ a$
90 POKE n,VAL("&"+a$)
100 NEXT
110 REM CALL 42300,"message",row
120 REM
130 DATA DD,7E,00,32,A3,A5,DD,6E
140 DATA 02,DD,66,03,7E,47,23,5E
150 DATA 23,56,C5,D5,1A,26,14,3A
160 DATA A3,A5,6F,CD,75,BB,1A,CD
170 DATA 5A,BB,06,04,C5,CD,19,BD
180 DATA CD,79,A5,C5,D5,CD,1B,BB
190 DATA D1,C1,38,2F,C1,10,ED,D1
200 DATA 13,C1,10,D6,C9,21,B0,BF
210 DATA 11,50,00,3A,A3,A5,47,19
220 DATA 10,FD,11,00,C0,06,08,C5
230 DATA E5,D1,23,01,4F,00,1A,ED
240 DATA B0,12,01,B0,07,09,C1,10
250 DATA EE,3D,C9,C1,D1,C1,C9,00
260 DATA 00,00,00,00,00,00,00,00
```

Exchange

Alan Thomas

Exchange for the Psion Organiser keeps a record of the exchange rate for any country the user may visit, and converts the local prices into Sterling. Another calculator memory is used to store the exchange rate so this may be updated at any time (from the programme itself).

```
EXCHANGE:
LOCAL M%,P,R,R$(30)
UDG: (0,6,9,8,28,8,9,31,0)
MENU::
M%=MENU("Convert,Rate")
IF M%=1
CONVERT::
CLS
PRINT"Enter price..."
INPUT P
R=P/M7
CLS
PRINT"Rate:",M7
R$=FIX$(P,2,11)+" = "+CHR$(0)+FIX$(R,2,15)
VIEW(2,R$)
GOTO MENU::
ELSEIF M%=2: PRINT"Enter rate..."
INPUT M7
GOTO CONVERT::
ENDIF

udg:(x%,a%,b%,c%,d%,e%,f%,g%,h%)
POKEB S180,64+x%*8 :POKEB S181,a%
POKEB S181,b% :POKEB S181,c%
POKEB S181,d% :POKEB S181,e%
POKEB S181,f% :POKEB S181,g%
POKEB S181,h%
```

Renumber

M Fermor

The following program for the C64 is a basic renumber facility. To use enter *Run 63744,* where *L* is the starting number and *B* is the increment number.

```
63744 REM RENUMBER
63745 L=100:B=10:S=43
63746 S=PEEK(S+1)*256+PEEK(S)
63747 IF PEEK(S+3)=249 THEN END
63748 A%=L/256:POKE S+3,A%
63749 POKE S+2,L-(A%*256)
63750 L=L+B:GOTO 63746
```

Programming Spotlight – Magic

Stuart Slater

Programming Spotlight is where long programs are featured and offered to sale to you, the reader, by the author. Programs featured in this spot become the copyright of Popular as usual, for the sum of £10. We reserve the right to set a reasonable price for the programs on offer.

Magic is a two level graphical adventure where it follows the adventures of a freelance druid and his exploits. You have the option of casting water, fire or other spells to defeat the roaming monsters while seeking to escape from that level.

So, for a copy of Magic on the Commodore +4 and C16 send £2.25 to Stuart Slater, Programming Spotlight, Popular Computing Weekly, 12–13 Little Newport Street, London WC2H 7PP.

with Kenn Garroch

Tallying up the chips

C Smith of Shipley, West Yorks, writes:

Q I own a Mannesman Tally MT80+ and I am trying to find out the type number of the two 2K(?) buffer chips for which there are two 24 pin sockets.

A Hmmm difficult but at a guess, they could be 4118, 8192 bit Ram chips, unless any of our readers know better. Two of these would give 2K by 8 bits of buffer space and you can obtain them from Maplin Electronic Supplies Ltd PO Box 3, Rayleigh, Essex, part No. QQ05F at £5.45 each.

File transfers

Brian Sayers of Finglas, Dublin, Eire, writes:

Q I have a problem concerning data files on the Commodore 64. I have data stored in program binary files in Ascii format and I wish to use them on the Apple II, Amstrad 64/128, and Spectrum computers. Do you know if there is a way to transfer the files between the Commodore and these machines? One initial problem I see is the different format of the discs, or could it be done via the ports?

A The only realistic method would be to obtain RS232 ports for all the machines. For the Spectrum, Amstrad, and C64, these are add ons that connect to the user/expansion ports. The Apple II version is a board for one of the expansion slots inside the machine.

With RS232 connections, you could transmit the data a byte at a time to the other machines. You would probably have to load the data files directly into the memory of the 64, Peek each byte and then transmit it via the RS232. Most RS232 connections come with some sort of terminal program that will allow data received to be stored in data files. Off hand, I cannot think of any other method since, as you say, the disc formats are wildly different and there is no other standard connection that is available for all the machines in question.

Lost routine

B P Smith of 3 Queens BFPO 38, writes:

Q I am wondering if you can assist me with a problem I have. I am writing a machine code program for the Spectrum. The program involves the use of the machine code version of the Basic Screens and Attr.

I have been using two routines for the Screen$: CD 3825, and CD F12B used with the print pos in the BC reg and the result in A.

Unfortunately, if these are called repeatedly, an out Of Memory Error occurs.

I have not found a Rom routine for the Attr function and would be grateful if you could tell me where it is.

A The out of memory error is due to the fact that the Screen$ function uses the calculator and this makes use of the workspace. If the workspace is not regularly cleared then 'out of memory' can be the result. The way around this is to call the Rom routine at 5823 after doing the Screen$, to clear the workspace and calculator stack. After calling $F12B, the result is not in the A register as you state but is pointed to by DE so LD A,(DE) gets the character value obtained by Screen$. If you then save this, and call 5823 to clear up any mess, then retrieve the character value, you can take action on it and not suffer from out of memory problems.

The Attr function is located at $8325 and takes the line number in C and the column in B. After calling the routine, the attribute value is at the top of the calculator stack and maybe loaded into the A reg with Call $D52D. The value obtained takes the form 128*(flash number)+64*(bright number)+8*(paper colour)+(ink colour).

Basic securities

J Gribbons of Haxby, York writes:

Q I have recently become acquainted with the BBC computer and have been using a disc drive.

I have been trying to add security to my Basic programs and have worked out, with the help of FX codes, how to prevent people from breaking into my programs. The problem is that the Load command can still be used and then it is possible to list the program. Is there any way of preventing, or at least partly preventing the program from loading using the Load command or is there a way of stopping the program from listing?

A There are a couple of solutions to your problem, unfortunately, they will not stop the dedicated 'hacker'. The simplest way to stop the program from listing is to turn off the VDU driver as the program lists. This is done by inserting a value of 21 in a Rem statement. So, if the program starts with '10 Rem unlist' then ?(PAGE+6)=21 stops line 10 from being listed.

Unfortunately, if there is a line 20, List 20 does not stop line 20 from being seen. The best way to use this method of protection is to place Rems at strategic places in the program and put 21s after them forcing anyone who wants to see the program to seach through and find them all. Since this is not too difficult, its not a very good protection method.

An alternative which is a little better is to load your program, find out its length in bytes, and then set Page to something else such as &1100. The use *Save to save the code from &1100 to the end of your program. The ordinary load command will not work properly now since there is a load of gunk attached to the bottom of the program. To load the program, you need to know the starting address, in this case &1100, and the correct value of page for the program. So to load it, use *load name &1100 and then set page to &1900 or whatever you used.

The disadvantage with this method is that the details of load address and length etc. are stored in the directory information on the disc. To stop these being listed, the following program can be used. What it does is insert a VDU disable character into the directory listing for the first file on the disc. Make sure that this a dummy i.e. just a name since it can't be loaded easily. To find the first file on the disc, use *Info**, and the first file will be at the top. Of course, anyone with this program can undo the protection so you will have to fiddle with it a little to fool them.

```
10 REM PROTECTOR
20 DIM BLK 255
30 DIM PARA 10
40 PROCRWDISC(0,0,1,0)
50 ?(BLK+8)=21
60 PROCRWDISC(0,0,0,0)
70 END
80 DEFPROCRWDISC
   (T,S,RW,DRV)
90 REM READ IS RW=1 TAKE
   GREAT CARE SINCE GETTING
   IT WRONG CAN MAKE A MESS
   OF THE DISC BACK IT UP
   BEFORE USING THIS
100 LOCAL RDWT
110 IF RW=1 THEN RDWT=&53
   ELSE RDWT=&4B
120 ?PARA=DRV
130 !(PARA+1)=BLK
140 ?(PARA+5)=3
150 ?(PARA+6)=RDWT
160 ?(PARA+7)=T
170 ?(PARA+8)=S
180 ?(PARA+9)=&21
190 A%=&7F
200 X%=PARA MOD 256
```

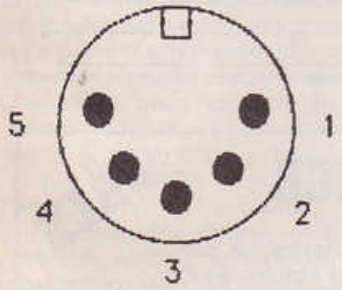
```
210 Y%=PARA DIV 256
220 CALL &FFF1
230 ENDPROC
```

C64 amplified

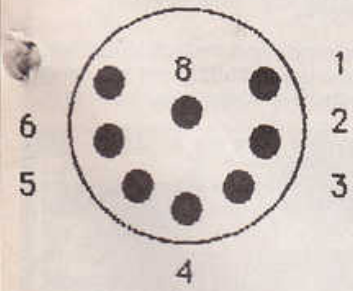
J K Cartwright of Tenby, Dyfed, writes:

Q I want to know how I can output sound from my C64 to an amplifier. What is the wiring involved, and is there any risk of damaging the computer?

A There are two layouts for the audio video outputs on the Commodore 64. Older machines have a five pin connection, the newer machines, an 8 pin. Looking at the back of the machine, the socket you need is the first one to the right of the RF output. Check if this is five or eight pins and use the following connections.



Old



New

Old layout
1 Luminance
2 Ground
3 Audio out
4 Video out
5 Audio in
New layout
2 Video out
4 Ground
6 Audio out
8 Choma

To connect your 64 to a hi-fi, take the audio output and ground and connect to one of the inputs of your amplifier: on most amps, the ground is the outside connection on the phono plug. The input to use is either the tuner or tape (either channel since it is mono sound). In technical terms, you should use an amplifier input with about 1KΩ impedence. If you use a higher impedence, say the input for the record deck, the sound will be very loud and distorted. Try a few and see which is best, you can't do any damage to your computer if the amplifier is fairly modern (i.e. its not an ancient valve design).

Best games

G Thornton of Castleford, West Yorkshire, writes:

Q Out of the following computers, which one has the better graphics, sound and games software: the Amstrad PC1512, the Atari ST, or the Commodore Amiga.

Also could you tell me how many colours are there on a colour printer, and do black and white printers print shades?

A Of the three, the best graphics and sound are probably to be found on the Commodore Amiga. Unfortunately, this machine has not sold as well as the Atari ST. The PC 1512 is nowhere in sight in comparison.

Colour printers come in two main varieties; ribbon and ink jet. The former is the most common and uses a four colour ribbon, divided in the same way as a two colour typewriter ribbon. The colours are usually red, blue, yellow, and black and can be combined to produce shades of other colours. Ink jet printers spray the ink onto the paper and are a little quieter than the dot matrices used with ribbons. Again, the three primary colours and black are used to produce mixtures for other colours.

Black and white printers can certainly print in shades and most screen dump programs use a bit pattern or shade for each of the possible screen colours.

T199/4A cartridges

M Hopkins of Willenhall, West Midlands, writes:

Q I have just been given a T199/4A which, unfortunately, doesn't work. When I switch it on, the screen just remains black (I assume it's black, it actually appears to be dark green). The logo is not appearing and pressing the keyboard doesn't help. I realise that you mainly deal with programming but you were the only person I could think to ask.

A As far as I remember, the T199/4A requires a cartridge before it will work properly. The cartridge contains the Basic operating system and if it isn't there or is not inserted properly, the machine doesn't work. You may try checking the power supply, fuses etc. Apart from this, my memory is a little hazy (it was three or four years ago), so if any one else has any ideas don't hesitate to get in touch.

More ST monitors

Peter Fellows, Technical Director of Software Express, 514-516 Alum Rock Road, Alum Rock, Birmingham writes:

Q With reference to your reply to the letter from Mr Sean L'Estrange in the issue of PCW dated 26th Feb, I would like to correct your statement concerning colour monitors and the Atari ST.

I would agree entirely with your comment concerning monochrome monitors, but I regret that any RGB monitor will not do. The Atari ST requires RGB analogue (sometimes called linear) and monitors which are RGB TTL or RGBI will either not work at all or will not represent the colours properly. May I also point out that the 520 STM and the STFM do have composite video (colour) though the quality is not as good as the RGB signal. Some 1040 manuals also indicate that composite video is available on the 1040 – this is *not* the case.

Unfortunately, we are not familiar with the Chroma monitor but we have successfully connected the ST to a variety of monitors and TV/monitors, from the low cost Fidelity to the Sony Professional. If we can be of any assistance to your readers, please let us know. Keep up the good work.

A What would really be handy would be a list of those monitors that do work and those that don't.

Commodore pens

P Hudson of Eckington, Sheffield writes:

Q I would be very pleased if you or any of your readers could tell me where I can purchase some pens for the Commodore 1520 printer plotter as the shop where I previously bought them no longer stocks them.

A As far as I know, these are the same pens as used in the MCP 40 and the Tandy printer plotter. Tandy say they stock the pens for their machine so the best thing to do would be to go along to your local Tandy store and check that they are the same (they should be). If they are not in stock, you should at least be able to order them.

Is there anything about your computer you don't understand, and which everyone else seems to take for granted? Whatever your problem *Peek* it to Kenn Garroch and every week he will *Poke* back as many answers as he can. The address is *Peek & Poke, PCW*, 12-13 Little Newport Street, London WC2H 7PP.

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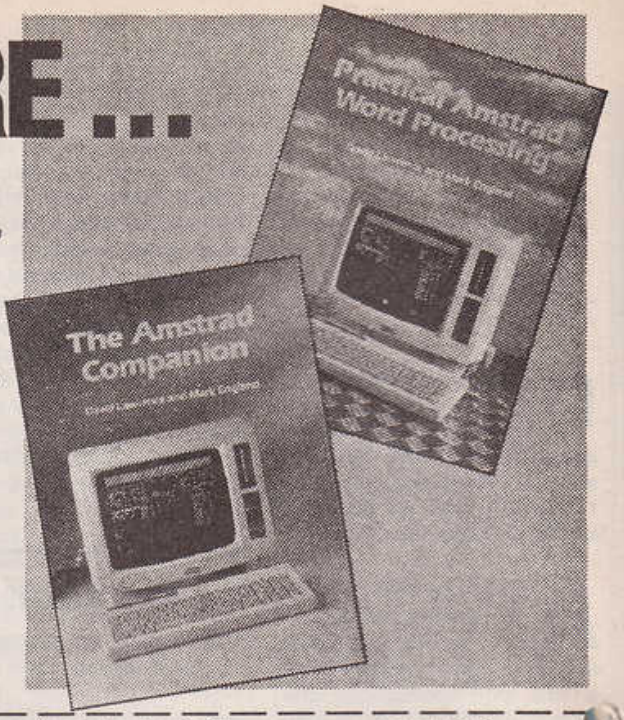

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Starting up the micro music

Mark Jenkins looks at Midisoft for the ST, a good package for those new to computer music

The *Midisoft* package for the Atari ST micros is another in the line of simplified, beginners' Midi composition systems which inexpensively introduce you to the use of Midi synthesisers and effects. At £99.95 it's in the same price bracket as *EZ-Track* from the Hybrid Arts corporation and Steinberg's more basic packages, and so compares well to Steinberg's *Pro-24*, Hybrid's *MidiTrack* and C-Lab's *Creator* which are intended for the professional market and which all nudge the £300 mark.

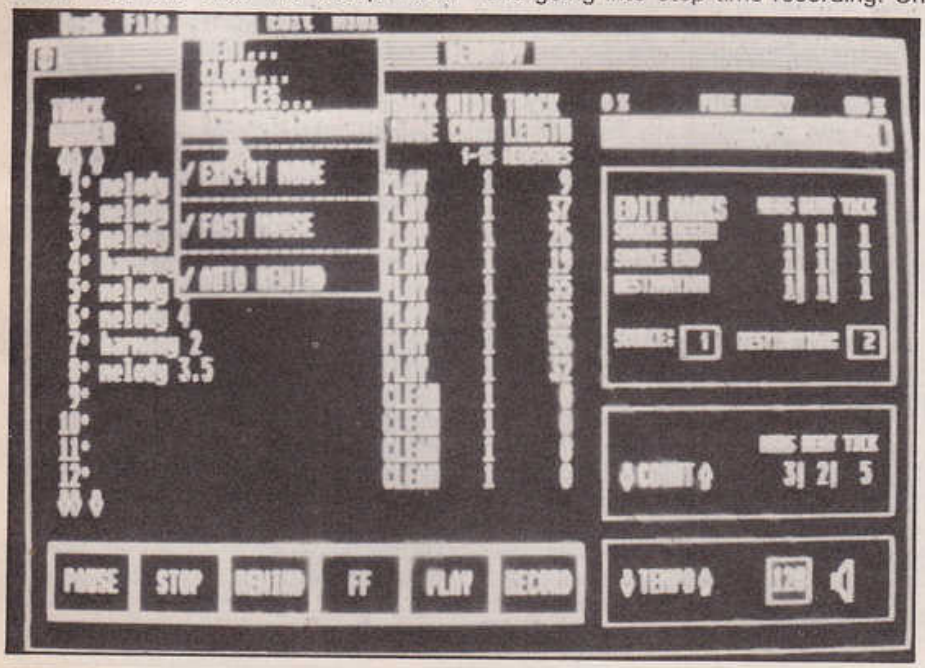
In what ways is *Midisoft* simplified? Well, like the other beginners' packages, it allows you to record many tracks of Midi information and play them back as one pattern simultaneously, but it does not allow you to record more patterns and chain them together to create a whole song. In other words, you can write a very lengthy and interesting verse, but you're in trouble when you want to work on the chorus.

> *"Midisoft, like other beginners' packages, allows you to record many tracks of Midi information and play them back as one pattern simultaneously, but you can't chain them together to create a song"*

However, the degree of complexity available within that verse can be quite staggering, with 32 tracks each set to any of the 16 Midi channels available for recording, playing, fast forward and rewind, pause and various editing functions.

The familiar Gem environment is used and there are five menus, Desk, File, Setup, Edit and Midi. The Setup menu includes a useful fast mouse option which doubles the ratio of cursor movement to mouse movements for when you're really familiar with the package, and this section also offers auto rewind to the point at which you started recording, beat (to select the number of beats per measure and number of count-in measures before recording begins), clock (internal or external) and so on.

On the Edit page you'll find the options of moving, copying, and combining tracks, inserting, deleting, pasting, erasing and transporting, time correcting, and going into step time recording. On the Midi menu you'll find the controls for tune up and other requests to be sent out to the connected synths, song select for external devices which can respond to this signal, and so on.



Let's assume we're in expert mode (no warnings!) and using Fast Mouse, zipping around the *Midisoft* command page with unnerving speed. First you'll want to label all the tracks you're working on, and a generous 24 spaces per track are available. You can solo one track to listen more closely to what it's doing, and select any Midi channel for any track. Free memory is displayed and a new tempo from 12–280 BPM can be entered from the ST keyboard while in stop or while playing.

On the right of most screens on the package you'll see the Edit marks display which defines two points between which various functions operate. You can cut the section between the two edit marks out and paste it elsewhere simply by typing in a destination in terms of track number, measure, beat and "tick". In the absence of a loop function this can be used to create repetitive patterns fairly quickly. The audible metronome can be turned on and off, and you can enable or disable recording of velocity information. The package comes with a well-written handbook which contains a glossary of terms plus several useful examples of typical music routines.

Overall, *Midisoft* provides reasonable value for money. It will certainly control as many Midi synths as you're likely to be able to afford, and teach you most of what you need to know about Midi recording and editing. However, if you want to go on to composing complex songs (or even not-so-complex songs) you'll eventually find its lack of a song arrange mode frustrating and will want to move on to something more versatile and (unfortunately) more expensive.

Rittor Music Europe Ltd, 149 The Broadway, Cricklewood, London NW2 3HY, 01-208 0558.

If you have any queries or tips for this column, please write to Mark Jenkins at *Popular Computing Weekly*, 12–13 Little Newport Street, London WC2H 7PP. Mark would also welcome examples of your own music on audio or program tape, or disc.

How to beat the Telecom system

Most computer communications enthusiasts will have experienced the horror of the first quarter's modem-owning phone bill. Until recently users were stuck with BT's charging structure. Here, Steve Gold looks at Mercury, does his sums and sees his bank manager smile

Overly large telephone bills for those involved in communications are not uncommon, often forcing the hapless enthusiast to cut down on his/her activities or worse still, stop altogether.

Some weeks ago in this column, we looked at ways of logging your call-times so that the phone bill needn't be too much of a shock.

Is there an alternative to such drastic action? If most of your calls are local (as is the case with Prestel and Micronet) then your bills will have to remain as they are, for the time being at least.

If, on the other hand, many of your calls are trunk and if appropriate, international, then help is at hand in the form of Mercury Communications with its 2200 service.

Contrary to popular belief, Mercury isn't all big business communications via dishes and fibre optic cable. Mercury's licence, granted by the Office of Telecommunications (Oftel) clearly allows it to branch into most parts of the communications market.

Mercury 2200 service works like this. By calling a simple local access number (usually 131) users are routed directly into the Mercury network. You then key in your supplied Mercury ID, followed by the number required, complete with the 'standard' national dialling code. Within a few seconds, your call is zipped across to the appropriate local centre, and back onto the local BT network to complete the call.

All of this takes place under control of the phone. As far as the users are concerned, they simply pick up the phone and, if a trunk call is required, dial the full number, prefixing it with a press of the blue M (for Mercury) button. All subsequent switching is handled under the Mercury smart phone's control.

Call charges are between 10 and 25 per cent cheaper when routed on Mercury. Savings are greatest where the call is routed totally over the Mercury trunk network. Typically, a 90 second cheap rate call from Leeds to London costs just 5.7p, compared with 8.8p via BT circuits.

Calls to the local Mercury access node are free, thanks to a reciprocal agreement between Mercury and BT.

Currently, the Mercury 2200 network covers about 40 per cent of the UK's telephone subscribers. The Mercury network forms an approximate figure of eight, stretching from London to Birmingham, up to Manchester, across to Leeds, and then down to Bristol (again passing through Birmingham) and thence back to London. Network spurs currently exist which extend service from London to Cardiff, Chelmsford, York and Edinburgh.

Later this year Mercury will serve most major centres of population, with progressive coverage of most of the UK expected by the end of the decade.

Telephone subscribers in or close to the main centres shown on the network map have the ability to use Mercury 2200 service now. Further details can be obtained free of charge from the number given at the end of this article.

In order to use the network, Mercury 2200 subscribers must purchase at least one Mercury 'smart phone' for £37 plus Vat. On top of this, the rental of an ID on the Mercury network will cost you £7.50 plus Vat a year – this charge is payable each year in advance.

The smart phone is an exciting instrument in its own right. Despite its relatively low price, the phone has advanced facilities such as 50 memories, last number redial and on-hook dialling. Once purchased, the phone becomes your own property to use as you wish.

Thus, in your first year, you should make call savings of at least £45–50 plus Vat on your phone bill for the system to pay its way. Second and subsequent years require only £7.50 worth of call savings to be made.

> *"Call charges are between 10 and 25 per cent cheaper when routed on Mercury. Savings are greatest where the call is routed totally over the Mercury trunk network."*

Calls to National Destinations

Rates: Pence per minute for directly dialled calls

TIERS	PRIME	STANDARD	ECONOMY
	0900 – 1300 Monday to Friday	0800 – 0900, 1300 – 1700 Monday to Friday	All other hours Monday to Friday, weekends and public holidays
1. Calls over 56km (35 miles) to destinations shown in Table 1	11.155	8.480	3.750
2. Calls over 56km (35 miles) to other destinations	11.730	8.750	4.100
3. Calls up to 56km (35 miles) to destinations shown in Table 1	9.720	7.452	2.500
4. Calls up to 56km (35 miles) to other destinations	10.000	7.500	2.500
5. Calls made to destinations within the Local Call Area	9.720	7.452	2.500

Against the purchase costs of the Mercury phone are the rental savings (approximately £2 per quarter per phone) on renting a phone from BT. If a Mercury phone is used instead of BT's, then the phone can be returned to BT for a reduction in rental to line only charges.

Mercury uses a wholly-digital network. Because of this, the 'mush' and reduction in volume associated with BT trunk calls is considerably reduced. Often, even with the clicks and whirrs of the local 131 call to Mercury, and the return to the local BT network at the distant end, call quality is as good as a local call on your own exchange.

Such call clarity has considerable advantages for modem users. As well as the call savings, the lack of line noise makes file transfers more reliable. In the case of error-checked transfers (Xmodem, Kermit etc) fewer error blocks mean shorter calls – further reductions in charges for online systems such as Telecom Gold, One to One etc.

Customer services (operator, directory enquiry and general enquiries) are available 24 hours a day, 365 days a year on Mercury. Thus, if you have a billing problem at 3pm on a Sunday afternoon, a quick call to Mercury customer assistance can be made. Try doing that with BT billing!

The final advantage of Mercury is its charging structure. Instead of calls being charged for in 4.4p blocks, with no pro rata charges for 'straying' just a few seconds into the next unit charging period, Mercury charges are calculated to three decimal places of a minute, the resultant rates being rounded to nearest tenth of a penny.

Since the minimum charge for a Mercury 2200 trunk call is 3p, compared with BT's 4.4p, call savings for short calls can accrue quite quickly. Local calls are available via Mercury, but charges are subject to a minimum of 7p – reflective perhaps of the fact that Mercury uses the BT network for this.

Further Details are available from Mercury Communications, 90 Long Acre, London WC2E 9NP, 0800 424 194 (a Linkline free call).

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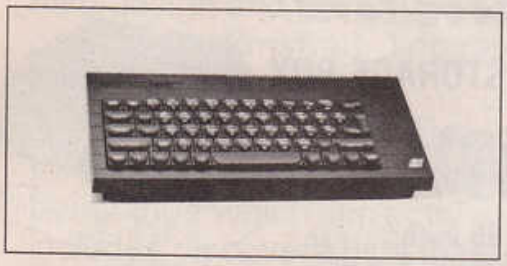

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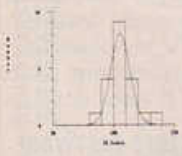

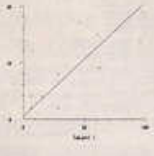

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MSX games, utilities, books for sale. Buyer collects, Wirral. Including Hobbit, 5 Star, Computer H175, JSW II, etc. Cost £200+, accept £80. Free MSX mags. Will split? Tel: 051-678 9775 after six.

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MASTERFILE DATABASES, following titles available: Amsdos Basic Instruction Set, Countries of the World, English Football Clubs, Famous Cocktails. All £1.50 each on cassette. Mr. C. Jones, 105 Dorchester Road, Weymouth, Dorset.

AMSTRAD CPC464, colour with disc drive. Mirage Imager, joystick over 30 pieces of software and discs, v.g.c. Worth over £600 software, original as new £250. Tel: Reading 0734 332417.

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New Releases

John Cook looks through this week's new arrivals

Amstrad CPC

Program *The Fear – Storm II* **Type** Arcade Adventure **Price** £1.99 **Supplier** Mastertronic, 8–10 Paul Street, London WC2.

Just like success breeds success, success also breeds sequels – enter *Storm II,* follow-up to that cheapie *Gauntlet* clone that Mastertronic released in mid-86.

The scam is that while the two heroes were battling it out attempting to rescue this damsel in distress (just in case you missed the first instalment), back at the ranch, the wizard Agravain's daughter, Silver, and her toy boy, Prince Frost, have received news that the villain of the piece, Una Cum has acquired The Fear.

The Fear is not a new wave four man Thrash Metal band, but an artefact of awesome power – so natch, the duo set out on a quest to get it back etc.

The graphics are very similar, if slightly more detailed than the original.

Taken as a cut price *Gauntlet* clones, it's a good deal, but if you have already purchased *Storm I,* you might feel that the program isn't significantly different enough to buy the follow up, even at £2.99.

Program *Colony* **Type** Arcade/Strategy **Price** £2.99 **Supplier** Mastertronic, 8–10 Paul Street, London WC2.

See MSX listing for comment.

Program *Strike!* **Type** Arcade **Price** £2.99 **Supplier** Mastertronic, 8–10 Paul Street, London WC2.

Program *Scalextric – The Computer Edition* **Type** Arcade **Price** £9.95 **Supplier** Leisure Genius, Virgin Games, 2–4 Vernon Yard, Portobello Road, London W11 2DX.

You know you're getting old when your parents give away your Scalextric set to the kid next door.

From now on, I'll have to settle for the computer version – a kind of cross between *Pole Position II* and *Racing Construction Kit.* I like it.

Program *Chronos* **Type** Arcade **Price** £1.99 **Supplier** Mastertronic, 8–10 Paul Street, London WC2.

Program *Rasterscan* **Type** Animated Adventure **Price** £1.99 **Supplier** Mastertronic, 8–10 Paul Street, London WC2.

And what, I hear you ask is an animated adventure? Well, Mastertronic says that it's an adventure with all locations, puzzles, clues and solutions depicted graphically. Rasterscan itself is a large spaceship which has recently been crippled in a space battle – and so is drifting helplessly and relentlessly towards the nearest star.

You take the role of a small, spherical service robot, whose only resident program is one that allows it to mend toasters . . . not so good.

Guiding your robot around the ship using keyboard or joystick, many puzzles must be identified and then solved before Rasterscan is back in working order.

Ten out of ten for originality of idea and implementation means this gets the big thumbs up.

Program *Strike Force Cobra* **Type** Arcade Adventure **Price** £9.95 **Supplier** Pirahna Software, 4 Little Essex Street, London WC2R 3LF.

Control four crack stormtroopers, thinly disguised as members of the computer press, in a bid to save the world.

3-D arcade adventure that didn't change the world now on CPC.

Program *Hit Pak* **Type** Compilation **Price** £9.95 (tape) £14.95 (disc) **Supplier** Elite Systems, Anchor House, An-

Pick of the week

Scratch n' sniff

Program *Leader Board – Executive Version* **Type** Sports Simulation **Micro** Commodore 64 **Price** £9.95 (tape) £14.95 (disc) **Supplier** US Gold, Units 2/3 Holford Way, Holford, Birmingham B6 7AX.

Here at Sunshine Towers, *Leader Board* on the ST has become something of an institution. Whereas before, 5.30pm used to be greeted with a stampede to the nearest hostelry, now you're more likely to hear the familiar 'thwak' of a golf ball being sent on a strangely erratic path along the first fairway, closely followed by the odd merry jest as it unerringly makes for the nearest bunker. Yes, bunkers.

On the ST you have bunkers to make your golfing life just that little bit harder – something the original Commodure version lacked, along with trees and rough. Well, 64 owners need be jealous no longer, as *Leader Board (the Executive Version)* has just been released on that format, which evens up the balance between the two.

The basic game mechanism has been left unaltered, but these extra features plotted onto two new courses will certainly give *Leader Board* a new lease of life if you had already mastered the original.

Stangely enough, *Leader Board* has always been much more difficult played on the 64. The speed at which the power and snap indicators move is much, much faster than on the ST, calling for razor sharp reactions. And with the introduction of the extra features, they'll have to be sharper still.

The trees, liberally spread around both courses, act as immovable objects that will stop the ball dead if you collide with them. These are coloured yellow and brown. The rough (coloured dark brow[illegible] is much harder to hack your way out of, and so will take about two clubs' worth of distance off a ball when you play your stroke – inconvenient but rarely disastrous. But then come the bunkers.

Bunkers, like rough, take two clubs' worth of distance off the ball . . . but you are unable to play a wood out of a bunker, and even if you do play an iron, you must hit the snap bar within one pixel of the middle position, or you're in big trouble.

Fail, and the ball can go anywhere - more often than-not, still in the bunker. Be warned, tempers start getting frayed after the sixth or seventh attempt.

The only thing that mig[illegible] have been changed that hasn't is the use of a darker shade of green to pick out the greens from the fairway.

But in any case, *Leader Board (Executive Version)* has retained all the playability on the Shop Floor version, but those extra features add that extra challenge that should have hardened gamers queueing up on the first tee.

chor Road, Aldridge, Walsall, West Midlands WS9 8PW.

Program *Vulcan – The Tunisian Campaign* **Type** Wargame **Price** £9.95 **Supplier** Cases Computer Simulations, 14 Langton Way, Blackheath, London SE3 7TL.

Allies vs Axis in 1943, down Tunisia way. The basis of the Desert Rats system has been retained with some extra features – including hidden movement, surely a pre-requisite in any program calling itself a true simulation.

Good on Spectrum, looks like it's been repeated here.

Atari ST

Program *Eden Blues* **Type** Arcade Adventure **Price** £24.95 **Supplier** Infogrames, Mitre House, Abbey Road, Enfield, Middx.

Another Ere Infomatique title, a conversion of one of the first of their CPC programs to make it over here, *Eden Blues*. Reasonably well received at the time, it's faithfully recreated here on the ST.

Atari XL/XE

Program *Hover Bover* **Type** Arcade **Price** £1.99 **Supplier** Mastertronic, 8–10 Paul Street, London EC2.

BBC B/Master

Program *Imogen* **Type** Arcade Adventure **Price** £8.95 (tape) £9.95 (disc) **Supplier** Micro Power, Northwood House, North Street, Leeds LS7 2AA.

After a quiet time from Micro Power, its most interesting release since *Castle Quest*.

2-D arcade adventuring, with the main character, a wizard, able to change into a cat or a monkey – which give him extra leaping ability or climbing ability.

With single colour, but high resolution graphics, you'll find yourself using both the intellect and the reactions in this one.

BBC Compact

Program *Imogen* **Type** Arcade Adventure **Price** £11.95 **Supplier** Micro Power, Northwood House, North Street, Leeds LS7 2AA.

C16/Plus

Program *Battle* **Type** Arcade **Price** £1.99 **Supplier** Mastertronic, 8–10 Paul Street, London EC2.

Commodore 64

Program *Hit Pak* **Type** Compilation **Price** £9.95 (tape) £14.95 (disc) **Supplier** Elite Systems, Anchor House, Anchor Road, Aldridge, Walsall, West Midlands WS9 8PW.

Phew – it doesn't take long for a game to come out on compilation nowadays, does it? The classiest (and newest) of the seven on offer here is certainly Palace's *The Sacred Armour of Antiriad* . . . a superior arcade adventure . . . followed closely by the frenetic *Split Personalities* from Domark. The others, *Scooby Doo, 1942, JSW II, Fighting Warrior* and *Duet*, make up the numbers.

Program *Auf Wiedersehen Monty* **Type** Arcade **Price** £9.95 **Supplier** Gremlin Graphics, Alpha House, 10 Carver Street, Sheffield S1 4FS.

The mighty mole leaps into action again – see this issue for full review.

MSX

Program *Colony* **Type** Arcade Strategy **Price** £1.99 **Supplier** Mastertronic, 8–10 Paul Street, London EC2.

Looks can often be deceptive. When you load *Colony*, and the first screen comes up on the monitor, the first thought is bad.

"Plan view" type maze. Single colour sprites. Three words spring into the brain. Boring, boring, boring. But once you get into the game . . . it's a completely different story.

Once again, you control a droid, but this time, you're in charge of a colony on another planet.

Your aim – to plant, grow and sell mushrooms. The problem – alien life forms outside the perimeter of the base, that is, they start outside. They don't stay there for long. Arcade strategy is the name of the game, as you repair and build fences, plant and harvest mushrooms, maintain and extend your areas of solar panels.

Zapping and trapping are two other of the fringe activities – give this one a go – you're unlikely to be disappointed.

Spectrum

Program *The Golden Mask* **Type** Adventure **Price** £2.50 (mail order only) incl. P&P. **Supplier** Compass Software, 36 Globe Place, NR2 2SQ.

Now that the arcade game cottage industry has almost completely dried up, the amateur end of the market is being propped up by the part time adventure writers like Jon Lemmon.

Although not in the same league as Fergus McNeil, Jon makes sensible use of the *Quill* and auxiliary programs in *The Golden Mask* – the second part of his current trilogy.

Basically, it's a silly names quest, but shows some promise. After all, any adventure in which you must type in the instruction *Get Wise* in the second location can't be all bad.

Program *Chronos* **Type** Arcade **Price** £1.99 **Supplier** Mastertronic, 8–10 Paul Street, London EC2.

Program *Strike!* **Type** Arcade **Price** £2.99 **Supplier** Mastertronic, 8–10 Paul Street, London EC2.

Program *Colony* **Type** Arcade Strategy **Price** £1.99 **Supplier** Mastertronic, 8–10 Paul Street, London EC2.

See MSX listing for comment.

Program *Rasterscan* **Type** Animated Adventure **Price** £1.99 **Supplier** Mastertronic, 8–10 Paul Street, London EC2.

See Amstrad CPC listing for comment.

Program *Earthshock* **Type** Graphic Adventure **Price** £3.99 **Supplier** Eighth Day Software, 18 Flaxhill, Moreton, Wirral, Merseyside L46 7UH.

The first of a new Grafix series of adventures from 8th Day – Liverpool based, budget adventure pioneers. It promises 50% more text compression than on its previous adventures, with one side of the tape having the 'extended' version, the other a graphic version. And to make this an even better deal, *Earthshock* has three different sub-plots in the middle section of the game.

Ziggurat

The return of nostalgia – and Space Invaders

Zarquon's knees! Do my very own eyes deceive me? Or is it just the fact that the computer games playing world has gone stark staring bonkers?

There I was, minding my own business, when what should I see but something about the very latest in computer games, which, when you look at it, is nothing more than a jazzed-up and remixed *Breakout*.

Breakout? You mean turning a little knob which moves a little white rectangle on the screen which little white blobs bounce off hitting the sides of the screen and/or coloured bricks which promptly vanish?

Well, er . . . yes! OK, so they've added the odd little frill like calling the bat a spaceship, fancy brick patterns, little monsters which eat your balls or things which make your hat squidgy, but *Breakout* by any other name is still *Breakout*.

I mean, in days way back, when micros could just about resolve rectangular bats and square balls with coloured bricks if you were rich, or different character shapes if you weren't, you could have endless hours of fun playing *Breakout*, which didn't really push the resources of the computer to its limit, but nowadays the whole idea I find to be totally ridiculous.

> *"Many people have tried to liken the entertainment software business to the pop music market"*

The thought that not one, but two of the major entertainment software houses in this country should jump on the *Breakout* bandwagon only serves to strengthen my opinions of entertainment software houses as being rip-off artists at heart.

Although, wait a bit. Many people have tried to liken the entertainment software business to the pop music market, and maybe the prophecy has been fulfilled. After all, if the top of the charts can be filled by people like Jackie Wilson, Ben E King and Percy Sledge, why shouldn't a *Breakout* game be a top seller in the entertainment software charts?

So, if any software house is looking for a new smash, and wants to pay me a large fat sum as ideas consultant, I've got this really neat idea. Listen. You have this load of alien-type figures, right, in about five rows of seven columns. They go from one side of the screen to the other, and when they hit the sides they drop down the screen a bit and go the other way, and wait, you also have the bottom row firing shots downwards as they go across.

Then near the bottom of the screen you've got these, like, forts, which get eaten away by all this shooting, and right at the bottom of the screen you've got this sort of gun firing shots up, and the idea is to shoot all these aliens before they shoot you three times, or get to the bottom of the screen. When you've shot them all, another lot appear and the whole thing starts again but a little faster.

Hey and that's not all! You also have this flying saucer thing which goes across the top of the screen every so often which you try to shoot to get extra points.

I've got a really neat name for it, too. Ready for this? I thought we could call it: *Space Invaders* . . .

Antony John Shepherd

NEXT WEEK

Laws of Computing

Popular **begins a series of articles about legal matters in computing. We kick off with the thorny subject of your rights as a consumer. What can you do if you buy a faulty product, be it software or hardware? What if the mail order company doesn't produce the goods?**

We aim to clarify the issue and make your position clear regarding consumer rights.

Compunet

Graham Edkins returns with his regular commentary on the Compunet database for Commodore users.

Sailing

Activision takes to the high seas in this yachting simulation. John Cook dons his lifejacket and reviews the game.

Whatever happened to computer games?

We take a long, hard look at the current state of the computer games market.

Hackers

TECHNOLOGY SO ADVANCED ...

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In addition, we at Silica would like to see you get off to a flying start with your new computer, so we have put together a special **ST STARTER KIT** worth over £100, which we are giving away **FREE OF CHARGE** with every ST computer purchased at our normal retail prices. This kit is available **ONLY FROM SILICA** and is aimed at providing users with a valuable introduction to the world of computing. We are continually upgrading the ST Starter Kit, which contains public domain and other licensed software, as well as books, magazines and accessories all relevant to ST computing. Return the coupon below for full details.

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At Silica Shop, we have a dedicated service department of five full time Atari trained technical staff. This team is totally dedicated to servicing Atari computer products. Their accumulated knowledge, skill and experience makes them second to none in their field. You can be sure that any work carried out by them is of the highest standard. A standard of servicing which we believe you will find **ONLY FROM SILICA**. In addition to providing full servicing facilities for Atari ST computers (both in and out of warranty), our team is also able to offer memory and modulator upgrades to ST computers.

Mb RAM UPGRADE: Our upgrade on the standard Atari 520ST-M or 520ST-FM keyboard will increase the memory from 512K to a massive 1024K. It has a full 1 year warranty and is available from Silica at an additional retail price of only £86.96 (+VAT = £100).

MODULATOR UPGRADE: Silica can upgrade the 1040ST-F to include a TV modulator so that you can then use it with your TV set. This is an internal upgrade and does not involve any untidy external boxes. A cable to connect your ST to any domestic TV is included in the price of the upgrade which is only £49 (inc VAT). The upgrade is also available for early 520ST computers at the same price.

THE FULL STOCK RANGE - Only From Silica

We aim to keep stocks of all Atari related products and our warehouse carries a stock of £½ million. We import many software titles direct from the USA and you will find that we have new releases in advance of many of our competitors. Unlike dealers who may only stock selected titles, we have the full range. In addition, we carry a complete line of all books which have been written about the Atari ST. A range as wide as ours is something you will find is available **ONLY FROM SILICA.**

AFTER SALES SUPPORT - Only From Silica

Rest assured that when you buy your ST from Silica Shop, you will be fully supported. Our free mailings give news of releases and developments. This will help to keep you fully up to date with what's happening in the Atari market. And in addition, our sales staff are at the end of a telephone line to service all of your Atari requirements. If you purchase an ST from Silica and would like any programming or technical advice, we have a full time technical support team to help you get the best from your computer. Because we have both the staff and the systems specifically dedicated to providing after sales service on Atari ST computers, we are confident that our users enjoy an exceptionally high level of support. This can be received **ONLY FROM SILICA.**

FREE CATALOGUES - Only From Silica

At Silica Shop, we recognise that serious users require an in-depth information service, which is why we mail free newsletters and price lists to our ST owners. These are up to 48 pages long and are crammed with technical details as well as special offers and product descriptions. If you have already purchased an ST and would like to have your name added to our mailing list, please complete the coupon & return it to us. The information service is available **ONLY FROM SILICA.**

FREE OVERNIGHT DELIVERY - From Silica

Most orders are processed through our computer within 24 hours of receiving them. Most hardware orders are sent by the overnight METRO courier service FREE OF CHARGE to customers within the UK. This method helps to ensure minimum delay and maximum protection.

PRICE MATCH - Only From Silica

We hope that the combination of our low prices, FREE UK delivery service, FREE Starter Kit and FREE after sales support, will be enough to make you buy your Atari equipment from Silica Shop. If however, there is something you wish to purchase, and you find one of our competitors offering it at a lower price, then please contact our sales department, providing us with our competitor's name, address and telephone number. If our competitor has the goods in stock, we will normally match the offer (on a 'same product - same price' basis) and still provide you with our normal free delivery. We realise that we are not the only company who will match a competitor's price. However, if you come to us for a price match, you will also be entitled to our after sales service, including free newsletters and technical support. This makes our price match promise rather special, something you will receive **ONLY FROM SILICA.** We don't want you to go anywhere else for your Atari products. So shop at Silica, the UK's No1 Atari Specialist.

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Selfridges (1st floor), Oxford Street, London, W1A 1AB

520ST-M

The affordability of Atari computers is reflected in the price of the 520ST-M keyboard, which is a mere £259 (inc VAT). This version of the ST comes with 512K RAM, as well as a modulator and lead for direct connection to any domestic TV. The price does not include a mouse, in addition, when you buy your 520ST-M from Silica, you will also receive the FREE Silica 'ST Starter Kit'. During 1987, many software houses will be producing games software on ROM cartridges, which will plug directly into the cartridge slot on the 520ST-M keyboard, giving instant loading without the expense of purchasing a disk drive. With the enormous power of the ST, you can expect some excellent titles to be produced, making this the ultimate games machine! If your requirement is for a terminal, then the 520ST-M can fulfill this role too. Leads are available to connect the ST to a variety of monitors, and with the imminent introduction of terminal software on ROM cartridge, the ST provides a low price terminal for business use. If you wish to take advantage of the massive range of disk software available for the ST range, you will need to purchase a disk drive. Atari have two floppy disk drives available, a ½ Mbyte model £149 and a 1Mbyte model £199. Full details of these drives, as well as the Atari 20Mbyte hard disk are available on request. If required at a later date, the mouse may be purchased separately.

£259

520ST-FM

The 520ST-FM with 512K RAM and free mouse, represents a further breakthrough by Atari Corporation in the world of high power, low cost personal computing. This model is the latest addition to the ST family, and is not only powerful, but compact. It is priced at only £399 (inc VAT) a level which brings it within the reach of a whole new generation of computer enthusiasts. When purchased from us, it comes with the FREE Silica 'ST Starter Kit' see paragraph on the left. To make the 520ST-FM ready for use straight away, Atari have built into the keyboard a ½ megabyte disk drive for information storage and retrieval, allowing you easy access to the massive range of disk based software which is available for the ST. This new computer comes with all the correct cables and connections you will need to plug it straight into any standard domestic television set. You do not therefore have to purchase an Atari monitor. If you do require a monitor however, these are available with the 520ST in the following money saving packages:

520ST-FM Keyboard	*Without Monitor*	*- £399 (inc VAT)*
520ST-FM Keyboard + High res mono monitor		*- £499 (inc VAT)*
520ST-FM Keyboard + Low res colour monitor		*- £599 (inc VAT)*
520ST-FM Keyboard + Med res colour monitor		*- £699 (inc VAT)*

Because the 520ST-FM has its own power transformer built into the keyboard, there are no messy external adaptors to clutter up your desk space. You are left with only one mains lead, serving both the disk drive and the computer. You couldn't ask for a more stylish and compact unit.

£399

1040ST-F

For the businessman and the more serious home user, Atari have their most powerful model, the 1040ST-F with 1028K RAM. This low cost powerhouse can be introduced into a business environment as a stand-alone system, or can support a mainframe computer as a terminal. The 1040ST-F not only features twice as much memory as the 520ST-FM, but also includes a more powerful built-in disk drive. The drive featured on the 1040ST-F is a one megabyte double sided model. The extra memory facility of the 1040ST-F makes it ideal for applications such as large databases or spreadsheets. Like the 520ST-FM, the 1040ST-F has a mains transformer built into the console to give a compact and stylish unit with only one mains lead. The 1040ST-F is also supplied from Silica Shop with a free software package and 'ST STARTER KIT'. In the USA, the 1040ST-F has been sold with a TV modulator like the 520ST-FM. However, for the UK market, Atari are manufacturing the 1040ST-F solely with business use in mind and it does not currently include an RF modulator, this means that you cannot use it with a domestic TV (Silica Shop do offer a modulator upgrade for only £49). The 1040ST-F keyboard costs only £599 (inc VAT) and, unless a modulator upgrade is fitted, will require an Atari or third party monitor. There are three Atari monitors available and the prices for the 1040 with these monitors are as follows:

1040ST-F Keyboard Without Monitor	*- £599 (inc VAT)*
1040ST-F Keyboard + High res mono monitor	*- £899 (inc VAT)*
1040ST-F Keyboard + Low res col monitor	*- £799 (inc VAT)*
1040ST-F Keyboard + Med res col monitor	*- £899 (inc VAT)*

The 1040ST-F comes with a mouse controller and includes 1Mbyte of RAM. It has a 1Mbyte double sided disk drive and mains transformer, both built into the keyboard to give a compact and stylish unit, with only one mains lead.

£599

ATARI ST

To: Silica Shop Ltd, Dept PCWK 0287, 1-4 The Mews, Hatherley Road, Sidcup, Kent, DA14 4DX

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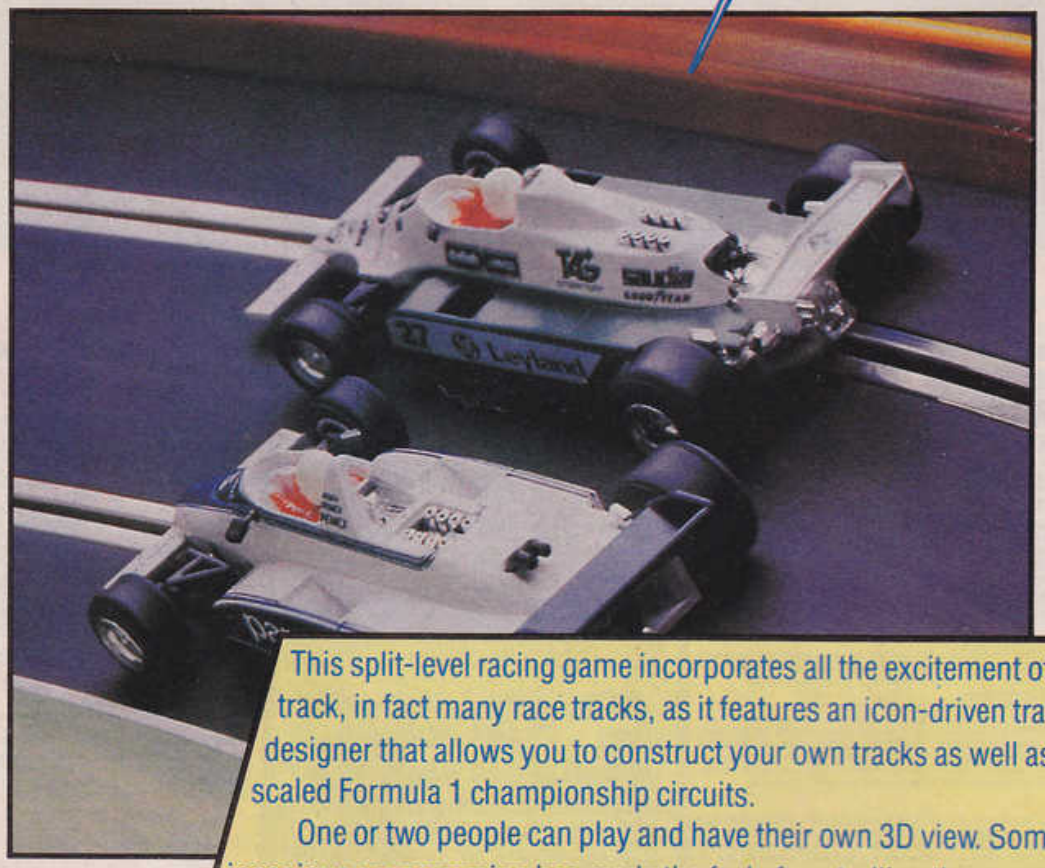

This split-level racing game incorporates all the excitement of the race track, in fact many race tracks, as it features an icon-driven track designer that allows you to construct your own tracks as well as select scaled Formula 1 championship circuits.

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