

POPULAR Computing WEEKLY

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8-14 May 1986

Vol 5 No 19

MSX 2 ready to arrive this year

- JVC is to preview MSX 2 this month – autumn launch expected
- Toshiba, Mitsubishi are waiting for market to be established
- Sony aiming for 1987 MSX plus CD-ROM machine launch

Full details below and inside

THE MSX working group of companies is gearing up to the launch of MSX 2. However, only one, JVC, has definitely decided to introduce its MSX 2 in the UK, although many MSX 2 models have been available in Japan for some time now. The rest are understandably cautious following the failure of

the first MSX machines to gain any hold on the market.

JVC will preview its new MSX – with 128K Ram, increased video Ram which en-

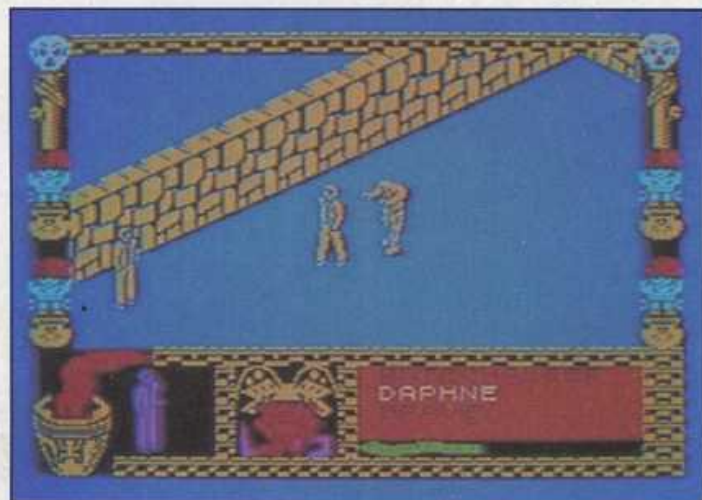
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PSION'S ORGANISER II

*Designed
with the
consumer in
mind*

*Full review
on P11*



Pyracurse – new from Hewson

PYRACURSE (pictured above) is the forthcoming title from Hewson, and uses the same style of arcade-adventure game play as *Avalon* and *Dragonarc*.

Pyracurse features a newspaper reporter, Legless O'Donnell, battling to save his

assistant, Daphne, from the curse of the ancient South American god, Xipe Totec. O'Donnell is aided by Kile, an archaeologist, and Frozbie, a dog.

Pyracurse is due for release on the Spectrum at the end of June, priced at £9.95.

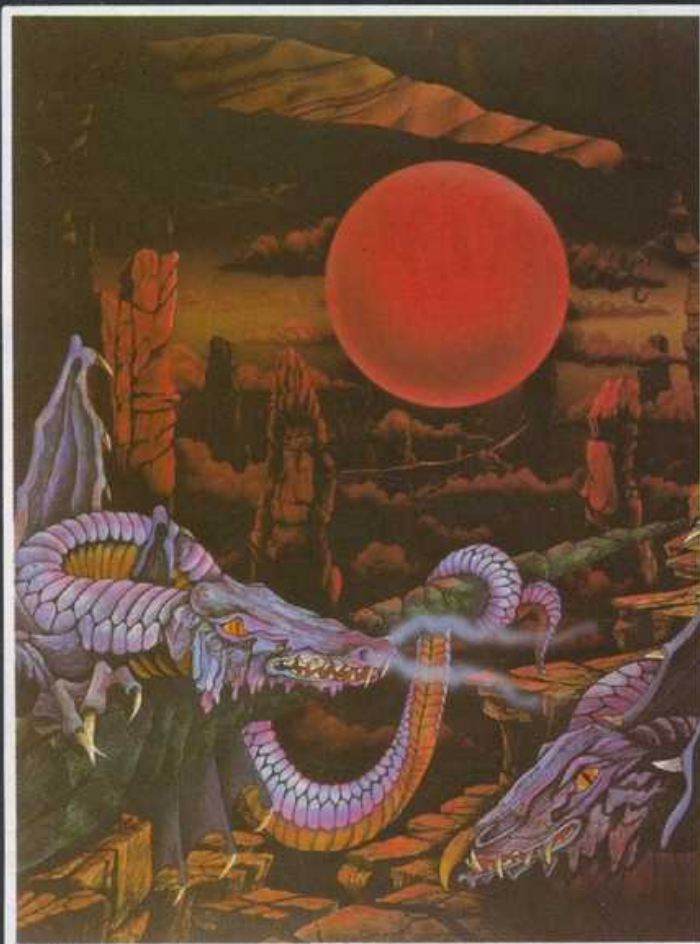
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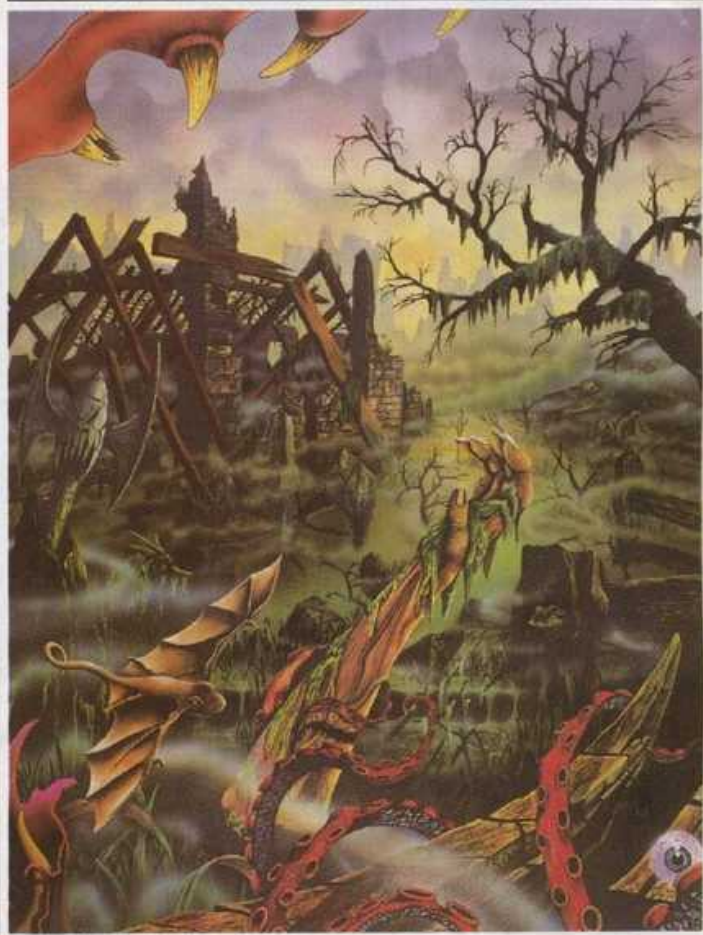
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◀ HARDWARE

11 Psion Organiser II

It's hardly likely to give Amstrad any sleepless nights, but this latest pocket computer could be just the job for specialised applications and computing on the move. John Cook reports.

SOFTWARE ▶

12 QL utilities

Two widely different but useful packages – speed up your applications with a Ram disc, and touch up your graphics with Sign Designer.

12 Easier Amstrad

Owners of 8256s, 6128s and other disc systems should check out this collection of disc utilities.

GAMES ▶

16 Ramjam's twin terror

Special colour preview of the latest (via Ariolasoft) from the people who brought you Valkyrie 17. A text and graphics adventure called Terrors of Trantoss

puts the player in a schizophrenic position.

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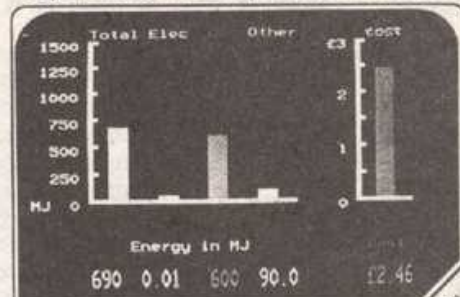
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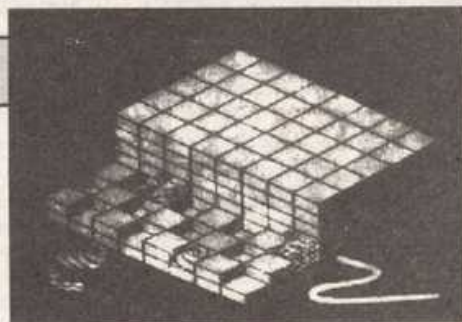
Special Supplement Education

In this week's pull-out supplement:

- A survey of foreign language tutorials
- A profile on Mirrorsoft, one of the leaders in the field and the people responsible for computerised Mr Men.



- Science and the schoolroom micro. A look at very high tech software
- A comprehensive, nationwide list of specialist dealers in the education field.



◀ PROGRAMMING

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Yet another instalment in our machine-code utilities series. This week add Search and Replace to your collection.

23 QL

Make more of the QL character set

with Mike Lloyd's routine for variations on a theme.

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You'll be seeing stars with this first-rate program from David Webber. It calculates the position of the sun, moon and

planets, and displays them graphically against the major constellations.

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Part 2 of the disc monitor program

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Commodore gears up for UK Amiga launch

THE official launch of the much heralded, much publicised Commodore Amiga will undoubtedly be the star attraction of this week's Commodore Computer show.

Apart from the machine itself, part of the floor space will be devoted to the 'Amiga vil-

lage', an area where third party companies will demonstrate products and software for the Amiga. Ariolasoft's *Deluxe* range will be launched (see *Popular Computing Weekly*, March 27). Business applications will be displayed by Taurus, Sophus Software and

Eidersoft.

Other show attractions will take place in the Commodore Theatre. Ex-Yes keyboard player Rick Wakeman will be making a special appearance, performing on Commodore's latest range of music add-ons and software for the 64/128.

Atari confirms 520STFM held back until September

FOLLOWING the launch of two new machines, the 520STM and 1040 STF, at the Atari Computer show in April, Atari has now announced that the third, the 520STFM, is now being held back until later this year.

Originally, Atari had indicated that the 520STFM, which includes a built-in 3½ inch floppy disc drive and TV modulator, would be launched about six weeks after the Atari show. "We have now decided to hold it back until September," said Rob Harding, Atari UK's mar-

keting manager.

The 520STFM will be one of Atari's new products on display at the September *Personal Computer World* show.

Other products announced in April that are still to appear are the IBM emulator for the 1040STF, the blitter chip for the same machine and the direct competitor to Amstrad's PCW 8256. All are scheduled for "later in the year", though Harding added that the emulator would be one of the September launches.

Psion announces new hand-held computers

PSION has launched the follow-up to its organiser pocket computer.

Imaginatively titled Organiser II, two versions of the new model will initially be available, the CM and XP.



Organiser II uses a new language, OPL (organiser programming language), which contains 112 commands and full database handling functions, written by Psion itself.

The CM has an on-board 8K Ram, 24K Rom, and a slot at the top, which can take an RS232 connection or a mains adaptor.

The XP has 16K Ram, 32K Rom, and in addition to the RS232 link and mains adaptor, will also take a bar code reader and magnetic card reader.

Psion is aiming the computer at both consumer and business users. For the consumer, it can be used as a database, full function calculator, or with the software datapaks available from Psion. Three are available immediately: a *Finance Pack* (for banking records), a *Maths Pack*, and a *Concise Oxford Dictionary* spelling checker.

Psion hopes the XP model will appeal to corporate users as did the original Organiser.

The Organiser II CM costs £99.50, the XP £139.50. For full details, see this week's review on page 11.



Amiga - the star attraction

The Commodore Computer show takes place from May 9-11, at Novotel, Hammersmith, London W6. Details from the organiser, Database Exhibitions, on 061-456 8835.

A full report on the show will appear in next week's *Popular Computing Weekly*.

Commodore looks for Corby plant buyers

COMMODORE has confirmed that its Corby plant is up for sale (see *Popular Computing Weekly*, March 27).

Commodore plans to sell the site, and then lease back part of it to house the 160 staff.

"It's a very large facility, about 210,000 square feet," said Commodore UK's acting general manager Chris Kaday. "There are only so many such sites in the UK, and only so many looking for this sort of place. We have not got very far yet."

ZX microfair

THE 19th ZX Microfair takes place this Saturday (May 10), at the Royal Horticultural Hall, near Victoria Station in London. Opening time is 10.00 am, closing time 6.00pm.

MSX 2 ready for this autumn

continued from page 1

ables 256 colours to be used on screen simultaneously, 80 column display with keyboard detachable from the main processor unit - at its trade show later this month. "This is a top-range model, which has only just been introduced in Japan," said Pieter Glas of JVC. "We want to re-instill excitement and enthusiasm about MSX, and we hope to sell it in the UK before the end of 1986."

Glas did not want to put a definite price on the machine, but he did say, "I suspect it will not be seen at all as a low-cost computer."

JVC is particularly keen to pursue the video-applications route with its MSX 2; Sony, however, one of the leading researchers in CD-Rom technology, plans to integrate a read-write CD-Rom with its future MSXs.

Sony's product manager, Joe Yakota, said, "We have nothing planned for 1986, but



JVC's MSX - to be superseded

our 1987 plans are more positive. Next year, we can initiate our CD-Rom with MSX for business applications - though that will be MSX at a very advanced level. It is an area of huge potential, and we're looking at around Christmas 1987 to introduce that."

Other MSX companies are more wary. For Toshiba, which was the first company to release a MSX machine in the UK, Chris Greet said, "At the moment we're concentrating on getting software together - so we don't look like being the first with MSX 2."

Steve Wankling at Mitsubishi had a similar tale. "We're keeping a close watch on the market - Mitsubishi had always joined in established markets rather than innovating. But since we're producing MSX 2 in Japan, we could launch here at short notice - or we could leave out MSX 2 in the UK and release more advanced versions instead."

Spellchecker for Locoscript to be released by Arnor

LOCOSCRIPT, the word processing package bundled with the PCW machines, is to get a spelling checker.

Arnor, publisher of the *Protext* word processor series for the CPC series, is to convert the spelling checker *Prospell* for the PCW 8256 and 8512.

The PCW version of *Prospell* will run with *Locoscript*, *New Word* and *Wordstar* files. Its dictionary, using English rather than American spellings, contains just over 31,000 words, with the facility to add

about 20,000 more. It also has search - using wild card - options, and an anagram facility. Checking speed is about 1500-2000 words per minute.

Later this year, Arnor will release *Protext* for the PCW machines as well. *Prospell* is scheduled for a mid-June release at £39.95; the *Protext* package will contain the word processor, *Promerge* and *Prospell* on one disc for £79.95. Details from Arnor at The Studio, Ledbury Place, Croydon, Surrey.

Spectrum looks at PC compatibles

FIREBIRD has set up new distribution avenues following the liquidation of Hi-tech, its previous agent, and has accordingly rearranged its release schedules.

It now hopes to clear its backlog of delayed launches by the end of the month, which means that the fully debugged Amstrad version of *Elite*, and *Rasputin* on the Amstrad

should be available soon.

Other products affected by Hi-tech's collapse include Spectrum 128 versions of the two above games, Amstrad versions of *Shadowfire*, and Odin's *Robin of the Wood* and *Nodes of Yesod*, plus *Comet Game* and *Bounces* on the C64. These should all now be released within the next week or so.

Rainbird and Level 9 in adventure link

ADVENTURE specialist Level 9 has finalised a publishing agreement with British Telecom division Rainbird, to write three new products for Rainbird in the next year, to be implemented over ten different machines.

The deal does not affect Lev-

el 9's autonomy, and the company will continue to publish titles under its own label.

The first package to be released from Level 9 by Rainbird will be *The Colossal Trilogy* on the Atari ST, although it will probably now be retitled.

In its own right, Level 9 is developing two titles for Mosaic, *The Growing Pains of Adrian Mole* and *The Archers*, and putting the finishing touches to *The Price of Magic*.

Firebird sorts out release dates

THE Spectrum franchise group is considering the introduction off a cheap IBM PC compatible in the UK, after displaying one at the recent UK CES to gauge customer reaction. The machine specifically being looked at apparently comes from Korean company Goldstar, whose MSX machine Spectrum distributed last year.

Spectrum chairman Mike Stern said, "We are looking into the possibility but nothing is certain yet." He declined to give any indication as to possible pricing.

Stern also countered the



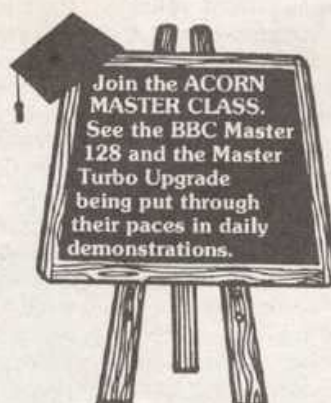
Mike Stern

possibility of beating Amstrad to the launch of its PC: "I can see the need for hurry in that area - but perhaps we're not trying to beat Amstrad," he said.

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Basic quirks

I've just read the two letters concerning the ST's Basic in *Popular Computing Weekly*, April 24. The quirks in the Basic are undoubtedly there, but there is something fundamentally wrong with the views in the letters.

When I sold my Amstrad and bought an ST, I was moving away from something - Basic. While Basic may be perfectly adequate on an 8-bit, 64K micro, programming Basic on a 16-bit "megacomputer" is like buying an IBM PC to play *Space Invaders*.

The ST is not primarily meant for running Basic; it's there for running for fast, much better languages like C, Pascal, Fort, etc. In my opinion, the Basic provided with the Atari ST is something included to attract the upgraders from further downmarket.

As an example of how Basic encourages bad programming practice, take Mr Hewson's program (Letters, *Popular*, April 24), which purports to show a bug in ST Basic.

Storing numbers in string variables has never been a very good idea. It's slower, more memory consuming and makes the program confusing. I am also having difficulty on my machine spotting his bug - I have one of the earliest releases of TOS, which means I should have the bug if it exists. Three of my friends with newer TOS, releases also tried Mr Hewson's program, and found that it always produced 36.

Kristian Rosenfold
Norway

Star Letters

Every week, starting with this issue, *Popular Computing Weekly* will be offering prizes for Star Letters. The most intelligent, pertinent, helpful, or simply interesting, item in our postbag each week will win the writer a free year's supply of exclusive *Popular Computing Weekly* binders.

The chance to clear up that pile of old *Populars* under the bed, and keep them neatly and tidily is yours, so get writing today. Send your thoughts to Letters, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 7PP.



"If my memory serves me right, he'll need plenty of space and lots of dry ice."

Happy owner

May I add my fourpenn'orth to your Amstrad/Sinclair correspondence.

I am the satisfied owner of Amstrad's humblest offering - the Arnold or CPC464. After a ZX 81, an Oric, and a rubber Spectrum, it was a revelation.

A couple of years ago, I ordered a QL from Sinclair, and was told delivery would be in 28 days. After the 28 days expired, I phoned several times receiving different reasons for the non-appearance of the machine, so I decided to cancel and wait for an Amstrad.

My Arnold was one of the first, and has been used constantly. It has never missed a beat, has been 100% reliable and when I added one of the first disc drives even better.

A significant point is that when I ordered the disc drive from Amsoft, I was quoted 28 days like Sinclair but I received my order within a week.

The quality of the machine and the fact that Amstrad seemed invariably to keep its promises made them an unusual company in the computer world, - so I bought some shares. Since then the shares have rocketed and I have made enough paper profit to pay for all the Amstrad hardware I have bought several times over.

Uncle Clive may be a brilliant brain, but I say, "thank God for Alan Sugar". He's got his feet firmly on the ground.

D Gibson
Llandudno Junction
Gwynedd

Star Letter

Create workspace

Have you ever worked away on a Basic program for the Spectrum, only to find when you are well into it, that you need to test a subroutine before incorporating into your program?

Ordinarily, to create workspace to try out your ideas, you would probably Save the program written so far, clear the Spectrum memory, enter the subroutine you want to test, and then reLoad the program to continue composing.

Not any more! Try this: Enter as line 1 at the head of your program,

```
1. LET x=23637: LET z=PEEK
x+256*PEEK (x+1): Print z: Print (z+1)
: STOP
```

Enter *Run 1*, and note down the two numbers given. Now change statements 3 and 4 to make line 1 read:

```
1. LET x=23637: LET z=PEEK
x+256*PEEK (x+1): POKE z,64: POKE
(z+1),0: STOP
```

Enter *Run 1* and all the program lines after line 1 will have disappeared!

Now you can enter your subroutine or other lines you want to test after line 1, even using the same line numbers, and *Run* them to get them right.

To return to your original program, it is essential to delete your test lines individually in the usual way (enter the line number you wish to delete as a direct command, and press *Enter*), enter *Run 1* (to reset variable z), and then enter as a direct command:

Poke z, (the first number you noted) : Poke (z+1), (the second number)"

And lo and behold, your original program will re-appear!

If you want to keep some of your program lines on screen, then this routine can be entered anywhere. Then all lines following it will be temporarily deleted.

R G Luxton
Solihull
West Midlands

A year's supply of *Popular* binders is on its way to R G Luxton.

Puzzle No 207

Jamie emptied his piggy-bank onto the floor. "A tidy sum," remarked his father.

"Actually, there are three of each value of coin which is currently legal tender," replied Jamie, "Just enough to buy that book that you were telling me about, Dad!"

"And with some money to spare," said his father. "Did you know that you can pay for the book in 186 different ways."

"I don't understand", replied Jamie.

"Look", said his father by way of explanation, "Suppose the price was eight pence, you could pay in three different ways - a fivepenny piece, a twopenny piece and a penny; or you might pay with a five pence and three pennies; or a third way would be to pay three twopenny pieces and two pennies. In no case are more than three of any coin used in the transaction."

Now Jamie's father had remembered to include the crown (25p) in his calculation. Can you find the cost of the book?

Solution to Puzzle No 202

The three distances which separate the villages are 7, 11, and 13 miles.

The *Data* lines in the program store all primes (except for the number two) up to 97. Clearly two can be discounted as this, if included, would make the total of all three even and therefore not prime. The three *For Next* loops call up all combinations of primes which have been Read into the array.

```
10 DIM P(25)
20 FOR N=1 TO 25:READ P(N):NEXT N
30 FOR S=1 TO 25
40 FOR S2=1 TO 24
50 FOR S3=1 TO 23
60 IF P(S)+P(S2)+P(S3)=100 THEN
70 IF P(S)+P(S2)=100 THEN GOTO 140
80 IF P(S)+P(S3)=100 THEN GOTO 140
90 IF P(S2)+P(S3)=100 THEN GOTO 140
100 IF P(S)+P(S2)+P(S3)=100 THEN GOTO 140
110 IF P(S)+P(S2)=100 THEN GOTO 140
120 IF P(S)+P(S3)=100 THEN GOTO 140
130 IF P(S2)+P(S3)=100 THEN GOTO 140
140 PRINT P(S),P(S2),P(S3)
150 NEXT S3
160 NEXT S2
170 NEXT S
180 END
190 THE
210 FOR P=2 TO 97:IF P=2 THEN GOTO 2
220 IF P=3 THEN GOTO 2
230 NEXT P
240 RETURN
1000 DATA 3,5,7,11,13,17,19,23,29
1010 DATA 31,37,41,43,47,53,59,61,67
1020 DATA 71,73,79,83,89,97
```

However, the question stated that the villages were connected by straight roads, and must therefore form a triangle. This means that the sum of the two shorter roads must be greater than the length of the longest road. Line 140 in the program tests for this.

Winner of Puzzle No 202

The winner is P Robinson of Carrbrook, Cheshire, who will be receiving £10.

Heavy on the Magick



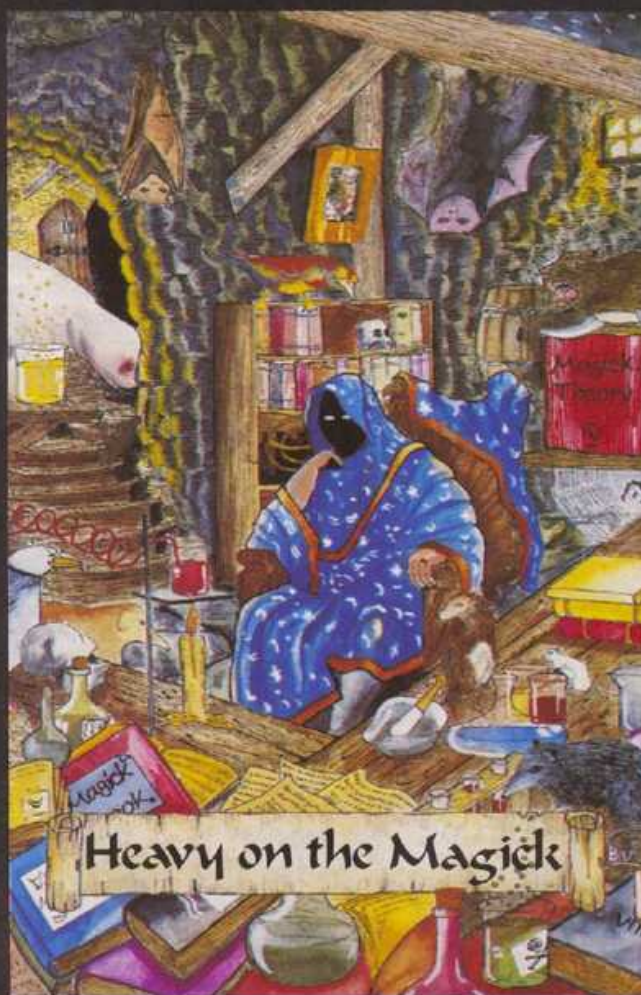
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Letters

Biased attitude

I have been a reader of *Popular Computing Weekly* for quite a long time now, and I was amazed when in the April 10 Issue, I read that you are *not* commercially biased. I think you are very biased especially where makes of computers are concerned. I own an Einstein machine which I find is as good if not better than most home computers, but do you ever mention it in your magazine?

Perhaps we should all buy BBC/Electron, Spectrum, Amstrad or Commodore as these seem to be the only computers worth writing about.

Surely, as an unbiased magazine, you could at least give some mention to the Einstein.

A D Panting
Witney
Oxon

The hard fact is, that we get more contributions, either in the way of software for reviews, articles, or listings for the other machines you mention. We cannot print articles for which we have no copy!

That does not mean, however, that we do not welcome or

publish information on micros such as the Einstein. If you look through your back issues, you will find news items, and New Releases, etc, when we have had the information to do so.

Sales service

I am writing about the effect on repairs of the sale of Sinclair computers to Amstrad.

I sent my computer to Sinclair for repair under its after-sale service on March 17, 1986. I duly received a card from them saying that my repair was being carried out on March 27. I had not received the computer back by April 17, so I tried ringing Sinclair at Camberley, but with no luck.

When the sale to Amstrad was made public, I rang Amstrad to see if anyone knew anything about my problem, but I was told that as my Spectrum was not new, nothing could be done. Is this how Mr Sugar is going to treat old Spectrum owners?

K W Sanders
Malvern
Worcs

Readers' Chart No 71

1	(1)	Elite (Spectrum/C64/Amstrad/BBC)	Acornsoft/Firebird
2	(2)	Uridium (C64)	Hewson
3	(4)	Commando (Spectrum/C64/C16)	Elite
4	(3)	Lord of the Rings (Spectrum/C64/Amstrad)	Melbourne House
5	(7)	Movie (Spectrum)	Imagine
6	(10)	Way of the Tiger (Spectrum/Amstrad)	Gremlin
7	(-)	Green Beret (Spectrum)	Imagine
8	(-)	Superbow! (C64/Spectrum)	US Gold
9	(-)	Yie Ar Kung Fu (Various)	PSS
10	(-)	V (Spectrum/C64/Amstrad)	Ocean

Winning Phrase No 72: "Dum Dum Ron", from Murat Aydin of London E5, who wins £25.

Second Class

A month ago, my Spectrum Plus stopped displaying colours, so I sent it off to Sinclair Research. The very next week your magazine announced the Amstrad takeover.

Speaking to Amstrad on the telephone today, I learnt that my Spectrum would be returned to me unrepaid. Then I will have to take it to Menzies, which will return it to Amstrad,

"after a short delay", of some weeks.

Until now, I thought Amstrad's marketing and after-sales service was one of the best available. When it bought Sinclair rights, I expected Sinclair users to be treated in the same way as its other customers. Wrong! It seems that the Spectrum is a second class product in Amstrad's view.

D Scott
Hawick

C FOR YOURSELF

● This book is an ideal companion either as a practical introduction to the C language or as an aid to the quick development of a wide range of applications.

● The theme of the book is data-handling, and methods of programming data-handling routines in C. Topics covered include control routines and menus, interactive data entry and text editing, screen format and form generation, error handling, useful data structures, sorting (both in memory and on disk), indexing and retrieval. Full testing routines are included for all the programs in the book.



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Spectrum/Amstrad \$7.95

The Beer Hunter or Aleus Yarus. After suffering many trials (with the Old Billus) and tribulations, (Bacillus Sandwichus) help this creature reach his one great goal in life - a drink in the safety of a lager free zone.

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Old Scores or Programma Prologus. This species has been so rarely sighted that leading experts have doubted its very existence. Research deep in the annals of software catalogues to find this rare gem, its mythic beauty is held to be legendary by those privileged to have seen it.

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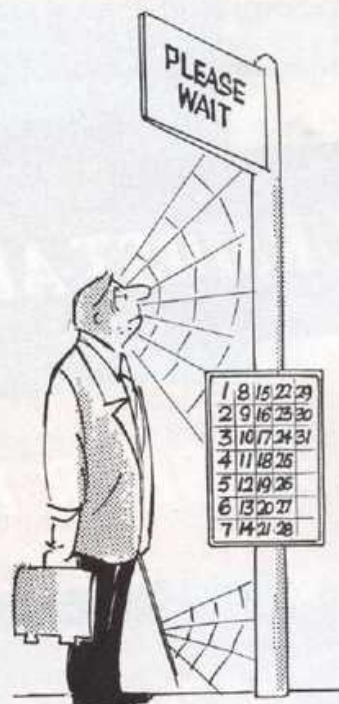
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An everyday utility?

John Cook takes a look at the up-graded *Organiser* – Psion's *Organiser II*

Hands up all those still using their Psion *Organiser* then? Mmmmm – not that many then, but it only takes a close look around a Marks and Spencer checkout to realise that the strange little handheld machine cannot simply be slotted into the technological weirdism category.

The original *Organiser* was a limited success in some corporate circles, but certainly didn't make any impression on the consumer market. Psion are hoping to kill both birds with this particular upgraded stone, the *Psion Organiser II*.

The *Organiser II* is available in two versions; the CM (with 24K Rom containing operating system, programming language plus other inbuilt functions and 8K of Ram) or the XP (32K Rom – the extra code mostly consisting of drivers for a Bar Code and Magnetic Card reader and 16K of Ram). The XL also has the ability to additionally use 128K Datapaks, the solid state storage media used by the system, while the CM may only use up to 64K units.

As before, these Datapaks, which slide neatly into the right hand side of the main unit, are Eeproms, write once/read chips. Secure and fast, their only disadvantage is that deleted files are not removed from the chip, only hidden.

Datapaks can only be truly erased by exposure to UV light in a formatter (but this'll cost £45 if you want to buy one), or Psion, or the ubiquitous dealer, will do it for for £3.50. With room for two onboard, this gives the XP a maximum storage capacity of $\frac{1}{2}$ Megabyte.

On powering up – power being provided

tronic diary up to the year 1999, which will not only allow a short entry for every half hour, but will even link an alarm to any particular one. There is a permanent real time clock, with a linked alarm which can be read and used by the language functions and a 10 memory calculator.

There is also a simple *Save* function, which will allow you to store any information in the form of a record up to 16 lines long, and up to a total of 254 characters.

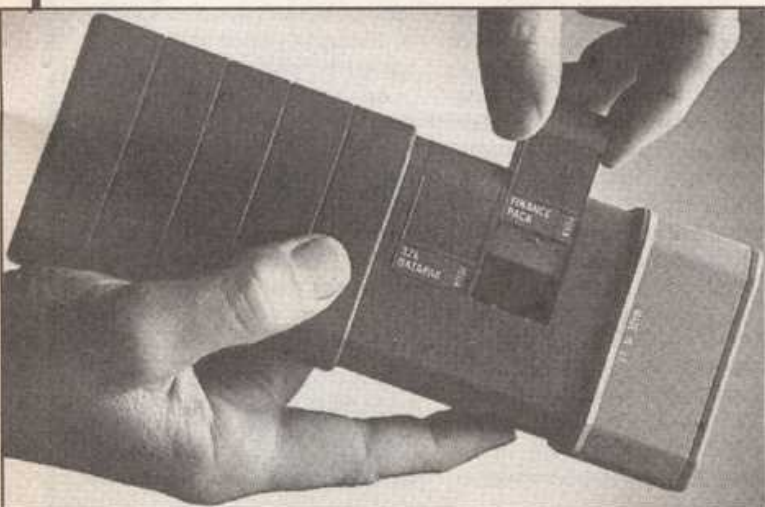
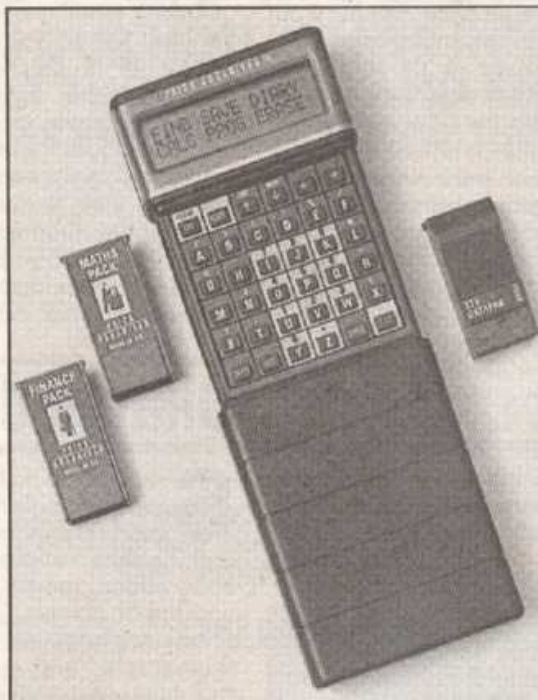
Info function, which will show the state of the various memories.

So far so good – but this far, what you have adds up to something that can be achieved with more ease and less fuss with pen and paper – and cheaper too. What makes the *Organiser II* interesting, is its sophisticated *Organiser Programming Language* (OPL for short), its ability to communicate with other devices via RS232 and the text it can gather data via Bar Code/Magnetic strip reader.

OPL deserves a full review of its own – the spec sheet alone would make the average hacker's mouth water. OPL is a procedure-based language, with constructs such as *If . . . Else If . . . Else, Do . . . Until* and *While*, some familiar Basic type commands, good error trapping, great file handling, full scientific functions (accessible by the calculator function) . . . and a lot more.

Two software packages *Finance* and *Maths* (on Datapack) are already available – more are planned – and the *Concise Oxford Spelling Checker* is being billed as 'the first of a series of electronic reference books' (all £29.95).

Who is going to buy the *Organiser II*? As a remote data entry and retrieval device, it's certainly going to do well in the business market. But as a mass market everyday utility, the humble jotter still has it beaten hands



Above: The finance pack; **Right:** The development team; (left to right) Andy Clegg, David Potter and Colly Myers.



by a 9V battery (lasting two to six months) or mains adaptor – your 2x16 character liquid crystal display bursts into life, presenting you with menu offering all sorts of goodies.

First, the 'executive' functions. Your *Organiser* will provide you with an elec-

This may be saved to battery maintained Ram (ie, you won't automatically lose it when you switch off), or to Datapack.

The versatile *Find* command lets you search for a particular keyword or part of word – then comes up with the required record. The main menu also contains an

down and it'll take nothing less than a £50 stripped down, tarted up '*Organiser III*' to change that.

Hardware: Psion *Organiser II*. **Price:** £99.95 (CM) £139.95 (XP). **Supplier:** Psion Ltd, Psion House, Harcourt Street, London W1H 1DT. Tel. 01-723 9408.

Software – the statistics

A *mstat2* is, no surprises here, the second in a series of low price statistical programs for Amstrad computers. It is aimed at an untapped market of those people, presumably mostly college students, who need to use statistical techniques for their work, but who can't afford the hundreds of pounds asked for most stats software.

To recap for those who missed the first review, *Amstat1* is designed to perform many simple tests such as simple ANOVA, simple regression and summary stats (mean, variance, etc) and is an excellent buy for school level.

Later *Amstat* programs will deal with advanced but specific applications – multiple regression, etc.

Amstat2 is a collection of what are known as 'non-parametric tests'. The technical categories of these tests are one sample, related two-sample tests, independent two sample tests, and k-sample tests with measures of correlation and they include such old hits as Binomial, Chisquare, Wilcoxon matched pairs, Contingency, Spearman and Kendall ranked correlations, etc.

Partly because each *Amstat* release fits into a defined theme and also partly, I suspect, to counter 'criticism' of *Amstat1*, that there was no

educational aspects – a level of knowledge was already assumed – *Amstat2* is very large and has been written to parallel a standard text on Nonparametrics to which you are often referred. There is a small drawback in that the program now costs some £40 even without the text. With four programs supplied and twenty seven tests the value of the package is still tremendous, something like £1.50 a test but the overall price may put it out of reach of some people.

However, a CP/M conversion of the programs is promised (for the PCW mainly) and the company will be entering a world of more serious users and more hefty pricing so *Amstat2* may do well.

There are no great differences in presentation to *Amstat1* beyond the provision of a patch for screen dumps and the ability to save the results to a word processor file.

As a fan of cheap but useful software for the masses to match the cheap and useful hardware, I highly recommend *Amstat*.

Tony Kendle

Program Amstat2 Micro Any
Amstrad CPC Price £39.95
Supplier S C Coleman, 33
Leicester Road, Ashby-de-la-Zouch, Leics LE6 5DA

Sign design's fine

Every time I begin to get the feeling that we've seen the full graphics potential of the QL, and have exhausted all of its possible specialisations, someone comes along with another program and proves me wrong. *Sign Designer* is just such a package.

Aimed at the user working primarily with text, numbers and other more specialised symbols, *Sign Designer* is a complete dedicated program system which can be used for producing any style of text and other visual presentation (including graphic illustrations) from simple letterheads to yards-long banners. The possible variations are endless and sometimes surprising.

Supplied on two microdrive cartridges, the first cartridge contains five complete letter fonts for use with the program cartridge; other typefaces can be compiled and saved to either microdrive or disc.

The second cartridge provides two facilities: one for designing and producing custom font or symbol sets and the other for utilising the fonts. The latter facility can produce graphic-generated text in any of four directions, separated by 90°, and continuously variable size in terms of either height or width or both.

A full range of colours and stipples are available in either mode 4 or mode 8; precise positioning and sizing of letter or blocks to text is aided by x-y

Disc support not slipping

Masterdisc is one of a series of disc utility programs that have been released for the CPC range. Because it is only the latest it is not exactly original and many people will probably find that they have amassed similar routines from elsewhere.

Conversely, *Masterdisc* has the advantage of being able to improve on what has gone before and some of the utilities are excellently done.

Among familiar options are very fast formatting (very useful for large batches), disc mapping, sector and directory editing (essential for recovering deleted files – a facility that has saved my life before now). You can also format in IBM data format (normally CPCs can only read/write these discs) and *Masterdisc* supports five and a quarter inch second

drives.

Masterdisc also offers an intelligent disc copy option that will handle discs with damaged sectors or unusual formats. One of its principal claims to usefulness must be the fact that it will allow you to backup PCW 8256 discs on a CPC, and also Tatung Einstein discs for that matter.

Until someone comes up with a software package that will allow you to format, read, write and copy PCW discs on a CPC this is a useful stopgap and with many other powerful features as well.

Tony Kendle

Program Masterdisc Micro
Amstrad CPC range Price
£12.95 Supplier Siren Soft-
ware, 76 Bridge St, Man-
chester, M3 2RT.

Changed medium not bad

Supplied as a multi-purpose utility, *Ram Disc* incorporates a number of really useful facilities which, once loaded, remain as a job until the QL is reset.

Provided sufficient memory is available, any number of Ram files may be set up simply by typing *format RAMn*, and the number of sectors required. The relevant drive (microdrive or disc) file is then copied into the Ram file from which it is loaded into the operating system using normal commands, with Ram for the usual drive identification.

Ram files may be configured to convert subsequent calls to microdrive or floppy from within a program to the relevant Ram files instead. In use, a Ram file is as simple as a drive access but substantially faster.

Of course, if a permanent copy of the Ram file is required, this must be copied on

to cartridge or disc prior to resetting the QL.

Other utilities included in the program is a slick cartridge or floppy *Copy* routine where files may be copied or deleted either individually or as a group; a printer spooler which will dump up to ten Ascii files to a printer – with an optional form feed between each file; a verifier Status keyword utility; and a superb screen dump.

An outstanding buy; I liked both the presentation and organisation of *Ram Disc*. A genuinely useful program, it is both user-friendly and 'idiot-proof'. Documentation regarding the various utilities is available as screen text.

Ron Massey

Program Ram Disc Price
£14.95 Micro QL Supplier D.
S. Enterprises, 25 Trinity
Rise, London SW2 2QP

co-ordinate indicators.

In spite of being somewhat specialised, this package is fun to use and represents good value for money.

Justifiably described as user friendly, first time users are nevertheless warned that they should practise with the system

in order to obtain the results it is capable of producing.

Ron Massey

Program Sign Designer
Price £18.95 Micro QL Sup-
plier D. S. Enterprises, 25
Trinity Rise, London SW2
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AMSTRAD, COMMODORE, BBC

BIOLOGY 2 (age 13-17)

This is a wide-ranging biology course which advances on Biology 1 program. It depends for its excellence on the quality of its editorial content which will engage the interest of the user.

BBC B, Commodore 64

BETTER MATHS 1 (age 12-16)

Covers a very wide range of popular sections of maths at this level. Contents: Approximation measurement, simple interest, factors, percentages, simple calculations, algebraic factors, sequences and series, tests. The program includes essential formulae.

Commodore 64, Amstrad

MAGIC MATHS (age 4-8)

"Here at last is a program that really does merit the term educational game... I suspect that the targeted age group would enjoy as well as learn from Magic Maths" Amstrad Action, April 1986.

Amstrad

MATHS MANIA (age 8-12)

An exciting arcade style educational game, deals with multiplication and division. "Superb graphics in this addictive learning game".

Amstrad

BETTER SPELLING (age 9-14)

An exciting new way to improve your spelling, this courseware package concentrates on all the key areas of English spelling. Real value for money with up to 16 menu options. Prepared by an English language author.

Commodore 64, BBC C, Amstrad

BIOLOGY 1 (age 12-16)

This program gives key definitions and promotes interactive learning through the question and answer session. Contents: 1. Life & Cells. 2. Mammals and Plants. 3. Photosynthesis and Enzymes. 4. Respiration/Excretion. 5. Transport. 6. Sensitivity. 7. Reproduction. 8. Cycles and Micro-organisms.

Amstrad, Commodore 64

PHYSICS 1 (age 12-16)

An outstanding program which makes excellent use of graphics. Contents: 1. Matter/Density. 2. Law of the Lever. 3. Pressure. 4. States of Matter A. 5. States of Matter B. 6. Heat/Temperature. 7. Current Electricity. 8. Magnetism - Electrostatics. 9. Light/Sound.

Commodore 64, Amstrad

ORDNANCE SURVEY/EARTH (age 12-17)

Excellent graphics in this program dealing with maps, grid references, altitude, latitude, seasons, etc.

Commodore 64, disk only

CHEMISTRY 1 (age 12-16)

A wide ranging basic course in chemistry. Ideal for first examinations. Contents: 1. Chemical Changes. 2. Oxygen/Hydrogen A. 3. Oxygen/Hydrogen B. 4. Atoms. 5. Carbon/Sulphur. 6. Oxidation/Reduction. 7. Acids/Bases. 8. Ion exchange/Water.

Amstrad, Commodore 64, BBC B

CHEMISTRY 2 (age 13-17)

An intensive program ensuring a good understanding of chemistry. Ideal for exam preparation.

Commodore 64, cass/disk

PHYSICAL GEOGRAPHY (age 12-17)

This course covers comprehensively the physical geography course. Topics: Rocks, Earth movements, agents of Denudation, Rivers, Glaciation, Erosion, Natural Regions.

Commodore 64, BBC B

MAPWORK: Britain & Ireland (all ages)

This is the best program of its kind, utilising hi-res screens to give excellent maps of Britain and Ireland. The program involves identification of locations and physical features.

BBC, Commodore

SOCIAL & ECONOMIC GEOGRAPHY

This program introduces a wide range of topics relevant to this section of geography.

Commodore 64, disk only

WEATHER/CLIMATE (age 12-17)

This program uses the multiple choice format for an in depth analysis of this topic. Topics: Weather observation, instruments, pressure, wind, temperatures, climates.

Commodore 64, Amstrad

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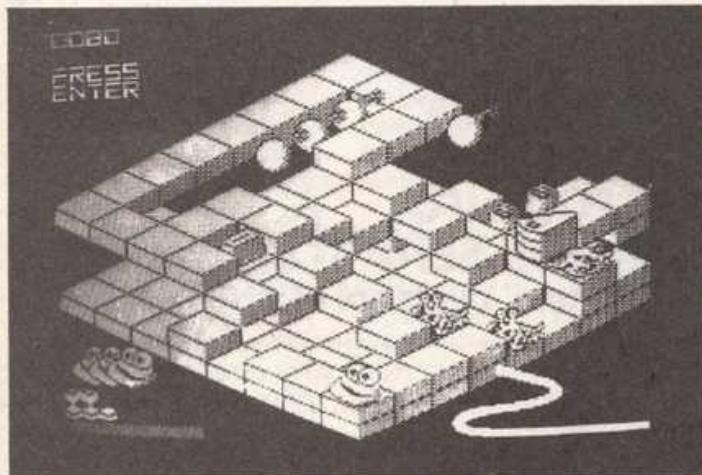
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Tackling the blocks

The common opinion of Addictive's product (*Football Manager* being the bulk of it) is probably 'technically dodgy but, yes, addictive'. *Kirel* may change all that. It is not only addictive, but

well... blam is one word that springs to mind.

That isn't all - lurking all over the place are nasty squished-jelly like monsters which drain your energy and get in the way. You also need to



damn clever as well, featuring 3D graphics like *Knight Lore* but with an eclectic range of plot ideas mixed in from other games, like *Q Bert*, to form an original end result.

The game is about manipulating blocks, piling them up, making bridges with them, removing them, sometimes blasting them away. All this is to enable your little animated jelly-like hero to reach and stomp on bombs strategically placed around the screen. Getting to the bombs involves reasoning which combinations of block manipulation are required to reach them - it requires thought (and quickly). Every screen is on a time limit indicated by a fuse burning away. Take too long, and

replenish bridge building block stores, energy and time, by collecting other objects. Finally there are various kinds of transporter system to get you from place to place.

Kirel is simply the most original game I've seen in ages, even though most of the individual ideas have been seen elsewhere. Visually excellent and highly inventive with dozens of different screens, I'd say *Kirel* is a must.

Graham Taylor

Program Kirel Type Arcade Machine Spectrum Price £8.95 Supplier Addictive Games, 10 Albert Road, Bournemouth, Dorset BH1 1BZ.

Football meets Hoover

Ballblazer is one of those Lucasfilm games originally created for the Atari and Commodore 64 - it has now been converted to the Spectrum.

What distinguishes *Ballblazer* from other programs is really the originality of its gameplay and the split/scrolling screens which show the action from simultaneously your own and your opponent's viewpoint.

The game is a kind of hi-tech

football, except that there are only two players and the goalposts move. You control a rotofoil, a hovercraft type device, and must first capture and score a goal by blasting the ball between the other side's goalposts. That's it, really - you can steal the ball by barging the opponent from one side or blast it away if you are afraid of losing it.

It's fast and furious, played out on a chequered grid which constantly scrolls to match

Knight of 1,000 guys

If you're into serious wargaming you're going to love *Knights of the Desert*. If you're a closet Rambo forget it - this is strictly for armchair generals.

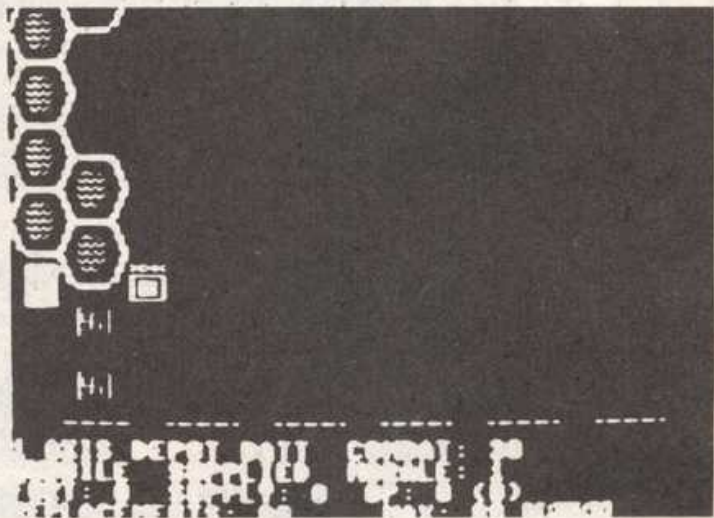
The scene is the North Africa campaign: Montgomery and Rommel, Panzers and Sherms ad the Desert Rats. You can take on a friend in two-player mode, or attempt to defeat the computer who takes the mantle of Rommel commanding the German and Italian armour.

The game is from Strategic

Brits back into the Med.

The screen displays, although not animated, are clear and colourful, with small graphics depicting the various types of unit (mobile infantry, tanks, etc). As you might expect, the fine points of the rules take some understanding and you should expect to play any games before you get to grips with things.

Knights of the Desert is certainly not a game for anyone looking for quick thrills and fast action. But for wargames enthusiasts who like a complex and detailed recreation of an



Simulations Inc, via US Gold, and as is usual with SSI games, strategy is all. There are no graphics to depict combat - simply a few sound effects.

The excitement comes from devising plans and executing them. Your main concern is supply, and establishing a working and defensible supply line will be your first priority. You can then look to push the

historic conflict, it fits the bill nicely.

Peter Warlock

Program Knights of the Desert Price £9.95 cassette £14.95 disc Micro Commodore Supplier US Gold/Transatlantic Simulations, Unit 10, Parkway Industrial Estate, Heneage Street, Birmingham

your movements. On the Commodore and Atari the game looked rather impressive as the enemy, animated to give the illusion of perspective, comes once again for the ball.

The problem is on the Spectrum: it just doesn't look as good. For one thing the grid playing area is created by using light green and white - there is very little contrast and that spoils many of the scrolling effects. The same is true of the actual rotofoils - they look rather indistinct and ordinary. The sound, impres-

sively metallic and hi-tech on the Commodore, merely sounds like a very bad radio.

Nevertheless, it is worth taking a look at, because the fundamental idea is strong and if you haven't seen the other versions, perhaps you won't find it so visually disappointing.

Graham Taylor

Program Ballblazer Price £7.99 Micro Spectrum Supplier Activision, Pond Street, Hampstead, London NW3

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Screen shots from Atari Version

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The pleasures of terror

Christina Erskine single-mindedly grapples with the twin personalities at the heart of Terrors of Trantoss

The RamJam Corporation first caught attention last year, with *Valkyrie 17*, an adventure rich in plot and atmosphere. Its latest offering is *Terrors of Trantoss*, to be published by Ariolasoft, and RamJam's ability to create a rattling good yarn has not diminished.

The yarn, it must be said, does not at first sight seem to contain much in the way of originality. All the traditional adventure ingredients are here: dark personifications of evil set on world domination, deserted villages, hidden keys and ogres in caves.

The plot

Briefly, it runs like this: Trantoss is an evil xytradd, embodiment of all things nasty, and banished long ago by Wizards of Vane, who shattered his golden mace, source of all his demonic power. Trantoss's deposed followers, undeterred, set about gathering together all the shards of the mace. As the mace was reassembled, so Trantoss's power was restored.

You play two brothers, Lobo and Scarn, who arrive home one day to find your family has vanished. This being the last straw, you set off to Trantoss's mountain hide-out to destroy the restored mace, and render Trantoss forever powerless.

Playability

You control Lobo and Scarn as though they were detachable Siamese twins. Lobo is heavy and chunky, Scarn thin and weedy, so you need to interchange between one or the other to do certain tasks. Not difficult - you can become either one of the pair by entering *Swap* as a move. Normally they/you both stick together like glue, but you can separate them and put them in different locations by typing *Part*.

An attractive aspect is that you are always given a choice between death and reincarnation, so you can work your way through the entire adventure however many fatal mistakes you make. Reincarnation loses you points, though, so if you really blunder your way through, crashing from one resurrection to the next, you may find you destroy Trantoss with a score of zero.

One of the enduring puzzles of the game, which you're likely to come up against early on is the clutches of runes, written on staffs and gates around the

all the translation work for you, but it is also possible to decipher them by simply regarding the runes as a symbol/letter substitution code.

Tips on playing

- If you're told you can't carry any more, remember you are actually two people and get your alter ego to carry the rest.
- The temple is one of the key locations. You need to catch the dog, which is where both your personae are needed. Get Lobo outside the temple with the sack. As Scarn, go back into the temple, and chase the



place. These runes need translating if you're going to get anywhere. This is best done by finding the location which will do

dog. The dog should run out, whereupon Lobo nets it in the sack.

- At this point you should have found a key, which will open a door at the back of the temple, to reveal . . . yet more runes. This is where you can get them translated.
- At the gates of Ganneth, a simple command contained within the rune on the gate will open them.
- Close the gates of Ganneth behind you, or the fang lizard will stand in your way.
- Another command found in a rune (on the staff) will make the staff glow. This has its use later in the game when you come across a box with a hole in it.
- You can go down the well in the deserted village, but it needs careful negotiation. Something needs to be thrown down the well - remember who's the stronger person. If both of you go down the well as one person, your weight will be too much.
- If you find a mace fairly early on, don't congratulate yourself. There are two maces, and one of them is an illusion.

Terrors of Trantoss is to be released at the beginning of June for the Spectrum, at £7.95. Further details from Ariolasoft, Long Acre, London WC2 (01-836 3411).



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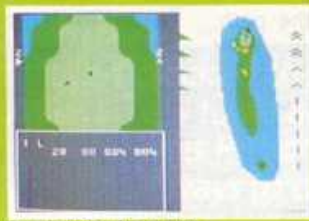
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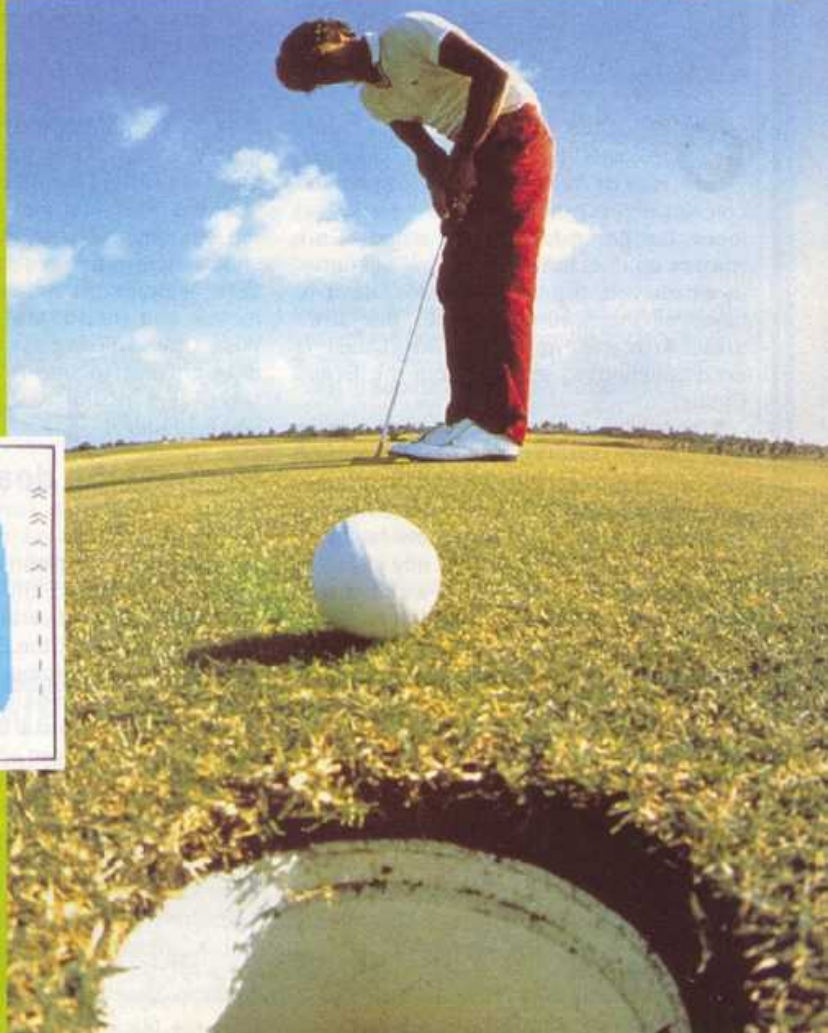
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Seeking help with Se-Kaa

This week Tony Bridge has some useful tips on Se-Kaa of Assiah from Mastertronic and the Hobbit appears once more . . .

One of the first budget adventures released by Mastertronic was *Se-Kaa of Assiah* by Clive Wilson and Les Hogarth: a graphic adventure with text input, the game follows the usual "Dark Hordes against the Wise Ones" scenario, in which you, the leading actor, have to discover the whereabouts of the three great Artefacts, and once this Quest is accomplished, to escape from the Dread Castle.

I thought that it was an enjoyable romp with some interesting problems and colourful action. However, the arcade action was a little basic for some reviewers and the game has unfortunately fallen by the wayside, which is a great pity.

But people still write to me with tips and problems on the game – like James Scott, who gave me several tips, while being stuck in a problem with The Guardian. He tells me (and many of his comments are backed up by the indefatigable adventurer, John Wilson of Rochdale) that: "to get out to the Island via the exits of the Castle, type Slide Door. To get the Rod from the block of ice, Open Red Valve – while wearing the cloak and carrying only the Torch – now light gas (I have to admit that I couldn't do this!), Open Green Valve and wait for the ice to melt. To get the hammer of Vib-Ra, cut the wire holding the Sack."

Cloak and staff

It's important, while you're mapping the adventure, to Search Room at every location, as things will be revealed that are otherwise not mentioned. To get past the Guardian, James, push the stud at the end of the Staff, then throw the staff at the Guardian. To unblock the obstruction near the gate requires a complicated sequence of filling

the sack (containing the Hammer) with sand from the floor, tying the sack to the lever, and then slitting the bottom of the sack.

At the start, just move east and west of the village and wait for the villagers to shower you with the gifts of the Cloak and Staff; wander around for a couple more moves and Beerd, the Messenger of the Wise Ones will appear to tell you of your mission and to inform you that he has taken care of the castle doors, allowing you free entry.

Souls of the dead

Despite the slowness of processing and the rather blocky graphics, I enjoy playing *Se-Kaa*: it's not too difficult, and I like the way that you're hurried on by the approaching steps of the Souls of the Dead. Although the problems are really not too hard, there are two parts to the adventure, and if you find it in a bargain bin somewhere, get to it before someone else does. Incidentally, if you find that you've made a silly mistake and wandered off the path, just press Break, and you'll find yourself resurrected – if you don't way out of this one! James' address, should you want to help him further, is: Trenchard House, Queen Victoria School, Dunblane, Perthshire FK15 0JY.

The Purple Paw wrote to me this week from his lair at 4, Orodruin Road, Barad-dur on the Plain of Gorgoroth, taking me to task. "I own an Amstrad CPC 464 and recently bought *The Hobbit* from The Home Computer Club for the wonderful price of about £3.00. I'm writing this letter for several reasons. The first, to thoroughly recommend the aforementioned club. And second – I feel that there may be many new players like myself who have never at-

tempted the game, and on this assumption I can't understand why you never mentioned *The Hobbit* or give any (much needed!) clues. For example, the Goblin's Dungeon problem is often mentioned in articles like yours in such terms as "You've never lived until you've solved it!" but the majority of players like myself would dearly love the odd hint. So try to write about it a bit, eh?

"The bugs in the program are even more worthy of mention. In the instructions it talks of a command Print which is meant to send all screen output to the printer, but this freezes the computer.

I haven't seen the Amstrad version of *The Hobbit*, Purple, so I don't know what special bugs are present, but Hobbitbug spotting has been a favourite pastime for Spectrum, Commodore and BBC owners for several years now. And this leads me onto your comments about mentions in the Corner about *The Hobbit*. As you say that I have never mentioned it, I assume that you have not been a devoted reader of the Corner for the past three years. It's a pity that you haven't noticed the 346 mentions of the game during that time, including the long-running Hobbit Hall of Fame and the half dozen detailed breakdowns of the Dungeon problem (and I don't know what others have said).

Thief with friends

If you ask for help at this location, you'll be told that a window should be no obstacle to a thief with friends: Bilbo is sometimes called (unjustly) a thief by other characters, so wait around for someone to turn up, then ask them to open the window. Then, ask them to carry you, then Go Window, or simply West. Don't forget to get the Key from beneath the sand (always Dig when you see sand mentioned in an adventure).

There, you've made me do it, haven't you? Many months ago, I promised that I would never mention this problem again as it had already been thoroughly covered in most publications. *The Hobbit* is undoubtedly a classic in the adventure field, but new programs come along all the time, all of which demand their own exposure: while I will continue to mention it from time to time, I believe that The Corner has done its best for *The Hobbit*. But enjoy the game, Purple, it is certainly worth attention.

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Quest for the Holy Grail on the C64. I can get past the Knight who says Nik in one direction but when I come back he says Nik and I turn into a pile of bathsalts. What do I do? Anthony Garrett, 91 The Woodlands, Melbourne, Derbyshire.

The Fourth Protocol on C64. How do I get out of the Barbican centre with the flowers for Blodwyn? Miss J Pickard, 6 Snowdon Avenue, Connahs Quay, Deeside, Clwyd CH5 4TX, N Wales.

Infidel on C64. How do you find Pyramid? D Green, 3 Nightingale Place, Bilston, West Midlands.

Warlord on Amstrad. How can I obtain the druids amulet, what can I do in Eomorian's Cavern, how to get rid of whispering Demons? Rik Demeyer, Wolfstraat 12, 9000 Gent, Belgium.

Snowball on BBC. Lamp Working but how do I survive outside, how do I repair droig? Pete Lord, 6 Wellswood Gardens, Exeter, Devon.

Forest at Worlds End on Spectrum. How do I Kill the Elves at the beginning (I have bow and arrows.) Vincent Lansdowne, 78 Hadrian

Road, Fenham, Newcastle upon Tyne NE4 9OL.

Denis through the Drinking Glass on Spectrum. How do I find first drink? David Charter, 4 West Rocke Avenue, W O T Bristol BS9 2AW.

Mordons Quest on Spectrum. What's the answer to Tarzans riddle, where is frong, how do you south from landing? Paul Thompson, 23A Rowan Drive, Newbury, Berks RG13 1LY.

Heroes of Karn on C64. How do I kill pirate, cross chasm, pass serpent, get wand, find mirror, open clam? T P Hayes, Airwork Ltd, PO Box 1223, Seeb Airport, Sultanate of Oman.

Bored of the Rings on Spectrum. Cannot get map from pixie or use vendingma machine. Eric Quiney, 67 Llwynon Road, Llandudno, Gwynedd, N Wales LL30 RQE.

Hobbit on Spectrum. Got Ring, cannot get out of caverns, keep getting caught by goblins. Martin Loker, 64 Salisbury Avenue, Westcliff on Sea, Essex SS0 7AX.

Gremlins on Spectrum. I have disabled the plough, I'm stuck on the rest. Ryan McCormack, 45 Northwood Avenue, Elm Park, Essex RM12 4PU.

T.K.V. on Spectrum. How do I Kill the Dragon? P C Collinson, address as above.

Hacker on Spectrum. How do I talk to the spies and what is the companies name? Dave Ed-

wards, 45 Riverdale Court, Higher Blackley, Manchester M9 3HW.

Black Sanctum on BBC. How do I built to altar? As above.

Mission Impossible on Vic20. How do I get into the control room? James Howard, 7 Buckfast Square, Corby, Northants NN18 8DT.

Fourth Protocol on Spectrum. What words will medical security understand to deal with Thorn? I Souter, 55 Somerset Avenue, Westcliff on Sea, Essex SS0 0DN.

Red Moon on Amstrad. Found 20+ objects, can cast a few spells but what for? Can anyone help before level 9 clue sheets come out? Natasha Silva, 6 Goldhanger Close, Rayleigh, Essex SS6 9RX.

System 1500 on C64. Any help at all wanted codes and Tel nos? 20 Castle Walk, Hyson Green, Nottingham NG7 6DZ.

Gremlins on Spectrum. Can't get computer to understand how to put Gremlin in blender or help even. Ross Hutchin, Criags "Softys Den" Innes, 6 Soothouse Avenue, Edinburgh EH17.

Classic Adventure on C16. How do you get past the snake in the hall of kings? B Dale, 99 Coldstream Crescent, Wishaw ML2 8QJ.

Hacker on Spectrum. Any information at all on this program. Mrs S Haviland, 12 Fludyer Street, Lewisham SE13 5RZ.

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Spellbinding tips and kitchen sinks

Tony Kendle continues with the series of tips from the author of *Spellbound*

Continuing this week with David Jones's tips on the excellent *Spellbound*. In case you missed last week's issue, David is the author of the Magic Knight series of games from Mastertronic and has just had the third in the series, *Knight Tyme*, released for the 128K Spectrum at an unbeatable £2.99.

Incidentally, Mastertronic is doing sterling work supporting some of the underdogs among home micros such as the C16. I am particularly pleased to see conversions appearing for the old Atari micro. Thanks to Mastertronic, US Gold and English software, we can be sure that the days of vastly overpriced software for the 8-bit Ataris are well and truly dead. There is a vast amount of excellent software available for these computers and since they can now be picked up in the high street at ridiculously cheap prices they're definitely my tip for a games machine.

One of the problems we left you sweating over from last week was how to stop Thor dropping dead on you at every available opportunity. David writes, "Thor must be told to go to sleep or he will die of exhaustion. By doing this you will ensure that he is fit and well and can help you when you have found his hammer. Thor will need his hammer before he can help you fix the lift. Just for fun try taking Thor's hammer away from him after you have given it to him."

Here are the rest of the tips. "Stand in the pool of liquid to cast the armouris photonicus spell. It will then be safe to drop the glowing bottle as all the light you need will be supplied by your illuminated armour."

Book of runes

"The broken glass that you get by dropping the glowing bottle can be usefully employed in conjunction with something that you cannot otherwise read."

"You will need the book of runes before you can understand the writing scratched on the runestone. Look out for something smelly in the basement. The pictures on the walls are very important if you want to get a full 100%."

"Before you can release Gimbal the wizard you will first need to find him. He is past the secret tunnel and on the other side of the pit. To release Gimbal you must cast the crystallium spectralis spell, de-

tails of which are included in the ancient scroll on the far side of the tower."

"A good luck charm must be in the same room as you if you use the candellium illuminatus spell to light the candle."

"The project physical body spell is one of the most powerful spells that magic knight can cast in this game. For it to work, he must have something very magic that was broken and is not mended, plus the crystal ball for the location of the target."

"The crystallium spectralis spell must be cast in the presence of Gimbal the wizard."

As well as David's tips we have some that have been sent in by Jason Watkins of Gravesend.

"The blue crystal will let you throw light objects at people. Give Erik the cleric the



Exploding Fist - winners soon

book of shadows.

"To cast the fumaticus protectum spell you will need the red herring and the above mentioned smelly object. To cast the candellium illuminatus you will need the runestone and the four-leaf clover. Give Florin the gold goblet."

Thanks to David, and everyone else for their letters on *Spellbound*, I'm sure it is not the last we will hear of Magic Knight in the column.

Before we can push on there are one or two things we have to clear up from past issues.

The pokes given for Amstrad *Sorcery* (on tape) had a missing bracket which generated the *Syntax Error* message. The problem can easily be corrected by consulting your computer manual but to recap, the offending line should read:

FOR I=2268 TO 12384: POKE (I-11264), PEEK (I): NEXT: SAVE "INFINITE ENERGY".B,1024,96,1024

Jason Temprell of Mansfield wants to

know what happened to the winners of our BBC *Exploding Fist* limerick competition.

Well, Jason, everything was passed to Melbourne House for the judging and I hope to print the list of winners soon, but you can take it that if you haven't heard by now you aren't one of the lucky ones.

Shelley Baron writes again concerning *Chuckie Egg II*. "Having spoken to AnF I can confirm that it has not gone out of business and that it was most helpful with my problem. However, thank you for publishing my first letter as without it I would not have been able to contact the company. The answer is that before you can get anywhere with the baskets you first have to get the lift working and start the generator. This means that you have to work your way down to the bottom, turn the generator on (can anyone tell me where it is?) and return to the beginning to collect the milk, sugar, etc." I'm glad to hear that your tale of AnF's demise was exaggerated as it has produced some excellent games to date and I hope for many more.

Fastest ship

Finally this week comes a letter from a S. Veeraagsorn of Bristol who takes exception to our *Mercenary* tips of a few weeks ago. "In fact the fastest ship in the game is not the cheese, but a ship referred to as 'Palya's brother-in-law's new ship' which is found flying at 500ft and at 100mph above the city. If you capture this ship no name is given, only if you shoot it down do you get the above description of it from Benson."

"To capture the ship you must first have a kitchen sink (a *what?*) which you can find in the Palya Colony Craft in the kitchen. With the kitchen sink on board fly at the altitude mentioned above. When you have the ship in sight, slow down to match the speed and fly into the craft as if to crash but then press T. To board the captured ship you must get into one of the hangars and drop it. If you try to board it on the planet surface, you will not succeed as it will fly away and remain at ground level."

"The speed of Palya's brother-in-law's new ship is 1931 on land and 5787 in the air but by pressing the plus key you can reach a speed of plus **75 - only the inter-stellar craft can go faster than this."

Next week we will be going back to the world of *Marsport*.



SEARCH

by Paul Murray

Continuing our series of machine code utility routines, this week, we present Search and Replace.

Search and Replace

This routine will look through a program or occurrences of a specified combination of tokens, letters, numbers, etc, and will replace these with a different combination.

Two variables must be entered:

F\$ = 'Find' string. Those tokens, etc, which are to be replaced.

R\$ = 'Replace' string. The tokens, etc, with which to replace the above.

For example, if a program is to be made microdrive compatible, then it may be required to convert all instances of *Save* to *Save***m***1*. This can be done by entering
 Let F\$ = Chr\$(248);
 Let R\$ = Chr\$(248) + "***m***1";
 Randomize
 Use 64613 where 248 is the code for *Save* (see Spectrum manual appendix 'A' for a complete list).

After calling the routine in the manner described above, all *Save*'s would have been converted to their microdrive equivalents.

Note that unlike string search and replace routines, this routine will successfully replace numbers as well as strings and tokens.

To install the program, you will need to use the Basic loader, and enter the code as printed this week.

However, if you would like the whole suite of programs, without the typing effort, then a cassette can be obtained from Paul Murray direct, for £3, including p&p. Write to him at 5 Hanham Mills, Hanham, Bristol, B15 3NU.

Name
Search

Call at
64613

Parameters
F\$ = Find string
R\$ = Replace string

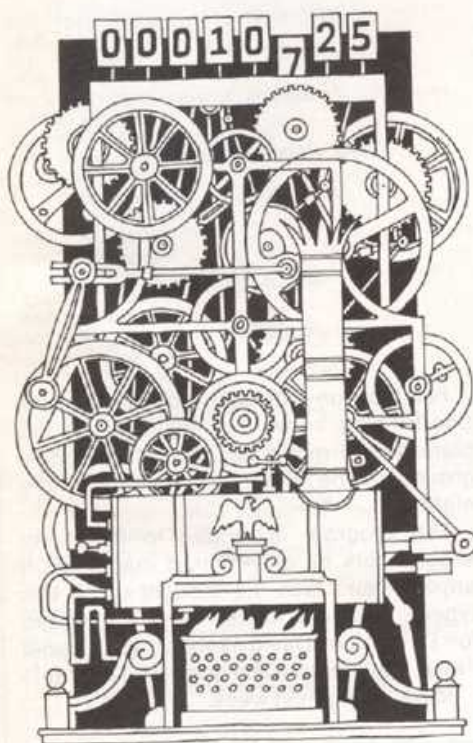
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64613 42 93 92 229 33
64618 133 252 205 137 252
64623 34 85 252 237 83
64628 91 252 33 135 252
64633 205 137 252 34 87
64638 252 237 83 93 252
64643 24 20 70 36 82
64648 36 34 93 92 205
64653 178 40 48 2 207
64658 1 35 94 35 86
64663 35 201 42 91 252
64668 34 95 252 42 85
64673 252 205 167 253 42
64678 95 252 237 91 91
64683 252 167 237 82 237
64688 91 87 252 25 34
64693 87 252 42 95 252
64698 34 91 252 42 93
64703 252 34 95 252 42
64708 87 252 205 167 253
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64718 252 237 91 91 252
64723 42 85 252 43 114
64728 43 115 237 91 93
64733 252 42 87 252 43
64738 114 43 115 42 83
64743 92 229 1 0 0
64748 237 67 89 252 167
64753 237 91 75 92 237
64758 82 225 32 6 225
64763 34 93 92 207 255
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64918 252 9 34 89 252
64923 225 9 209 237 75
64928 99 252 213 229 195
64933 9 253 253 54 71
64938 0 43 229 42 95
64943 252 35 34 97 252
64948 225 34 93 92 231
64953 229 42 97 252 43
64958 34 97 252 124 181
64963 225 200 126 254 34
64968 32 10 253 126 71
64973 238 1 253 119 71
64978 24 228 254 196 40
64983 12 254 58 48 220
64988 254 46 40 4 254
64993 48 56 212 253 203
64998 71 70 32 206 229
65003 205 155 44 193 167
65008 237 66 68 77 42
65013 97 252 167 237 66
65018 35 34 97 252 33
65023 6 0 25 229 1
65028 6 0 42 95 252
65033 9 34 95 252 42
65038 93 92 205 85 22
65043 35 54 14 35 235
65048 213 239 192 56 33
65053 146 92 1 5 0
65058 209 237 176 225 235
65063 34 93 92 239 2
65068 56 24 137 205 107
    
```

CHECKSUM=58491



CHARACTER SET

by Mike Lloyd

The QL's character set has eight different size settings, but only the one font is used. The usual method of improving screen displays is to redefine the character set, but this requires a large amount of planning and well over a kilobyte of data. The simple routine listed here allows you to draw characters pixel by pixel, using any pixel design your imagination can come up with. The characters can be of any width and height.

The variables passed to the procedure allow the selection of screen position, width, height and colour of the output. Variables used within the listing are declared in a *Local* statement so that they can be used without problem within any program. After setting the ink colour to the appropriate value, the routine establishes where in the Rom the character set is stored. The QL's font is divided into two sections and the address *Peeked* is the start of the font for ASCII values 32 to 127 (ie, the space through the figures and alphabets to the copyright symbol), so the routine is limited to using only these characters. The rest of the routine is a series of nested loops at the heart of which lies the pixel drawing routine.

The pixel design included in the main listing produces blocks identical to the standard QL print, but it is not limited to the normal *Csize* values. Listed below the procedure are four alternative pixel designs, some of which are demonstrated in the printout shown.

It should be noted that the co-ordinates used by the *Circle* command are not the same as those used by *Block* and *Cursor*. Finally, although the printing speed is slow compared with the QL's normal print speed (which is itself nothing special), it is perfectly acceptable, particularly when drawing screens for dumping to a printer.

• Large characters

• Main Listing

```
100 DEFine PROCEDURE BIGprint (x,y, xpix,ypix, col,a$)
110 LOCAL base,bit,byte,cbase,chr,xpos
120 INK col:base = PEEK_L (PEEK_L (163844)+298)
130 FOR chr = 1 TO LEN(a$)
140   cbase = base+9*(CODE (a$(chr))-31) +2
150   xpos = x+(chr-1) *xpix *8
160   FOR byte = cbase TO cbase+8
170     IF PEEK (byte) =
180       FOR bit = 1 TO 5
190         IF PEEK (byte) && (2^(7-bit))
200 :
210 REMark >> Insert pixel drawing routine
220 :
230 BLOCK xpix+1, ypix, xpos:xpix+bit*xpix, y+(byte-cbase)*ypix, col
240 :
250 REMark >> End pixel drawing routine
260 :
270   END IF
280   NEXT bit
290   END IF
300   NEXT byte
310 NEXT chr
320 END DEFine bigchar
```

• character pixels

```
230 CURSOR xpos:xpix+bit*xpix,y+ypix+(byte-cbase)*ypix:PRINT a$(chr)
```

• circular pixels

```
230 CIRCLE xpos:bit*xpix,y-(byte-cbase+1)*ypix,xpix/2
```

• shadow style

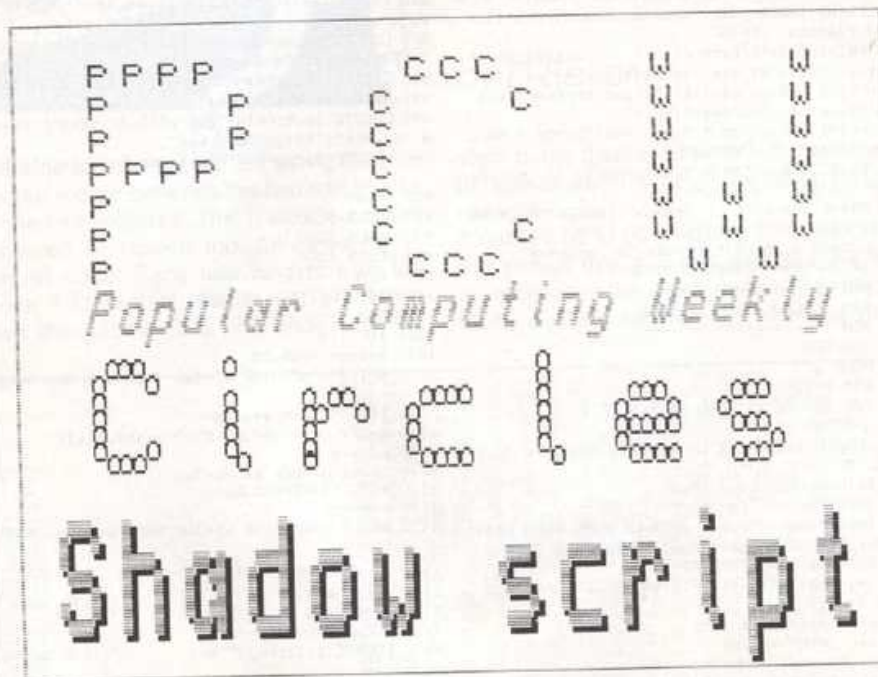
```
230 BLOCK xpix+4, ypix+2, xpos:xpix+bit*xpix, y+(byte-cbase)*ypix, 0
235 BLOCK xpix+1, ypix, xpos:xpix+bit*xpix, y+(byte-cbase)*ypix, col
```

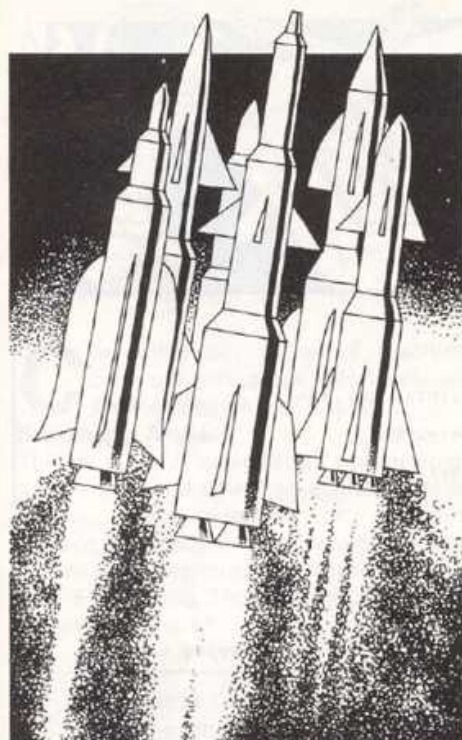
• italic style

```
230 BLOCK xpix+1,ypix,xpos:xpix+bit*xpix+6-byte+cbase,y+(byte-cbase)*ypix,col
```

• Example calls

```
10 FOR colour = 1 TO 7: BIGprint 10,60, 10,8, colour,"PCW"
20 BIGprint 0,30, 3,2, 94,"Popular Computing Weekly"
```





PLANETS POSITIONS

by David Webber

This program, to be printed over two weeks, may be a long one, but is certainly well worth the effort for anyone who has the slightest interest in astronomy.

What it will do is calculate the positions of all the planets at any time of the day or night, between 1/1/75 and 31/12/99. Exact data will be given, showing the Latitude and Longitude relative to the Ecliptic – and also the Right Ascension and Declination on the Equator.

For the non-technical, however, 3 star Charts also show the positions of the planets and moon up against the background of the star constellations in the night sky.

The program is written in Basic, so should work on all Amstrad machines. If anyone can't face the thought of all this typing, then tape copies can be obtained for £2.50 from David Webber at Cummel Fayle, Ballaterston, Ballaugh, Isle of Man.

More listing next week.

```

10 REM *****
20 REM * PLANETS POSITIONS *
30 REM *****
100 MODE 0
110 LOCATE 3,6:PRINT"PLANETS POSITIONS"
120 LOCATE 9,9:PRINT CHR$(64):" by"
130 LOCATE 6,12:PRINT"D.T.Webber"
140 FOR n=1 TO 2500:NEXT n
150 MODE 2:BORDER 18:INK 1,0:INK 0,18
160 hs=" P L A N E T S P O S I T I O N S "
170 ps=CHR$(143):FOR x=23 TO 57:LOCATE x,1:PR
INT ps:NEXT
200 LOCATE 1,5:PRINT" This Program will cal
culate the positions of the planets between 1
/1/75 and 31/12/99 and contains the f
ollowing:"
210 PRINT
220 PRINT TAB(6)"Planets Longitude and Latitu
de":PRINT
230 PRINT TAB(6)"Planets Right Ascension and
Declination":PRINT
240 PRINT TAB(6)"Moon's position":PRINT
250 PRINT TAB(6)"Star charts showing position
s of Planets":PRINT
260 PRINT TAB(6)"Each Planet is located on th
e Star charts at the top left corner of the"
270 PRINT TAB(6)"capital letter representing
the Planet as follows":PRINT
280 PRINT TAB(6)"Mo = Moon":TAB(30)"Me = Merc
ury":TAB(60)"V = Venus"
290 PRINT TAB(6)"Ma = Mars":TAB(30)"J = Jupi
ter":TAB(60)"S = Saturn"
300 PRINT TAB(6)"U = Uranus":TAB(30)"N = Ne
ptune":TAB(60)"P = Pluto"
310 LOCATE 6,25:PRINT"Press to continue"
320 IF INKEY="" THEN GOTO 320
400 REM -----
410 REM CALCULATION OF DATE
420 REM -----
430 CLS:DEG
440 MODE 2
450 DIM k(12)
460 FOR j=1 TO 12:READ k(j):NEXT j
470 q=27393
480 LOCATE 1,5:PRINT"Enter date required eg.0
3.11.75"
490 PRINT:INPUT"Day "id
500 INPUT"Month "ia
510 INPUT"Year "iy:IF y<75 OR y>99 THEN PRIN
T"Year out of range-should be between 75 and
99":GOTO 510:PRINT:PRINT
520 x=y*365+INT(y/4):IF y/4=INT(y/4) AND m<3
THEN x=x+1
530 x=x+k(m)+30*(a-2)+d
540 z=x-7*INT(x/7)+1
550 a="SunMonTueWedThuFriSat"
560 PRINT:PRINT "Date " MID$(a$,3*z-2,3):" "

```

```

id:"/"id:"/"iy:yl=y
570 PRINT
580 DATA 30,31,29,30,30,31,31,32,33,33,34,34
590 x=m-q
600 PRINT"Enter time required eg.hour:24 hour
clock) and minute"
610 PRINT"Deduct 1 hour for BST"
620 PRINT:INPUT"Hour "ih
630 INPUT"Minute "im
640 h=h+60:m=m+im:p=m/1440
650 x=x+p
660 LOCATE 5,25:PRINT"Is this information cor
rect? Y/N"
670 a=INKEY$:IF a="" THEN GOTO 670
680 IF a="Y" OR a="y" THEN CLS:GOTO 830
690 IF a="N" OR a="n" THEN CLS:GOTO 470
700 IF a<>"Y" OR a<>"y" OR a<>"N" OR a<>"n"
n" GOTO 660
800 REM -----
810 REM SET UP TABLES
820 REM -----
830 CLS
840 PRINT TAB(24)"P L A N E T S P O S I T I
O N S"
850 PRINT TAB(24)STRING$(33,45)
860 PRINT TAB(30)"on "MID$(a$,3*z-2,3):" "
870 LOCATE 16,6:PRINT"Ecliptic Co-ords":TAB(4
9)"Equatorial Co-ords"
880 LOCATE 16,8:PRINT "Long":TAB(30)"Lat":TAB
(49)"R.A.":TAB(62)"Decl"
890 LOCATE 16,9:PRINT"deg":TAB(30)"deg":TAB(4
8)"hr.min":TAB(60)"deg.min"
900 LOCATE 9,22:PRINT"Wait for full printout"
910 PRINT
920 GOSUB 1000
930 GOSUB 1200
940 GOSUB 1600
1000 REM -----
1010 REM POSITION OF SUN
1020 REM -----
1030 INK 1,0
1040 s=360*x/365.25
1050 WHILE s>360:IF s>360 THEN s=s-360:WEND
1060 IF s<0 THEN s=s+360
1070 g=279.04147:h=282.510396:j=0.01672
1080 m=s+g-h
1090 IF m<0 THEN m=m+360
1100 e=360*j/PI*SIN(ma)
1110 k=s+e+g
1120 WHILE k>360:IF k>360 THEN k=k-360:WEND
1130 IF k<0 THEN k=k+360
1140 k=ROUND(k,2)
1150 l=k:vg=0
1160 GOSUB 3700
1170 LOCATE 1,11:PRINT"Sun "t:GOSUB 390
0
1180 RETURN

```

```

1200 REM -----
1210 REM POSITION OF MOON
1220 REM -----
1230 m1=124.8756:m2=145.9601:m3=248.6441:m4=5
.1453:m5=0.0547
1240 GOSUB 1000
1250 l2=360*x/27.3217+m1
1260 WHILE l2>360:IF l2>360 THEN l2=l2-360:
WEND
1270 m2=l2-(360/365.25)*(x/8.85)-m2
1280 WHILE m2<0:IF m2<0 THEN m2=m2+360:WEND
1290 n2=m2-(360/365.25)*(x/18.61)
1300 WHILE n2<0:IF n2<0 THEN n2=n2+360:WEND
1310 v2=1.274*SIN(2*(l2-k)-m2)
1320 w2=0.186*SIN(ma)
1330 x2=0.37*SIN(ma)
1340 y2=n2+v2-w2-x2
1350 ec=6.289*SIN(y2)
1360 li=l2+v2-w2+ec
1370 v=0.658*SIN(2*(li-k))
1380 la=v+li
1390 WHILE la<0:IF la<0 THEN la=la+360:WEND
1400 WHILE la>360:IF la>360 THEN la=la-360:
WEND
1410 la=ROUND(la,2)
1420 na=n2-0.16*SIN(ma)
1430 ba=SIN(li-na)*SIN(m1)
1440 DEF FNp(x)=(ATN(x/SQR(1-x*x+1)))
1450 ba=FNp(ba)
1460 bm=ROUND(bm,2)
1470 la=la+vg+bm
1480 GOSUB 3700
1490 ta=t:da=d1
1500 PRINT"Moon "t:GOSUB 3900
1510 RETURN
1600 REM -----
1610 REM MERCURY
1620 REM -----
1630 tp=0.24085:ep=320.66305:w=77.06645:e=0.2
05629:a=0.387099
1640 lo=7.00427:nd=48.03493
1650 GOSUB 2600:GOSUB 3000:GOSUB 3400
1660 tb=t:db=d1
1670 PRINT"Mercury "t:GOSUB 3900
1700 REM -----
1710 REM VENUS
1720 REM -----
1730 tp=0.61521:ep=310.97453:w=131.21928:e=0.
006785:a=0.723332
1740 lo=3.39438:nd=76.45475
1750 GOSUB 2600:GOSUB 3000:GOSUB 3400
1760 tc=t:dc=d1
1770 PRINT"Venus "t:GOSUB 3900
1800 REM -----
1810 REM MARS
1820 REM -----
1830 tp=1.88089:ep=249.62919:w=335.59881:e=0.
093382:a=1.523691
1840 lo=1.84983:nd=49.36466
1850 GOSUB 2600:GOSUB 3000:GOSUB 3400
1860 td=t:dd=d1

```


Programming: Amstrad

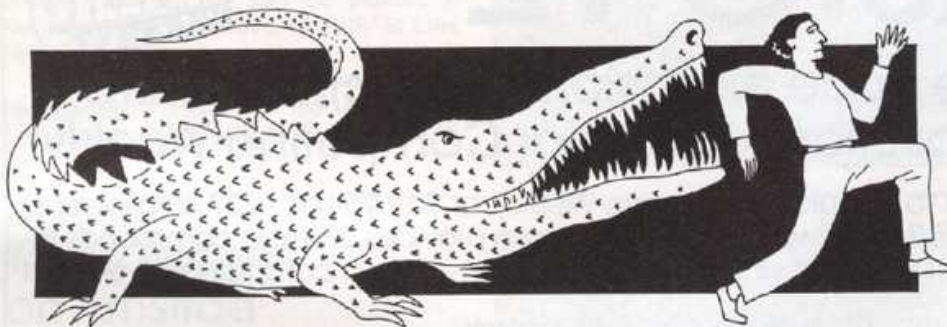
```

1870 PRINT "Mars"      ":GOSUB 3900
1900 REM -----
1910 REM JUPITER
1920 REM -----
1930 tp=11.86224:ep=355.21414:w=13.91992:e=0
.04844:a=5.202804
1940 io=1.3045:nd=100.19608
1950 GOSUB 2600:GOSUB 3200:GOSUB 3400
1960 tf=t1:df=d1
1970 PRINT "Jupiter"  ":GOSUB 3900
2000 REM -----
2010 REM SATURN
2020 REM -----
2030 tp=29.45771:ep=104.17278:w=92.55833:e=0
.05563:a=9.538844
2040 io=2.48933:nd=113.43842
2050 GOSUB 2600:GOSUB 3200:GOSUB 3400
2060 tg=t1:dg=d1
2070 PRINT "Saturn"   ":GOSUB 3900
2100 REM -----
2110 REM URANUS
2120 REM -----
2130 tp=84.01247:ep=205.78286:w=170.25472:e=0
.04722:a=19.181854
2140 io=0.77316:nd=73.87283
2150 GOSUB 2600:GOSUB 3200:GOSUB 3400
2160 th=t1:dh=d1
2170 PRINT "Uranus"   ":GOSUB 3900
2200 REM -----
2210 REM NEPTUNE
2220 REM -----
2230 tp=164.79558:ep=249.91462:w=44.40592:e=0
.00858:a=30.05796
2240 io=1.77236:nd=131.50505
2250 GOSUB 2600:GOSUB 3200:GOSUB 3400
2260 tj=t1:dj=d1
2270 PRINT "Neptune"  ":GOSUB 3900
2300 REM -----
2310 REM PLUTO
2320 REM -----
2330 tp=246.378:ep=202.3345:w=224.256:e=0.246
1151a=39.29976
2340 io=17.14451:nd=109.9965
2350 GOSUB 2600:GOSUB 3200:GOSUB 3400

2360 tk=t1:dk=d1
2370 PRINT "Pluto"     ":GOSUB 3900
2400 REM -----
2410 LOCATE 9,22:PRINT STRING$(22,32)
2420 LOCATE 9,22:PRINT "PRINTOUT COMPLETE"
2430 LOCATE 9,24:PRINT "Do you wish to see sta
r charts? Y/N"
2440 as=INKEY$:IF as="" GOTO 2440
2450 IF as="Y" OR as="y" THEN CLS:GOTO 4000
2460 IF as="N" OR as="n" THEN CLS:GOTO 2480
2470 IF as<>"Y" OR as<>"y" OR as<>"N" OR as<>"n"
"n" GOTO 2430
2480 LOCATE 29,12:PRINT "END OF PROGRAM"
2490 LOCATE 27,14:PRINT "Type RUN to restart":
END
2600 REM -----
2610 REM CALCULATION FOR PLANET
2620 REM -----
2630 np=360*w/365.25/tp
2640 WHILE np>360:IF np>360 THEN np=np-360:
WEND
2650 WHILE np<0:IF np<0 THEN np=np+360:WEND
2660 l=np+(360*e/PI)*SIN(np+ep-w)+ep
2670 WHILE l>360:IF l>360 THEN l=l-360:WEND
2680 WHILE l<0:IF l<0 THEN l=l+360:WEND
2690 vp=l-w
2700 rp=a*(1-e^2)/(1+e*COS(vp))
2800 REM -----
2810 REM CALCULATION FOR EARTH
2820 REM -----
2830 te=1.00004:pe=99.53431:we=102.51044:ee=0
.01672
2840 ne=360*x/365.25/te
2850 WHILE ne>360:IF ne>360 THEN ne=ne-360:
WEND
2860 WHILE ne<0:IF ne<0 THEN ne=ne+360:WEND
2870 le=ne+(360/PI)*ee*SIN(ne+pe-we)+pe
2880 ve=l-we
2890 re=(1-ee^2)/(1+ee*COS(ve))
2900 RETURN
3000 REM -----
3010 REM INFERIOR PLANETS POSITIONS
3020 REM -----
3030 REM -----
3040 REM -----
3050 WHILE ZA<0:IF ZA<0 THEN ZA=ZA+360:WEND
3060 WHILE ZA>360:IF ZA>360 THEN ZA=ZA-360:
WEND
3070 ZB=180+LE
3080 ZC=RP*SIN(ZA)
3090 ZD=RE-PP*COS(ZA)
3100 ze=zc/zd
3110 RETURN
3200 REM -----
3210 REM SUPERIOR PLANETS POSITION
3220 REM -----
3230 REM -----
3240 za=l-le
3250 WHILE za<0:IF za<0 THEN za=za+360:WEND
3260 WHILE za>360:IF za>360 THEN za=za-360:
WEND
3270 zb=l
3280 zc=re*SIN(za)
3290 zd=rp-re*COS(za)
3300 ze=zc/zd
3310 RETURN
3400 REM -----
3410 REM LONGITUDE CALCULATION
3420 REM -----
3430 zi=ATN(ze)
3440 ia=zb+zi
3450 WHILE ia<0:IF ia<0 THEN ia=ia+360:WEND
3460 WHILE ia>360:IF ia>360 THEN ia=ia-360:
WEND
3470 la=ROUND(ia,2)
3500 REM -----
3510 REM LATITUDE CALCULATION
3520 REM -----
3530 v=SIN(1-nd)*SIN(io)
3540 DEF FNm(x)=ATN(x/SQR(1-x*x+1))
3550 v=FNm(v)
3560 vd=lm-l:vb=l-le
3570 vq=rp*COS(v)
3580 vc=rq*TAN(v)*SIN(vd)
3590 ve=re*SIN(vb)
3600 vfv=vc/ve
3610 vg=ATN(vf)
3620 vg=ROUND(vg,2)

```

Commodore 64



DISC MONITOR

by D Baker

Following on from last week, here is the remainder of the code and instructions.

Display Format – When a block is loaded, by selecting F1 from the menu, only 128 bytes are displayed, due to the screen size, although all 256 are in Ram and

available for editing, etc. By using the (F3) key you toggle between the two half blocks as often as required. The Track/Sector are displayed at screen top, followed by 16 lines of code. Each line begins with the 'Block Address; of the line of eight hex bytes that follow. The line ends with the

eight bytes displayed as ASCII characters (if alphanumeric) or '.' for a non-alpha character.

\$00 00 FF 00 11 00 44 4B 4DDKM
\$00 shows that this line displays the first eight bytes of the Block (bytes 00 to 07); 00 to 4D are the Hex values of these eight

10 REM DISC MONITOR PART TWO

20 PRINT CHR\$(147):NR=0

30 FOR W=0 TO 5:976

40 READ H:POKE X+H,NR:NR=NR+1

50 IF NR<2048:14 THEN PRINT "DATA ERROR-NR="NR

60 STOP

70 DATA 169,147, 32,210,255, 96,168, 0,169, 6,192, 56,232, 48

80 DATA 201, 18,144, 2,233, 7,153, 18,192,200,192, 2,208,236

90 DATA 173, 18,192, 10, 10, 24,109, 18,192,189, 18,192, 24

100 DATA 189, 11,192,141, 8,192, 36,169, 0,173, 6,192, 41,240

110 DATA 24, 74, 74, 74, 74, 24,185, 48,281, 58,144, 3, 24,185

120 DATA 7,153, 6,192,200,192, 2,208, 6,173, 8,192, 41, 15

130 DATA 75,136,194, 36,173, 6,192, 32,210,255,173, 7,192, 32

140 DATA 210,255,169, 32, 32,210,255, 96,169, 64,141,189, 2,169

150 DATA 0,133,199, 32,129,255, 32,228,255,240,240,141, 12,192

160 DATA 96,169, 15,168,162, 0, 32,188,255,169, 0, 32,189,255

170 DATA 75,192,255,169, 8,170,168, 32,188,255,169, 1,162, 41

180 DATA 169,192, 32,189,255, 75,192,255,169, 4,170,168, 0, 32

190 DATA 188,255,169, 0, 32,189,255, 32,192,255,169, 1,162, 4

200 DATA 76,201,255, 32,237,194,169, 13, 32,210,255, 32,210,255

210 DATA 169, 32, 32,210,255, 32,210,255, 32,194,192

220 DATA 169, 13, 32,210,255, 32,210,255, 169, 0, 32, 40,192,192

230 DATA 0,208,249, 32,284,255,169, 4, 32,135,255, 76, 4,199

240 DATA 173, 1,192,141, 50,192,173, 2,192,141, 51,192,173, 4

250 DATA 192,141, 53,192,173, 5,192,141, 54,192,162, 15, 32,201

260 DATA 255,152, 0,189, 42,192, 32,210,255,252,224, 10,280,245

270 DATA 76,284,255, 32,284,255,169, 0, 32,195,255,169, 15, 32

280 DATA 195,255, 96,169, 1,141, 23,192, 32,202,194, 32,210,194

290 DATA 169, 49,141, 42,192, 32, 57,195,162, 0, 32,198,255,168

300 DATA 0,140, 10,192, 32,207,255,153, 75,192,260,208,247, 32

310 DATA 182,195,168, 0,140, 14,192,148, 18,192, 32,249,196, 96

320 DATA 32,281,195,168, 0, 32,287,255,281, 13,246, 17,153, 10

330 DATA 192,280,192, 3,144,241,126,169,157, 32,210,255, 76,174

340 DATA 195, 76,210,192,169, 0,141, 19,192,141, 11,192, 76,173

350 DATA 11,192,280,250,173, 10,192,141, 11,192,162, 49,141, 10

360 DATA 192, 36,162, 0,160, 3, 74, 32,240,255,169, 9,195, 62

370 DATA 192,281, 64,240, 7, 32,210,255,280, 76,217,195, 32,169

380 DATA 195,173, 10,192,141, 6,192,141, 1,192,173, 11,192,141

390 DATA 7,192,141, 2,192, 32, 31,194,173, 8,192,240, 4,200

400 DATA 26,144, 6,169, 1, 32,136,196, 96,141, 0,192,169, 3

410 DATA 162, 1, 24, 32,240,255,169, 0,182, 71,192,201, 64,240

420 DATA 7, 32,210,255,280, 76, 47,196, 32,169,195,173, 10,192

430 DATA 141, 6,192,141, 4,192,173, 11,192,141, 7,192,141, 8

440 DATA 192, 32, 31,194,173, 8,192,141, 3,192,173, 0,192,160

450 DATA 8,219, 4,190,173, 15,136,173, 4,192,21, 0,193,144

460 DATA 10,169, 3, 32,128,196, 36,200, 76, 96,196,169, 8,141

470 DATA 24,192, 96,141, 24,192, 72,162, 24,169, 1, 24, 32,240

480 DATA 255,104,188,196,195, 53,195,168,185, 12,193,201, 64,240

490 DATA 7, 32,210,255,280, 76,145,196,162, 24,169, 1, 24, 32

500 DATA 240,255, 32,181,194, 32, 75,194, 96,173, 33,192,200, 1

510 DATA 56, 32,189,199, 32,202,194, 32,218,194,162, 15, 32,201

520 DATA 255,169, 0,185, 55,192, 32,210,255,280,192, 7,208,245

Programming: Commodore 64

bytes. The first five values are non-alphanumeric when converted to ASCII (Chr\$(0), Chr\$(255) etc) whilst \$44,\$4B,\$4D equate to the letters DKM.

8 printer dump displays all 256 bytes in this form. The screen display will always display one Hex value and its equivalent

ASCII byte in inverse characters, this is the 'Edit Byte' and by typing a new hex value you can change the byte as required - both digits of the byte must be typed; the program will always wait for the second byte. The cursors let you move around the block to select a new byte to edit.

Following editing of a block, do not forget that to record the changes made you must save the amended block back to disc.

Should you make a mess of any editing attempt, simply reload the relevant Block and start again; disc contents are only changed following a Block Save.

```
530 DATA 32,204,255,162, 8, 32,201,255,160, 0,185, 75,193, 32
540 DATA 210,255,200,208,247, 32,204,255,169, 50,141, 43,192, 32
550 DATA 57,192, 32,182,195,152, 0,141, 23,192, 32, 75,194, 36
560 DATA 32, 75,194, 32,124,197,162, 3,160, 8, 24, 32,240,255
570 DATA 169, 0,141, 13,192,172, 14,192, 32, 40,197,239, 13,192
580 DATA 173, 13,192,201, 16,208,243,169, 0,141, 16,192,141, 17
590 DATA 192, 32,160,199, 36,140, 0,192,169, 36, 32,210,255,162
600 DATA 0,192, 72, 32,124,194, 32,163,194,164,169,200,232
610 DATA 193,141, 8,192, 32,124,194, 32,163,194,164,169,200,232
620 DATA 192,224, 0,200,234, 72, 56,233, 0,169,162, 0,185, 75
630 DATA 193,201,128,144, 5,169, 46, 76,107,197,201, 32,176, 2
640 DATA 169, 46, 32,210,255,200,232, 0,200,229,169, 13, 32
650 DATA 210,255,184,168, 56,162, 0,160, 3, 24, 32,240,255,160
660 DATA 0,185, 62,192,201, 64,240, 7, 32,210,255,200, 76,134
670 DATA 197,173, 0,192, 32,211,197,141, 8,192, 32,124,194, 32
680 DATA 163,194,169, 13, 32,210,255,169, 32, 32,210,255, 32,210
690 DATA 255, 32,210,255,160, 185, 71,192,201, 64,240, 7, 32
700 DATA 210,255,200, 76,181,197,173, 3,192, 32,211,197,141, 8
710 DATA 192, 32,124,194, 32,163,194, 96, 72,169, 0,141, 10,192
720 DATA 141, 11,192,194,201, 10,176, 15,141, 11,192,173, 10,192
730 DATA 10, 10, 10, 24,169, 11,192, 36,230, 10,192, 56,233
740 DATA 19, 76,221,197,160, 0,162, 23, 24, 32,240,255,160, 8
750 DATA 185, 90,192,201, 64,240, 12,201, 42,208, 1, 96, 32,210
760 DATA 255,200, 76, 3,199,169, 13, 76, 15,198,169, 4,141, 20
770 DATA 192,141, 22,192,163,124,141, 19,192,169,149,141, 21,192
780 DATA 173, 17,192,141, 10,192,173, 10,192,240, 34,169, 40, 24
790 DATA 189, 19,192,141, 19,192,144, 3,230, 20,192,169, 40, 24
800 DATA 189, 21,192,141, 21,192,144, 3,230, 22,192,200, 10,192
810 DATA 76, 51,198,173, 16,192, 24,169, 21,192,141, 21,192,144
820 DATA 3,230, 22,192,173, 16,192, 10, 24,169, 16,192, 24,169
830 DATA 19,192,141, 19,192,144, 3,230, 20,192, 96, 0, 0,173
840 DATA 75,193,200, 3, 76,210,190,141,126,190,173, 76,193,141
850 DATA 127,190,173,126,190,141, 0,192, 32,211,197,141, 8,192
860 DATA 32,124,194,173, 6,192,141, 1,192,173, 7,192,141, 2
870 DATA 192,173,127,190,141, 3,192, 32,211,197,141, 8,192, 32
880 DATA 124,194,173, 6,192,141, 4,192,173, 7,192,141, 5,192
890 DATA 160, 0,140, 14,192, 32,189,199, 76,116,195, 32, 75,194
900 DATA 162, 12,160, 0, 24, 32,240,255,160, 0,185, 55,193,201
910 DATA 64,240, 7, 32,210,255,200, 76,223,198, 96,169, 0,141
920 DATA 24,192,141, 23,192,169, 6,141, 33,208,141, 32,208,169
930 DATA 1,141,134, 2, 96, 32,249,137, 32,236,200, 32,181,194
940 DATA 173, 12,192,201,136,200, 1, 96,201,133,240, 57,201,137
950 DATA 240, 56,201,136,240, 70,201,134,240, 51,201,157,240, 50
960 DATA 201, 29,240, 49,201, 17,240, 40,201,145,240, 47,201,135
970 DATA 240, 19,201,132,240, 10,201, 40,144,195,201, 64,240,191
980 DATA 201, 71,176,187, 76,185,200, 75, 4,195, 76, 59,202, 75
990 DATA 61,200, 76, 47,200, 76, 64,200, 76, 5,200, 76, 25,200
1000 DATA 76,233,199, 76,207,199, 32,174,196, 76, 4,199, 32, 27
1010 DATA 198,173, 19,192,193,201,173, 26,192,133,252,173, 21,192
1020 DATA 133,253,173, 22,192,133,254,169, 0,177,251,201,120,144
1030 DATA 19, 56,233,128,145,251,200,192, 2,208,240,160, 0,177
1040 DATA 253, 56,233,128,145,253, 96, 32, 27,198,173, 19,192,133
1050 DATA 251,173, 20,192,133,252,173, 21,192,133,253,173, 32,180
1060 DATA 120,254,160, 0,177,251, 24,180,120,145,253, 96, 32,189
1070 DATA 200,244,160, 0,177,253, 24,180,120,145,253, 96, 32,189
1080 DATA 199,173, 17,192,240, 12,173, 18,192, 56,233, 0,141, 10
1090 DATA 192,206, 17,192, 32,160,199, 75, 4,199, 32,109,199,173
```

```
1100 DATA 17,192,201, 15,176, 12,173, 18,192, 24,169, 0,141, 10
1110 DATA 192,238, 17,192, 32,160,199, 76, 4,199, 32,189,199,173
1120 DATA 16,192,240, 6,206, 10,192,206, 16,192, 32,160,199, 75
1130 DATA 4,199, 32,109,199,173, 15,192,201, 7,176, 6,230, 18
1140 DATA 192,238, 16,192, 32,160,199, 76, 4,199,173, 23,192,208
1150 DATA 3, 76, 4,199, 32,120,198, 76, 4,199, 32,109,199, 32
1160 DATA 75,194, 32,227,199,173, 24,192,240, 3, 76, 4,199, 32
1170 DATA 116,198, 76, 4,199,173, 14,192,240, 8,160, 0, 32,199
1180 DATA 120, 76, 4,199,169,120, 32,199,195, 76, 4,199,141, 10
1190 DATA 192,160, 0,173, 19,192,141,132,200,173, 20,192,141,133
1200 DATA 200,169, 10,192,201, 65,176, 0,185,120,153, 0, 4, 76
1210 DATA 142,200,105, 63, 75,131,200,192, 1, 240, 19, 32,181,194
1220 DATA 201, 40,144,249,201, 71,176,245,141, 11,192,160, 1, 76
1230 DATA 122,200,160, 0,185, 10,192, 56,233, 48,153, 10,192,201
1240 DATA 10,144, 5,223, 7,192, 10,192,200,192, 2,200,233,173
1250 DATA 10,192, 10, 10, 30, 10, 24,189, 11,192,172, 10,192,183
1260 DATA 75,193, 72,173, 21,192,141,231,200,173, 22,192,141,232
1270 DATA 200,104,105, 64,201,120,176, 3, 24,105, 64,141, 0, 4
1280 DATA 76, 4,199,169, 15,160,162, 8, 32,196,255,169, 0, 32
1290 DATA 109,255, 32,192,255,162, 15, 32,199,255,160, 0,162, 20
1300 DATA 24, 32,240,255, 32,205,255, 32,210,255,201, 13,205,246
1310 DATA 32,204,255,169, 15, 32,195,255, 56, 32,230,198, 32, 75
1320 DATA 194, 32, 4,199, 32, 75,194, 96,169, 49,141, 43,192,173
1330 DATA 25,192, 32,211,197,141, 0,192, 32,124,194,173, 6,192
1340 DATA 141, 1,192,173, 7,192,141, 2,192,173, 32,192,32,211
1350 DATA 192,141, 0,192, 32,124,194,173, 6,192,141, 4,192,173
1360 DATA 7,192,141, 5,192, 32,202,194, 32,210,194, 32, 57,195
1370 DATA 162, 8, 32,196,255,160, 0, 32,207,255,153, 0, 16,200
1380 DATA 255,247, 32,102,195,238,145,201,238, 26,192,173, 26,192
1390 DATA 172, 27,192,217, 20,192,200,198,238, 25,192,173, 27,192
1400 DATA 172, 27,192,200,217, 34,192,240, 8,169, 0,141, 26,192
1410 DATA 76, 41,201, 32,102,195, 96,169, 30,141, 43,192,173, 26
1420 DATA 192, 32,211,197,141, 8,192, 32,124,194,173, 6,192,141
1430 DATA 1,192,173, 7,192,141, 2,192,173, 36,192, 32,211,197
1440 DATA 141, 5,192, 32,124,194,173, 6,192,141, 4,192,173, 7
1450 DATA 192,141, 5,192, 32,202,194, 32,210,194,162, 15, 32,201
1460 DATA 255,160, 0,185, 55,192, 32,210,255,200,192, 7,200,247
1470 DATA 32,204,255,162, 0, 32,201,255,160, 0,105, 0, 16, 32
1480 DATA 210,255,200,200,247, 32,204,255, 32, 57,195, 32,192,195
1490 DATA 238,255,201,238, 26,192,173, 26,192,172, 27,192,217, 20
1500 DATA 192,208,194,238, 25,192,173, 25,192,172, 27,192,200,217
1510 DATA 34,192,240, 8,169, 0,141, 25,192, 76,166,201, 32,192
1520 DATA 195, 96,169, 0,141, 27,192,172, 27,192,195, 34,192,141
1530 DATA 25,192,169, 0,141, 26,192,169, 16,141,115,201,141,255
1540 DATA 201, 32, 75,194, 32,169,202, 32,241,202, 32,191,194,201
1550 DATA 65,200, 6, 32, 75,194, 76, 4,199, 32, 75,194, 32, 41
1560 DATA 201, 32,193,202, 32,241,202, 32,191,194, 32, 75,194,173
1570 DATA 27,198,108, 34,192,141, 25,192,169, 0,141, 36,192, 32
1580 DATA 166,201,238, 27,192,173, 27,192,201, 6,200,167, 32,217
1590 DATA 302, 32,241,202, 32,191,194, 32, 75,194, 76, 4,199,162
1600 DATA 12,160, 9, 24, 32,240,255,160, 0,185,104,192,201, 64
1610 DATA 208, 1, 96, 32,210,255,200, 76,178,202,162, 12,160, 0
1620 DATA 24, 32,240,255,160, 0,185,203,192,201, 64,240,231, 32
1630 DATA 210,255,200, 76,203,202,162, 12,160, 9, 24, 32,240,255
1640 DATA 160, 0,185,222,192,201, 64,240,207, 32,210,255,200, 75
1650 DATA 227,202,162, 13,160, 9, 24, 32,240,255,160, 0,185,241
1660 DATA 192,201, 64,240,195, 32,210,255,200, 76,251,282
```

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Programming: Bytes & Pieces

File Reader on BBC B

by Chester Gillon

This is a universal file reader program for the BBC B. It will read any file created with the Basic command, *Print channel*. The user has to input the file name and if it is the wrong file type, eg, a Basic program, it will stop with the message, 'Wrong File Type'.

If the file is of the correct type, the program will list the contents of each field, along with its type, (string, integer or floating point number).

At the end, the program will print the total number of strings, integer and floating point numbers.

In my own work, I have found this useful in de-bugging database programs, especially in dealing with the dreaded 'Type mismatch' error.

```
100 P=0:T1=0:T2=0:T3=0
110 INPUT "FILENAME?"F$
120 X=OPENINF$
130 REPEAT
140 A=0:AX=0:A$=""
150 PTR=X:P=B:GET#X:PTR=X+P
160 IF B=0 THEN INPUT#X,A$:PRINT "STRING" =";A$:P=P+2+LEN(A$):T1=T1+1
170 IF B=64 THEN INPUT#X,AX:PRINT "INTEGER" =";AX:P=P+5:T2=T2+1
180 IF B=255 THEN INPUT#X,A:PRINT "F.P. NUMBER=";A:P=P+6:T3=T3+1
190 IF B<>0 AND B<>64 AND B<>255 THEN PRINT "WRONG FILE TYPE":CLOSE#X:STOP
200 UNTIL EOF#X
210 PRINT:PRINT
220 PRINT "TOTAL NUMBER OF RECORDS:";T1+T2+T3
230 PRINT "TOTAL NUMBER OF STRINGS:";T1
240 PRINT "TOTAL NUMBER OF INTEGERS:";T2
250 PRINT "TOTAL NUMBER OF F.P. NUMBERS:";T3
260 CLOSE#X
```

Bubble Sort on C64

by Lionel Jack

This is a Two-way Bubble Sort for the Commodore 64. On running, the program will sort positive numbers from the lowest to highest values - the Rem statements show alterations to be made to sort from highest to lowest.

Line 160 converts the results to two decimal places, but can be omitted if desired (with the removal of 'FNR' in Line 180).

This example sorts 10 numbers, but can be extended simply with the use of Dim statements; ie, *Dim A(25)*, *For I=1 to 25*, etc.

```
10 PRINT "clr";CHR$(144);POKE 53281,1
20 C=0:P=1
30 FOR I=1 TO 10
40 PRINT TAB(4)"NUMBER" I;:INPUT A(I)
50 A(P)=A(I):C=C+A(I):P=P+1
60 NEXT I
70 D=C:REM D=1
80 FOR I=1 TO 10
90 FOR P=1 TO 10
100 IFA(I)>=A(P) AND A(P)<D THEN D=A(P):REM >=< and <=>
110 IFA(P)<=D THEN V(I)=P:REM <=>
120 NEXT P
130 A(V(I))=A(V(I))+C:D=C:REM +C becomes -C and D=1
140 NEXT I
150 PRINT "home"
160 DEF FNR(X)=(INT(X*100+.5))/100
170 FOR I=1 TO 10
180 PRINT TAB(24) FNR(A(V(I)))-C:REM -C becomes +C
190 NEXT I
```

Trace Routine on Amstrad

by Alastair Scott

The Amstrad Trace routine is very unsatisfactory, as it prints the current line number at the cursor position and corrupts the display. The routine here remedies this.

Type in the listing, which will Poke in the necessary data in to memory - between &A000 and &A0A7. Run the program, and type: *Step.On:Tron* to change to the new Trace. Now, on running a Basic program, the line number being currently executed will be printed at the bottom of Window 7, and the program will wait for the Tab key to be pressed before continuing with the next line. To return to normal program control, type: *Step.Off:Tron*. In the course of execution, the program (obviously) redefines the Tab key. To return to normal, type: *Key Def 68,0,9*. NB. This was developed and tested on a CPC464.

```
10 Single Stepping
20 by Alastair Scott
30 MEMORY &9FFF:MODE 2:cs=0
40 FOR a=&A000 TO &A0A7
50 READ a$:POKE a,VAL("&"a$):cs=cs+PEEK(a)
60 NEXT
70 IF cs<>18787 THEN PRINT CHR$(7)"DATA ERROR":END
80 CALL &A000:PRINT "STEP.ON and STEP.OFF command
s initialised.":END
90 DATA 01,09,A0,21,21,A0,C3,D1,BC,11,A0,C3
100 DATA 25,A0,C3,38,A0,53,54,45,50,2E,4F,CE
110 DATA 53,54,45,50,2E,4F,46,C6,00,00,00,00
120 DATA 00,3E,44,06,00,CD,27,BB,3E,C3,32,5A
130 DATA BB,21,3E,A0,22,5B,BB,C9,F5,CD,37,BD
140 DATA F1,C9,E5,D5,C5,CD,38,A0,47,21,A2,A0
150 DATA 7E,FE,00,20,23,78,FE,5B,28,05,CD,5A
160 DATA BB,18,44,21,A2,A0,34,CD,78,BB,22,A3
170 DATA A0,3E,07,CD,B4,BB,32,A5,A0,26,01,2E
180 DATA 19,CD,75,BB,78,CD,5A,BB,78,FE,5D,20
190 DATA 22,3A,A5,A0,CD,B4,BB,2A,A3,A0,CD,75
200 DATA BB,21,A2,A0,36,00,06,64,C5,06,00,10
210 DATA FE,C1,10,F8,3E,44,CD,1E,BB,28,F9,CD
220 DATA 25,A0,C1,D1,E1,C9,00,00,00,00,00,00
```




Calling America – on the cheap

David Wallin explains Packet SwitchStream (PSS), the inexpensive way to log-on to US Bulletin Boards

This week's column looks at a cheaper way to access US Bulletin Boards – you can save up to £30 off an hour's call, for example.

This is via a system called PSS, Packet SwitchStream.

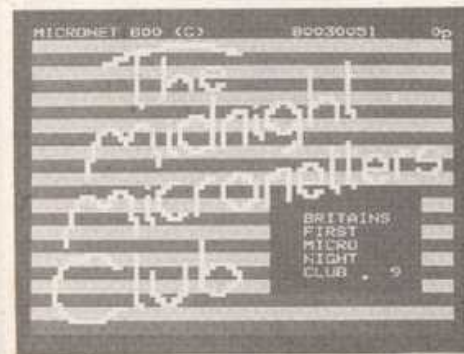
Very basically it's a network of phone lines, which can be accessed from most local phone exchanges, like Prestel, and therefore you are only charged at a local call rate. To explain PSS in full would fill a couple of fair-sized books, but today I'll give you an introduction and later we'll take a bit more space and go into it in more detail.

The phone lines used for the PSS system are specifically for computers and data transfer only, and so are of a higher quality and data is sent to a much higher standard. The only time that the data is sent over a normal phone line is when it goes from your house to the local exchange. Another reason that PSS uses dedicated phone lines is that it uses 'time division multiplexing'.

Time division multiplexing means that lots of calls use the line at the same time. The way TDM works is this: each person who is using the line is on it for a very short time.

They each get enough time to send one packet of data. Heavyweight machines called multiplexors sort out who has sent the data and where it should go.

A 'Packet' of data is a string of data 128 characters long, with a few more characters added saying where the data is going



to and where it came from. Hence, the name, Packet SwitchStream: it switches between packets of data on different streams.

Although it may sound as if it would be very slow sending data in 128 byte long

bits it is in fact so fast that you won't notice it unless you spend hours looking for it.

To get PSS you need a computer and a modem capable of handling either 1200/1200 full duplex, 1200/75 or 300/300 baud. Also it must be able to handle the following data format: 8-bit word length, one stop bit, and no parity (8,N,1).

Most software will give you this and if yours doesn't then look around for soft-



ware that does.

To use PSS you must contact the PSS Customer Service Group to obtain a NUI (Network User ID), a 12 character password. This proves to the PSS exchange that you are a known user – and so it can charge your bill.

Using PSS is not the easiest pastime in the world. Having dialled up you start by typing in:

Return Return D1 Return

The computer then prints up a message, similar to:
LON/A02-19201059.

This is London, the area of the PSS exchange/the number of the 'port' you have been given. Next you type in your NUI, which will be displayed on-screen. The computer will respond with, *Add*, upon which you enter the PSS number of the service you want. For the on-line directory of PSS services the number is 21920100515, the UK dialling code is 234, so you would type; A21920100515 (A for address).

If +COM then appears, connection has been achieved. When you log-off, PSS will give you some info on how long you were on-line, etc.

PSS can be used to most of the large, developed countries in the world, and some of the smallest, spanning Australia, Brazil, The Ivory Coast, the USA and the

UK. PSS is only the name of the British service, Japan for instance has DDX-P and Venus-P, and the USA has 10 different services.

To dial a foreign country using PSS is not too difficult, but some networks are different, basically you just give a '9' then the Data Network ID code (DNIC) for the network you want before the number. International PSS calls are routed via the IPSS, the International Packet SwitchStream.

Just because it's cheaper than a normal phone call, don't assume it's cheap in its own right. For an hour to the USA, phone charges on a normal call are £36, but on IPSS it's only £6 – the connect time charge only. But you also have to pay for the amount of data which you send.

More details on PSS can be obtained from Packet SwitchStream, Customer Services Group, G07 Lutyens House, 1-6 Finsbury Circus, London EC2M 7LY (01-920 0661).

Or watch this space for more information about PSS, including how to make it work exactly how you want it.

It is unlikely that you would use PSS to



call a number in the UK, but for services in the US, such as Compuserve and The Source, which are massive information services, PSS is essential as you will find that you spend ages on-line.

If you have any queries, tips or comments to make about any aspect of micro communications, David Wallin would love to hear from you.

Write to him at *Popular Computing Weekly* 12-13 Little Newport Street, London WC2H 7PP.

At PAGE 6 Magazine we recently had a readers survey. Here's what some of our existing readers said.

- | | | | | |
|---|---|---|--|--|
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| "The best in Great Britain" | "Well set out - programs I have tried have been good quality" | "Page 6 is simply the best magazine available - well done" | "A first class magazine dedicated to Atari owners" | "Page 6 is marvellous, great! It is of highest possible standard - I could never miss it" |
| "Page 6 has done nothing but become better each issue!" | "A very well published magazine - easy reading" | "A well balanced and informative magazine. I may have lost interest without it!" | "A good magazine and getting better" | "Brilliant and getting better with each issue" |
| "Very good magazine - it has helped me a lot" | "Excellent and informative" | "Indispensable!" | "Great magazine!" | "The best Atari magazine for beginners" |
| "A great magazine that I look forward to receiving" | "Every Atari user shouldn't be without it" | "A very fine magazine, keep it up!" | "Good value for money and full of good articles, etc." | "I think it is an excellent magazine and I look forward to it" |
| "Excellent" | "Please continue to the same quality standard" | "Brill! I look forward to it" | "Without doubt, the only Atari magazine worth its salt" | "Excellent magazine - I have got every one" |
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| "Excellent mag, improves with each issue. Good balance of content" | "Very interesting and useful" | "Super mag" | "Wouldn't do without it - very informative" | "Excellent for reviews, games, tutorials, etc. - would not like to be without it. Always excited by its arrival" |
| "The best Atari mag on the market" | "The reviews are very interesting and informative" | "Wouldn't be without it" | "Probably the best value for money magazine I buy. Please keep up the good work" | "I wish I had known of its existence earlier. Keep on going, you're doing splendidly" |
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New Releases

Graham Taylor looks through this week's new arrivals

Amstrad

Program Basic + Type Utility Machine Amstrad Price £5.00 Supplier AM Scott, 30 Talbot Street, Grangemouth, Stirling-shire, FK3 8HU

Program Bomb Jack Type Arcade Machine Amstrad Price £8.95 Supplier Elite, Anchor House, Anchor Road, Aldridge, Walsall WS9 8PW

I can't understand why *Bomb Jack* is so successful, I must be missing something in the game which has already proved very successful on the Spectrum and Commodore and has now been con-



verted to the Amstrad.

The game involves bouncing around the screen, as high as you can and guiding your bounce with the joystick trying to clear the screen of bombs. The usual weebles get in your way and there are the usual bonus objects which allow you to leap safely on your enemies.

The only possible point of interest I can find in the game, which is, I admit, a very exact replication of the arcade machine original, is that each screen is played out on a scenic tourist spot from around the world.

Well, I suppose all that computing power that isn't being used on the graphics or game logic might just as well be used for picturesque backgrounds.

Still, there are evidently plenty of people who do find *Bomb Jack* a thrilling game, and this is certainly a professionally produced conversion.

Program Gunfight Type Arcade Machine Amstrad Price £9.95 Supplier US Gold, Unit 10 Parkway Industrial Centre, Heneage Street, Birmingham B7 4LY

Program Starquake Type Arcade Machine Amstrad Price £8.95 Supplier Bubble Bus, 87 High Street, Tonbridge, Kent TN9 1RX

Program The Key Type Utility Machine Amstrad Price £9.90 Supplier Gatsolve, 135 Manor St, Accrington, Lancashire BB5 6BZ

Program Tomahawk Type Arcade Machine Amstrad Price £9.95 Supplier Digital Integration, Watchmoor Trade Centre, Watchmoor Road, Camberley, Surrey GU15 3PJ

Tomahawk is an extraordinarily complex simulation of helicopter flight. Helicopter flight, it should be said, is even more complicated than flying a plane since you have to worry about controls for torque and vertical lift, aside from everything else.

What makes the game, though, is that more than almost any other simulation, the arcade demands of things to blow up and the intellectual demands of flying the helicopter are perfectly mixed. There is a powerful impression or realism, thanks not only to the sheer accuracy of the controls, but also due to the very impressive 3D graphics. However, there are also helicopters, tanks and field guns to attack.

This Amstrad version of the game is almost exactly the same as the Spectrum version,



Pick of the week

Karate

Program Karate Type Arcade Machine QL Price £14.95 Supplier Eidersoft, The Office, Hall Farm, N Ockendon Upminster, Essex RM14 3QH

Well, knock me down with a glancing blow, would you believe it? An absolutely marvellous QL game, which gives new heart to those currently glumly pondering the fate of Sir Clive's misunderstood machine.

Karate is, obviously, an *Exploding Fist* variant, but it's beautifully presented and uses the higher screen resolution the QL is capable of.

The central figures are large, highly detailed and smoothly animated, backgrounds are equally impressive. Combat moves can be

controlled by joystick. Using combinations of diagonals and fire button, a possible 16 moves are available.

Aside from bashing the living daylight out of a single opponent, later screens bring in more assorted problems, like whizzing spheres, time tests where you have to kick a series of what look like rugby balls in a specified limit, and finally several inscrutable but vicious opponents on the screen at once.

Sound is minimal but fairly effective - about the closest to a bone-cracking thwack the QL can manage is a sort of pweerk, but it's okay. An absolute must for everybody looking for arcade games for the QL - and where were games like this a year ago when the machine really needed them?

which was good enough. It's perhaps a shame that the Amstrad's extra features like sound were not utilised. Nevertheless for Amstrad owners into flight simulators this is the one to go for.

BBC

Program Bruce Lee Type Arcade Machine BBC Price £9.95 Supplier US Gold as above

Program Cosmic Battlezones Type Arcade Machine BBC Price £9.95 Supplier US Gold as above

Program Early Maths Type Educational Machine BBC Price £7.95 Supplier Willow Software, The Willows, Wroughton Lane, Congresbury, Bristol BS19 5BQ

Program Early Words Type Educational Machine BBC Price £7.95 Supplier Willow Software as above.

Program Fontwise Type Utility Machine BBC Price £20 Supplier Clares Micro Supplies, 98 Middlewich Road, Rudheath, Northwich, Cheshire CW9 7DA

In recent months Clares has become best known for creating *Fleet Street Editor* for Mirrorsoft, but the company

has been producing good quality BBC utilities for a while now. Latest is *Fontwise Plus*, a disc-based program which allows you to use a whole range of different font styles on text files created using *Wordwise*, *View* and some versions of *Mini Office II*.

Although essentially the system only works with unformatted text, this is, in practice, not much of a restriction - you can do all formatting of text, determining line length, margins, justifying, underlining, etc. You may switch between any of the 12 fonts supplied, from writing a document, using control codes, and those 12 fonts may also be printed condensed or magnified.

It works well, and more importantly, it works quite speedily. The typical problem with font programs, which require data to be sent in large chunks to the dot matrix printer, is that they take aeons to do the job - not the case here.

Fontwise Plus is a good utility, well documented, and fairly easy to use.

Commodore

Program Empire Type Arcade Machine Commodore 64 Price £9.95 Supplier Firebird, Wellington House, Upper St Mar-

New Releases

tins Lane, London WC2H 9DL

Program Guitar Studio 1 Type Utility Machine Commodore 64
Price £9.95 cassette, £11.95 disc
Supplier Micro Music, St Michaels Chambers, Spurriergate York YO1 1QR

Program Guitar Studio 2 Type Utility Machine Commodore 64
Price £9.95 cassette, £11.95 disc
Supplier Micro Music as above.

Program PSI 5 Trading Company Type Strategy Machine Commodore 64
Price £9.95
Supplier US Gold as above.

Program Mail 64 Type Utility Machine Commodore 64
Price £14.95
Supplier Initiative Managers, 96 Worcester Road, Malvern, Worcestershire.

Mail 64/1541 looks to be a useful utility for clubs and other organisations where it is sometimes necessary to send out a series of letters to a large number of people.

The disc-based system combines a database on which names and addresses can be stored.

There are a variety of options to print all or some of those names on to sticky labels.

It works very simply, but well enough. You may flip through and amend existing records, choose which addresses to print by selecting a give line of text or define which files are to be printed, eg. all those with Smith in the surname or whatever.

A straightforward enough program, but well designed and relatively cheap at £14.95.

Program The Comet Game Type Arcade Machine Commodore 64
Price £7.95
Supplier Firebird as above.



Dragon 32

Program Aquanaut 471 Type Arcade Machine Dragon 32
Price £5.95
Supplier Microdeal PO Box 86, St Austell, Cornwall.

Program Rommel 3D Type Arcade Machine Dragon 32
Price £5.95
Supplier Microdeal as above.

Program The Vortex Factor Type Arcade Machine Dragon 32
Price £5.95
Supplier Microdeal as above.



MSX

Program Gunflight Type Arcade Machine MSX
Price £9.95
Supplier US Gold as above.

QL

Program Assembler Workbench Type Utility Machine QL
Price £24.95
Supplier Talent, Curran Building, 101 St James Road, Glasgow G4 0NS



Spectrum

Program Ballblazer Type Arcade Machine Spectrum
Price £11.95
Supplier Cosmic Pop, PO Box 475 London E4 9UD

28.95
Supplier Activision 15 Harley House, London NW1



Program Music Box Type Utility Machine Spectrum
Price £11.95
Supplier Cosmic Pop, PO Box 475 London E4 9UD

Program Spiney Norman Type Arcade Machine Spectrum
Price £1.99
Supplier Firebird as above.

Program Raging Beast Type Arcade Machine Spectrum
Price £1.99
Supplier Firebird, Wellington House, Upper St Martins Lane, London WC2H 9DL

Raging Beast (which seems to be called Ole on the title screen) is a matador simulation although, fortunately for those of us with squeamish sensibilities, the bull doesn't get stabbed, dard, or any other way come to a sticky end. Good news for animal lovers.

The point of the game is simple, to make as many passes as you can, which basically means holding out the red cloak and hoping you can get out of the way when the beast

comes for you. If you get stomped on by the bull, aside from acrobatically spinning through the air, you can redeem the situation by attempting to jump on to the bull's back - the longer you can hang on the more points you get. If you become sufficiently dextrous with the cape to score enough 'passes', a hoop is thrown from the audience for you to place over the bull's head. Chances are, though, that your most common sight will be the two guys with the stretcher once more carting your battered body out of the arena.

Rather a clever game in many ways, certainly a change. My only real objection is that the graphics, although nicely animated, are incredibly small.

Program Seabase Type Arcade Machine Spectrum
Price £1.99
Supplier Firebird as above.



Program The Planets Type Strategy Machine Spectrum
Price £9.95
Supplier Martech House, Bay terrace, Pevensey Bay, E Sussex BN24 6EE.



Top Twenty

- | | | |
|--------|--|------------------|
| 1 (2) | Commando (Various) | Elite |
| 2 (6) | They Sold (2) (Spectrum, C64, Amstrad) | Hit Squad |
| 3 (1) | Bomb Jack (Spectrum, C64) | Elite |
| 4 (9) | V (Spectrum, C64) | Ocean |
| 5 (-) | PSI-5 Trading Company (C64) | US Gold |
| 6 (4) | Comp. Hits 10 Vol 2 (Various) | Beau Jolly |
| 7 (7) | Way Of The Tiger (Spectrum, Amstrad) | Gremlin Graphics |
| 8 (17) | Superbowl (Spectrum, C64) | Ocean |
| 9 (8) | Green Beret (Spectrum) | Imagine |
| 10 (5) | Last V8 (C64, Amstrad, Atari) | Mastertronic |



Commando - No 1

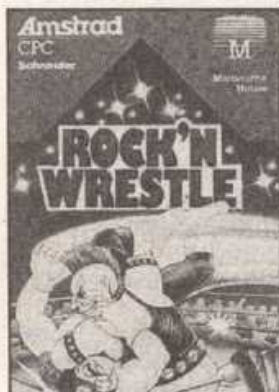


Bombjack - going down

Top Tens

Amstrad

- | | | |
|--------|---------------------------------|-------------------|
| 1 (-) | Commando | (Elite) |
| 2 (1) | Last V8 | (Mastertronic) |
| 3 (4) | They Sold (2) | (Hit Squad) |
| 4 (2) | Spindizzy | (Electric Dreams) |
| 5 (5) | Way Of The Tiger | (Gremlin) |
| 6 (3) | Into Oblivion | (Mastertronic) |
| 7 (-) | Saboteur | (Durell) |
| 8 (10) | Comp Hits 10 (2) | (Beau Jolly) |
| 9 (7) | Get Dexter | (PSS) |
| 10 (-) | R'k 'N' Wrestle (M'bourne H'se) | |



Rock 'N' Wrestle - at No 10

Atari

- | | | |
|--------|---------------------|-----------------------|
| 1 (1) | Last V8 | (Mastertronic) |
| 2 (2) | One Man & his Droid | (Mastertronic) |
| 3 (-) | New York City | (Americana) |
| 4 (3) | Action Biker | (Mastertronic) |
| 5 (-) | Shamus | (Americana) |
| 6 (-) | Ollies Follies | (Americana) |
| 7 (10) | Arcade Classics | (Datasoft) |
| 8 (-) | Scouter | (Americana) |
| 9 (9) | Steve Davis Snooker | (CDS) |
| 10 (4) | Fighter Pilot | (Digital Integration) |

BBC

- | | | |
|---------|---------------------|---------------|
| 1 (1) | Commando | (Elite) |
| 2 (3) | Winter Olympics | (Tynesoft) |
| 3 (2) | Karate Combat | (Superior) |
| 4 (6) | Tennis | (Bug Byte) |
| 5 (7) | Citadel | (Superior) |
| 6 (4) | Comp. Hits 10 Vol 2 | (Beau Jolly) |
| 7 (5) | Phantom Combat | (Doctor Soft) |
| 8 (-) | Speech | (Superior) |
| 9 (-) | Moon Cresta | (Incentive) |
| 10 (10) | Yie Ar Kung Fu | (Imagine) |

All figures compiled by Gallup/Microscope

Commodore 64

- | | | |
|--------|-----------------------|----------------------|
| 1 (-) | PSI-5 Trading Company | (US Gold) |
| 2 (3) | They Sold (2) | (Hit Squad) |
| 3 (1) | Bomb Jack | (Elite) |
| 4 (5) | Uridium | (Hewson Consultants) |
| 5 (4) | V | (Ocean) |
| 6 (8) | Kane | (Mastertronic) |
| 7 (-) | Off The Hook | (Off The Hook) |
| 8 (-) | Spellbound | (Mastertronic) |
| 9 (-) | Breakdance | (Americana) |
| 10 (-) | Hardball | (US Gold) |

Spectrum

- | | | |
|--------|---------------------|----------------|
| 1 (1) | Green Beret | (Imagine) |
| 2 (10) | Starstrike 2 | (Realtime) |
| 3 (6) | V | (Ocean) |
| 4 (-) | Superbowl | (Ocean) |
| 5 (2) | Bomb Jack | (Elite) |
| 6 (3) | Hvy On The Magik | (Gargoyle G) |
| 7 (4) | Way Of The Tiger | (Gremlin) |
| 8 (8) | Turbo Esprit | (Durell) |
| 9 (-) | Sport Of Kings | (Mastertronic) |
| 10 (-) | Sam Fox Strip Poker | (Martech) |

NEXT WEEK

The next issue of *Popular* will be packed with all the latest news and reviews - the brand new products from the Sinclair and Commodore shows - plus all our regular features

● Colour Feature

The Price of Magik is the brand new addition to Level 9's impressive catalogue. Read our comprehensive review - plus playing tips

● At last, the Amiga arrives

Two shows take place next weekend of particular interest to Commodore and Sinclair users. We'll have a full report on the UK launch of the Amiga at the Commodore Computer Show - plus all the other goodies on display, of course. And news from the 19th ZX Microfair - any bets on Amstrad taking a stand?

● Readers' Survey

Your chance to tell us what you think of the magazine.

Place your order for *Popular* now - you know it makes sense!

The Hackers



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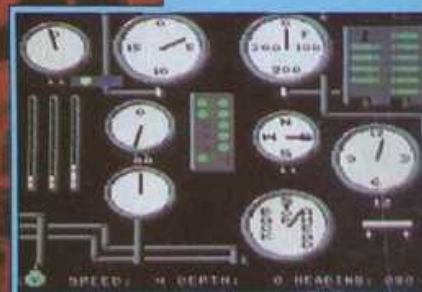
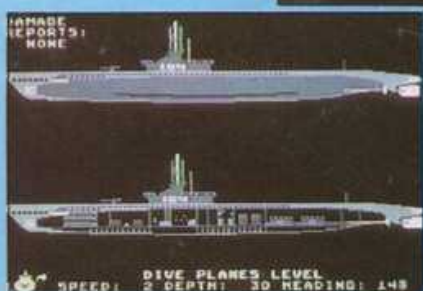


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