PRICE LIST

New:

PC-PSU with supply for 2 Floppies and MB02	36,00 €
MB02-Printerlead	13,00 €
Spectrum +2A, new and original package, complete	220,00 €
Diskinterface D80 + Flopppy for Didaktik or Spectrum	111,00 € KS
B-Laufwerk for D80	60,00 € KS
Proface AT Extern (Keyboardinterface for connecting PC-Keyboards to Spectrum)	55,00 € KS
Proface AT intern	52,00 € KS
Melodik AY-Soundbox (unboxed)	21,00 € KS
128k upgrade Kit for 48k (only Hardware Specialists)	21,00 € KS
128k upgrade Kit incl. building inside (send Spectrum board)	52,00 € KS
Mice Maus (Mouse using Kempston Port)	25,00 € KS
+2 Cassetterecorder	36,00 €
Floppy Disc drive (1,86 with MB02, 720k with Opus, 780k with +D) Please specify	24,00 €
PSU for +2A/B and +3 or PSUI for +2 (also 48k and 128k) Please specify	31,00 €
FDD lead for 2 drives	4,00 €
Microdrive	25,00 €
Multiface 128 (working also on 48k)	26,00 €
Dust Cover 48k+/128k	8,00 €
Keyboard membrane 48k	11,00 €
Keyboard membrane Spectrum +/128k, new quality, not aging	21,00 €
Printer Ink Ribbon original STAR LC 10 , Doublepack 2 pieces	11,00 €
Microdrive Cartridges (ex-software)	3,50 €
Plus 3 Tapelead	10,50 €
Spectrum +2 Lightpen	36,00 €
Spectrum +3 Lightpen	27,00 €
Silverpaper for ZX Printer	5,00 €
Phaser-Pistole with Software (Tape or +3)	20,00 €
+3 drive belt	2,00 €
Wafadrive Cartridges 16K= 7,00 €, 32K= 7,50 €, 64K 8,00 €	

Used:

Sinclair ZX Spectrum 128k, complete with all cables	144,00 €
Sinclair ZX Spectrum +2, complete with all cables	70,00 €
Sinclair ZX Spectrum +2A, complete with all cables	65,00 €
Sinclair ZX Spectrum +3, built in 3li drive, complete with all cables	100,00 €
Sinclair Spectrum 48k (Gummy), complete with all cables + Introduction Tape	64,00 €
Sinclair Spectrum 48k +, complete with all cables + Introduction Tape	64,00 €
+3 Drive (tested)	74,00 €
Interface I	62,00 €
Opus Discovery Diskinterface with 1 x 720k Drive (new ROM)	118,00 €
Joystickinterface 1-Port 3,00 € 2-Port 11,00 €	
Joystick (many different)	2,50 €
Sinclair SJS-Joystick (+2/+3)	6,00 €

Also we have a lot of Software offers and books. Please contact us and we will send you our pricelist.

Products marked with 8BC or KS are sold in the name of 8-Bit Company or Kompakt Servis. We organise the business.

Prices excluding postage. Delivery as long as stock lasts.

ZXF **CHRISTMAS 2002/Issue 3**

Contents

If you enjoy ZXF and you want it to continue then consider yourself duty bound to let me know this (mail@cwoodcock.co.uk). All other feedback will be gratefully received also - criticisms (please be kind), improvement suggestions and notifications of any errors you think you've spotted are essential for this sort of project to succeed.

If you would like to contribute to future issues of ZXF - even if it's just to write a letter - **please do**; contact me again by the email address above.

Editor: Colin Woodcock (mail@cwoodcock.co.uk)

Website: www.zxf.cjb.net

Contributors this issue: Martijn van der Heide, Andrew Owen, Equinox Tetrachloride, Shaun Bebbington, Samir Ribic, John King, Thomas Eberle and all my letter writers. Thanks everyone. You make the difference.

edit

2002: IIRC

2002 has been a good year for Spectrum fans - fitting since it's been the 20th anniversary of Sir Clive's much-loved machine. We've seen the emulation scene taken to a whole new level with such innovative releases as SPIN, Klive, Es.pectrum and Spectaculator; we have a brand new ROM to play with in Andrew Owen's SE BASIC - now very close to completion (and let's not forget Geoff Wearmouth's 'Sea Change' ROM, which *is* now complete); we've seen new PC utilities released (eg, SevenuP); we've seen new hardware concepts evolve (eg, the ZXSE). In the meantime, the resources we're all familiar with have continued to exapnd and evolve. WOS, for example, has a new chat room service to compliment its increasingly popular discussion forum. Is there no end to this site's capacity? The recent decision to host the *entire* collection of CRASH issue recently scanned by Stephen Stuttard would suggest not.

Furthermore, 2002 appears to have been a year in which retro-computing has taken large steps towards mainstream culture. Shaun bebbington's now regular retro slot in the weekly Micro Mart springs immediately to mind, as does Amstrad's 'e-mailerplus' telephone/email system, with its built-in Spectrum games compatibility. Perhaps more significant still are magazine releases such as 'games ™' - issue one of which dedicated over 25 pages to retro material. And is it just me, or do there appear to be more and more 'newbies' announcing themselves to comp.sys.sinclair these days. Certainly the price of Spectrums on ebay - and they're hardly in short supply - would seem to indicate that there are plenty of people out there who want to own a Spectrum. Are these all just 'investors'? Personally I hope the answer to this question is 'no'. I hope that at least some of these buyers are plugging their prizes into TVs and playing games and writing BASIC, just like they used to. And I hope they're showing all this to their kids and letting them experiment too. After all, when the Spectrum hits its 100th anniversary in 80 years time we want somebody around then to at least acknowledge this, don't we?

And, naturally, I hope also that many of you will consider ZXF to have been a good thing to have happened to the Spectrum scene in 2002. This issue in particular has seen the greatest amount of collaboration in it's (brief) history so far, which is exactly what I'd hoped for when planning issue 1. I've learnt over the past few months that the best way to get people to contribute is to ask them directly, so I'll be doing a bit more of that in the coming year.

From this point onwards, ZXF will be relaxing its publishing shedule to three issues per year, so you can expect to see ZXF04 (material for which is already being accumulated) in April. I feel I've put a lot into getting this ball rolling over the last 6 months and would like to establish now a regular routine that is both sustainable for me and gives everyone who wishes to a fair chance to contribute.

And so to 2003 - what will await us there? For now, at least, if you're celebrating a festival this season, I hope it is a peaceful one. On the subject of peace, we might not be so lucky next year: read the story of 'Warajevo' and you will be reminded that those drawn into distant wars are not so dissimilar to us as we might sometimes find ourselves assuming.

Until next time.

Colin Woodcock

mail@cwoodcock.co.uk

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8-bit show

SINTECH, one of the very last suppliers of Spectrum hardware and software (see advert, page 2) are hoping to organise an 8-bit extravaganza in Stuttgart next year. The event, which will welcome Spectrum, C-64, Amstrad and Atari users, will include a soccer tournament with teams for each computer (don't worry - Alan Sugar will not be involved) alongside all the usual range of computing and drinking activities.

SINTECH want to know what sort of support there will be for such an event and have asked for help and suggestions; as always, the bottom line is that if you want to see it happen you have to let them know. **sintech@online.de** is how you do this.

RZX Archive

RZX is now starting to firm up its status as the new standard in input recording, with **Spin, Es.pectrum** and **RealSpectrum** now supporting this format on a Win/DOS PC and **Fuse** taking up the honours for Unix. Suitably, then, a new archive for complete game recordings has now gone online at **www.rzxarchive.co.uk**, courtesy of **Daren Pearcy**, and it's now starting to fill up with a number of titles for you to view from begining to end; from those very first, virgin shots to that final, exhausted, blood-drenched victory cry. Who needs DVDs this Christmas?

How much?

Amazing **ebay** price of the month award must go to the recent auction of 250,000 eight bit games in new or sealed condition, including such titles as Lord of the Rings, Manic Miner, Trashman and Dun Darach. Starting at just £2.00 for the lot, the bidding swiftly rose into the hundreds, then thousands of pounds, finally peaking at an astonishing £4,600.

Micro wars

Time for a shameless self-plug. **Micro Mart**,

host to Shaun Bebbington's weekly *Retro Computer Mart* column (see the **read** section for more about this) has embarked upon a popstars-esque knockout contest to determine the greatest ever home computer. Pitting 16 popular formats against each other, the battle commenced in issue 723 with our favourite argued for by yours truely versus the **Oric Atmos** supported by Mickael Pointier. Needless to say, the Spectrum romped through to the next round, taking just over 60 per cent of the online voting at the Micro Mart forums, however the actual numbers of votes cast were a bit on the low side; more will be needed to see the Spectrum win against its next opponent in round two: The Vic 20.

If you missed the articles, their complete text can be found online at the Micro Mart site (you need to register, but it's free to do so).

Disk Preservation

Hot on the heels of the Spectrum Tape Preservation project comes the **Spectrum Disk Preservation (SDP) Project**, the purpose of which is to gather perfect EDSK (extended DSK image - a file format designed to describe copy-protected floppy disk software) images for disks that aren't already available on **The .TZX Vault** or **World of Spectrum**. This latest project to preserve all those +3 software releases is the joint work of Andy Barker and Steve Brown, and can be found at **www.worldofspectrum.org/sdp/**. Of course they'll need your help; if you own any +3 titles you can find out if they're needed at the site and also how to convert them into the the EDSK format.

Graphic stuff

Pavel Plíva has clearly been a rather busy chap as of late. In the last few weeks he's not only updated his Windows utility **ZX Screen Snapper** to version 1.6, he's also released two more entirely new titles for the platform, **ZX Maps Creator**, and **ZX Screens**. Pavel's site is at **http://**

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zx-spectrum.wz.cz/ and you can also download the software - of course - from WOS at **www.worldofspectrum.org/utilities.html**.

And, on the subject of graphics, **Jamie Tejedor Gómez** (aka Metalbrain) has just released version 0.71 of his rather splendid **SevenuP** editor, which you can get from **www.speccy.org/metalbrain.**

ZX Digest

is the name of a new Spectrum magazine edited by Andy Ryals. At a cost of just €10 or £5 (and that can barely cover the postage, can it?) a subscription will get you 3 colour issues of the mag plus a CD-ROM of all the latest spectrum games/utils/etc from 2000 onwards. Subscrbers also get emailed newsletter and CD-ROM updates. More information is available from Andy's website at **www.zxdigest.dsl.pipex.com/**

Chloe comes home

The concept of the 'SuperSpectrum,' it would appear, is far from dead. Whilst images of a marzipan covered **Loki** might have been the closest we ever got in the 80s (barring - ok - the SAM Coupé), today's hobbyists have not yet given up on the idea. **Mike Wynne** has been working on his **SpeccyBob** project for some time now (**www.speccybob.2y.net**), the Lite version being a Spectrum facsimilie you can pretty much build from off-the-shelf components (yes - even the ULA); the 'full' version, however (some way from completion yet, I gather) promises much more, including selection video modes, IDE interface, and up to 4Mb RAM.

But applause of the moment is due to Andrew Owen, whose **ZX Spectrum SE** (ZXSE) machine - a modified Timex Portugal TC2048 - got its smack on the backside and first real lungfulls of air in October, mere days after ZXF02 'went to press'. You can read more about this in this issue's **int** section.

But it ends not there. Sami Vehmaa, creator of the **ZXATASP** IDE interfaces reported on last issue has now published his own plans for a **Spectrum +5**, which will feature such

goodies as a considerable amount of memory and Compact Flash card support.

CSS FAQ under review

The bible of **comp.sys.sinclair** is to be reviewed, if you hadn't heard already. To do this the CSS FAQ Maintenance Team need your feedback on what must be one of the most comprehensive FAQs on the net already. The following questions have been issued for you to answer - in as much or as little detail as you desire - and then post off to **cssfaq@worldofspectrum.org** (please include with this information also your browser type and version).

1) As a *general rule*, do you find the current content of the FAQ to be accurate?

2) Do you find the current style and layout of the FAQ adequate, or would you prefer a new design?

3) Do you use the Offline version of the FAQ? Should the Offline version be "plain", with an enhanced version (same content) available Online?

4) Which sections of the FAQ do you find most useful, most of the time?

5) Which sections of the FAQ do you feel are unnecessary, or need significant work to become useful?

6) Would you prefer that a smaller, completely overhauled FAQ be released initially, with existing and updated/expanded content progressively added as it is verified?

If so, which sections do you believe are most important to have available immediately?

7) Are commonly used peripherals (Interface I, Interface II, ZX Printer, ZX Microdrives, Kempston Joystick/Printer interfaces, etc. etc.) adequately covered, or should more information be included with links where necessary to external resources?

8) Are non-Sinclair/Amstrad machines adequately covered (Timex variants, etc.) ?

9) Should a more distinct section be created and maintained for current developments (SE

Basic, Spectrum SE, Sprinter, etc.) including a summary of ongoing hardware projects and current upgrades, with appropriate links?

10) Which site do you usually visit to read the FAQ?

WOS 7 years young

The **World of Spectrum** website passed the seventh anniversary of its creation at the end of November. The birthday treat hinted at by **Martijn van der Heide** in his interview (this issue - see **int**) about his site is a new chatroom service to compliment his existing forums area.

WOS forums has been growing steadily in its popularity over the last few months, to the extent that some have suggested it to have become **the** place on the net for Spectrum-related discussion, where previously the newsgroup **comp.sys.sinclair** has always held this title (there has recently been quite a bit of debate on **css** about the intrusiveness of off-topic posting, which has ranged from the usual "my-favourite-eighties-crisps-brand-was..." sort of discussion to a far more vitriolic debate on the suitabiity of the death penalty for the late Myra Hindley). Until now the main congregation point for online Spectrum *chat* has been the **#Speccy** channel on **astrolink**, which required dedicated IRC software; it will be interesting to see how popular WOS Chat becomes now that the need for this has been removed...

New retro

games ™ is a new multi-format magazine from **Paragon Publishing** which hit the UK high streets in the final week of November. The larger part of this is dedicated to new releases on the PS2, the GameCube, the Xbox and so on. There is also, however, a very meaty retro section - 27 pages in all - and Spectrum fans will be delighted to hear that this particular issue, at least, is pretty much presented as an issue of **CRASH** magazine. Starting with a recycled Oliver Frey front cover (the original CRASH issue 1 cover, in fact) and the CRASH logo itself re-worded as ' retro' the layout mimicks Newsfield' s one

time flagship publication right down to the title fonts. There' s even a feature by **Lloyd Mangram**...

The featured computer this issue is, perhaps unsurprisingly, the ZX Spectrum, which is accompanied by a number of retrospective game reviews (across all formats) and articles, and reprints of a couple of old game adverts (**Pyjamarama** and **Jet Set Willy**) - which is a nice touch. Clearly the focus here is on retro and nostalgia, and I could find no references to any of the new stuff going on in the 8-bit world (not even a reference to emulation, which seems an astonishing omission), but the section makes for a very pleasant read and its choice of presentation style gives you a definate warm, fuzzy feeling.

Is this a sign that interest in retro computing is on the increase? Well clearly it' s a sign that there is a perception that it is. How well the magazine sells will be the determiner of how accurate that perception is, I guess. Issue 2 of **games ™** is out on 23 January.

ZX VGA

More from **Sintech**, who are now taking orders for a new product, a VGA-Box for the Spectrum which will allow you to plug your Spectrum in to a PC monitor. For 128/+2 owners, the box connects straight to the RGB port on your machine; 48/+3/+2A users will have to take their signal direct from the modulator, however. It comes with its own power supply (UK users will need to get hold of a UK mains adaptor - simple enough) and looks set to cost €49 (about £30). **Sintech** need to know first the sort of demand there is likely to be for these items, so if you think you' l be needing one, get over to **www.sintech-shop.de** and email them from there.

BAS2TAP

From ThunderWare Research Centre, BAS2TAP, The utility to convert `BASIC in an ASCII file' to a TAP tape image file, has now hit version 2.0. The download (DOS, Linux or Amiga; or the C source) is at **WOS**.

CRASH on CD to buy

Stephen Stuttard has been a very busy bod. Oh yes. Over the last six months or so he' s scanned every last issue of Newsfield' s **CRASH** magazine - my own personal favourite of the Spectrum magazines - and burned them onto 5 CDs for you and I to buy for less than the cost of the work he' s put into this. Yes, you heard me right - *every* page of *every* issue. He' s even thrown in sample issues of other Newsfield mags (**ZZap!64**, **Amtix**, etc; even the special preview copy of **LM** given away with CRASH 36, although no copies of **FEAR**) and other Spectrum mags (**Your Sinclair** and **Sinclair User**). And - yes - the set also includes the infamous recalled issue 19, complete with the offending Sinclair User parody, *Unclear User* (it' s actually not all that funny).

Stephen' s a bit of a die-hard fan of the Newsfield publications, having already performed this monstrous feet of endurance for the entire ZZap!64 collection as well as participating in the ZZap!64 issue 107 project (a brand new issue of the Commodore magazine). The especially good news is that he' s now thinking of converting some of the other Spectrum titles, such as YS.

The CRASH CDs contain all 98 issues of the magazine, with issues 1-20 covered on CD1, 21-40 on CD2, 41-60 on CD3, 61-80 on CD4 and 81-98 on CD5. What you get is very straightforward - each issue has its own directory with each page stored there in JPEG format (and, in the rather unlikely event that

you don' t have a graphics program capable of viewing JPEG images, one has been provided for you on CD1). Each CD also has a number of extra features: the other magazine scans mentioned earlier, for example; the **Jetman**,

Tamara Knight, **Terminal Man**, etc, sagas all gathered together into their own directories for easy viewing; a special directory with scans showing how the computing press covered the collapse of Newsfield; and so on. And did I mention that every single covertape has also been included? All this will set you back a mere £20.

In case you hadn' t noticed, I' m rather impressed by this piece of work. If, like me, you threw out your entire CRASH collection years ago when, shiny new 286 on your desk, you decided the Spectrum to be a thing of the past; if, like me, you cannot face the horror of what a replacement set via **ebay** might end up costing; if, like me, you fear divorce proceedings would be an inevitability if you ever did get hold of a replacement set, then this collection of CDs will be a blessing from the heavens above.

If you want to get your hands on a set, mail Stephen at **sstuttard@yahoo.co.uk** and he' ll then let you know the address to send your cheque to.

And if £20 is a bit of a stretch at the moment, what with crimbo here to see every last penny out of your pocket, you' l be delighted to know that Martijn van der Heide will be hosting **the entire collection** at WOS (see **ftp://ftp.worldofspectrum.org/ pub/sinclair/magazines/Crash/**). But use this resource sensibly or it' l soon be gone (as was the case when Stephen tried to web-publish his ZZap!64 scans, in fact). If you want the whole lot, buy the CDs.

SE BASIC gets serious

A lot has happened to **Andrew Owen's** update to Sinclair BASIC since last issue. Now close to a 1.0 release, **SE BASIC** has become a lot more visible and a great deal easier to access.

Previously only available via email or by downloading an IPS patch to apply to your Spectrum ROM, SE BASIC can now be downloaded direct from Andrew's new site (which amalgamates both of his old pages on SE BASIC and the **ZX Spectrum SE** - see **int** for more on the latter) at **www.worldofspectrum.org/sinclairbasic/**. The 16k ROM file up for download will slot straight into emulators such as **SPIN** which allow you to choose different ROMs for each of the Spectrum models emulated - in this case the file can be used as a replacement for the standard 48k ROM.

SE BASIC is more than just a 48k ROM replacement, however, and has been designed to run in all Spectrum models. Without wishing to go into too much detail here (we will take a much more in depth look at SE BASIC next issue), an emulated 128 Spectrum will need to have one of its ROMs (there were two for the original 128 and the Plus 2; four for the +3/+2A) replaced with SE BASIC. There are two ways of doing this - one is to get the IPS patches from Andrew's 'Patches' page and create the ROMs yourself (and even this is much easier now than previously, since Andrew now provides patches for the 32k and 64k ROM files used by many emulators for +2 and +3/+2A emulation respectively - ie, the two/four ROMs combined into a single file - rather than just a 16k ROM patch which you then have to concatenate with the other ROM(s) in order to make it 'emulator friendly'); the other way is to download the very latest version of either SPIN or **vbSpec** and select the SE BASIC option there. Yes it really is as easy as that (guess which method I use); both of these emulators will now patch in SE BASIC there and then for you, whichever variant of Spectrum you're using. What's more, says

Andrew, "when a new version of SE Basic is released you can just drop it in the vbSpec directory and use it straight away". Now you can't ask for more than that.

So now there really is no excuse for not having a look at this very exciting upgrade. Apart from all the bug fixes and the hardware support, the editor is just so much better, with new commands to play with as well as enhancements to many of the old ones. Single keypress commands are now a thing of the past and there's even a trendy new font which is much easier on the eye than the Sinclair 'classic'.

And there's more. SE BASIC now has its very own discussion forum at **WOS forums**, and judging from the number of views Andrew's posts have had, there's a great deal of interest in this upgrade. Recently Andrew announced there that he intends to split the project in two: SE BASIC will continue to be his own baby, whilst **Sinclair Extended Basic** will become an Open Source project to be hosted at **http://sourceforge.net/**. It sounds like there's plenty more to come.

AY RIDERS release

Never mind Gareth Gates, the **AY RIDERS** are a collaboration of top tune programmers for the Spectrum 128's AY sound chip. And they have just released an album, no less.
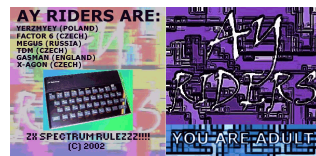
Available as a set of free MP3 downloads for you to burn onto CD if you desire (there's even cover artwork to download too), **You Are Adult** contains 20 tracks from contributors that include **Gasman** and **TDM**.

www.ayriders.prv.pl

Emulator news

VBSPEC

Another update for **vbSpec**, Chris Cowley's 100 per cent Visual Basic Spectrum emulator. Version 1.60 has set out in new directions, adding in support for the ZX Printer and also for the Kempston Mouse. The ZX Printer, as we shall see, seems to be the new darling of the emulators, stepping up to take the place of the Currah Micro Speech (see last issue). In the view of this humble commentator, this has not happened a moment too soon. I like the ZX Printer. A lot.

vbSpec's implementation of Sinclair's printer outputs the... erm... output as a graphic in a separate window, line by line, black 'ink' on grey (silver) paper - just like it was in the old days (but without the grinding noise); there's even a handy little form feed button on the window to advance the paper with. And when you're done you can save your output as a BMP file and clear the roll to start again. So if you're after a text output to feed into a word processor, you will be disappointed (although I suppose you could always try putting the bitmap file through an OCR program), but then **RealSpectrum** has supported printing to a file for some time now for that job. No, the ZX Printer is there for one reason and one reason only: it looks cool. As a final touch there's even the option to toggle between ZX Printer output and Alphacom 32 output (the latter being blue text on a white background rather than black on a silver background).

A further addition to vbSpec is support for Andrew Owen's Sinclair SE BASIC, which can be switched on from the General Settings option in the Options menu. This will work with all models of Spectrum emulated and the ROM file itself is included in the download, making this probably the

most painless way about at the moment to get going with this new BASIC (The version of SE BASIC included is 0.93e, however, which does not include working ZX Printer support, so to get everything working together you'll either have to wait for version 1.0 of SE BASIC or get hold of an earlier version of the ROM in which Printer support worked).

Finally, something I should have mentioned previously is that vbSpec has supported the Timex TC2048 since version 1.30, giving you the possibility of playing around with those extra graphic modes that the Spectrum never got to see. Once again, select this from the General Settings option in the Options menu.

http://freestuff.grok.co.uk/vbspec/

SPIN

Strange and mysterious; SPIN's main new feature (version 0.4; a 0.41 bug fix has since been released) is also ZX Printer emulation, however the idea just ocurred to co-author Paul Dunn - and at around about the same time as it did to Chris Cowley. No collaboration here, just plain old coincidence, although I suspect that the added Kempston mouse support (also a new feature of vbSpec) and support for SE BASIC stretches the coincidence a little too far...

Whatever. SPIN's implementation of the line printer does not include vbSpec's Alphacom 32 button (hardly a difficult feature to add, I suppose) or its form feed button; other than that there's not much to choose between this and vbSpec on this front.

On the issue of the Kempston mouse, there are a few programs availible which support this, I understand; I have an incomplete knowledge of these (anyone who would like to provide a list would be very welcome). Xcellent Software's **The Artist** is reported to,

Emulator news

but I haven' t had any success with this particular title myself yet. Rainbird' s **Art Studio** is also a supposed supporter, although you' ll need a copy of Simon Owen' s **LensKey** (see last issue) to get past the Lenslok security screen. **Ikari Warriors** is purported to be, although I can' t find this on WOS. **Carrier Command**, however, I both found and ran with the Kempston mouse, and it worked a treat.

The simplest demonstration of the mouse I could find was this short BASIC program provided to CRASH magazine (issue 48) by Andrew Haslam. This is a little drawing routine, where the left button lifts the ' pen' off the screen and the right button clears the display.

```
10 LET X =IN 64479
20 LET Y =IN 65503
30 IF IN 64223 = 253 THEN CLS
40 IF IN 64223 = 255 THEN PLOT
X,Y
50 GO TO 10
```

To get this to work you' ll need to enable the Kempston Mouse in the SPIN **Control** options box; once the program is running you can then activate mouse control by pressing **Home** on your PC keyboard (and pressing Home again turns the Kempston Mouse off).

Since the last round-up of emulator news last issue, SPIN has also incorporated OpenGL support for its rendering of the Spectrum screen. You' ll need a pretty quick computer to make use of this feature (and if you don' t have one you are able to turn this off), but the result is the closest I' ve seen yet to a real TV screen.

One final SPIN issue is that the project is to become Open Source, probably using the GNU General Public License (GPL).

http://homepage.ntlworld.com/paul.dunn4/Spin.zip

ZX-EMUL

ZX-Emul is a 48k Spectrum emulator I know very little about, except that it' s written by **Vladimir Yudin** and has just been released in a Windows flavour (version 0.03b). The emulator is heavy on the debugging stuff and accepts snapshot files (.SNA and .Z80) only. You can also use with this emulator alternative 16k ROMs for the 48k machine, such as SE BASIC or Geoff Wearmouth' s **Sea Change** ROM mentioned last issue. ZX-Emul can be downloaded from **www.worldofspectrum.org/emulators.html** in the PC / RUSSIAN section of this page.

Puzzle answers

Look away if you don' t want to know...

Anagrams

1. *FORMAT; RANDOMIZE; BORDER; LLIST.* They are all BASIC keywords.

2. *Nightmare Room; Orangery; Cold Store; Wine Cellar.* They are all locations in Jet Set Willy.

3. *Psygnosis; Gremlin Graphics; Rainbow Arts; Software Projects.* They are all software houses.

ZX Crossword

Across: 3 Hungry Horace; 6 DIM; 8 Anarchy; 9 Players; 12 Chess; 13 Dice; 15 Make-A-Chip; 18 Protek; 20 Away from all this; 21 Statement lost; 22 EastEnders.

Down: 1 Knight Lore; 2 Cyan; 4 Abbey; 5 Address; 7 Match Point; 10 Raffaele; 11 Mirrorsoft; 14 Backgammon; 16 Gauntlet; 17 VERIFY; 19 Hollis.

The unclued answers are all games released by Psion.

wibble

I've nothing to complain about this issue! First, some feedback the article on making a loading screen that featured in the last issue of ZXF. Thanks everyone.

Man, I´ve read the latest ZXF Issue, and it is great, just one information:

BMP2SCR has a build in Screen Editor too. Okay, it is not so complex like 7up, but it is good for touch up these little nasty attribute overflows. You can even convert the SCR to TAP from the viewer (Yesss, it is true) :).

The screen editor is a less known piece of BMP2SCR, even some friends in Germany were surprised as I show it to them, that is because nobody reads instructions...

To access it, just go to the SCR Viewer (First option after loading), then load a screen and press "p" for Paint.

I know, that this is a bit complicated, but the BMP2SCR Adv. version 2.00 will be fully redesigned and will also have a better access to this screen editor.

Greetings

LCD - Leszek Chmielewski

Although the method you detail in issue 2 of ZXF does convert images to Spectrum screens, I prefer using bmp2spec with the GIMP to convert images as I think it generates better images on the Spectrum.

I' ve written a small tutorial on how I used this to create the loading screen for Top Shelf Challenge 3 for the CSSCGC 2002 and put it on my website. You can find it here: **http://rivet.50megs.com/bmp2spectut/ bmp2spectut.html**

Great mag by the way.

Cheers,

Derek Jolly

Firstly, I must congratulate you on another excellent issue of ZXF, and I look forward to the next one.

Secondly, as the BMP to SCREEN$ article focused on a method of creating Spectrum screen images on a Windows PC, I wanted to give my two Rolos and very quickly run through how to achieve a similar effect on the Amiga (WB3+):

1. Find your picture, it doesn' t matter which size it is or which format it is in as long as you have a Datatype which will read it. For best results make sure it has approximately the right aspect ratio, and seriously boost the colour and contrast with PPaint.

2. Using PDHFIC (**www.unsatisfactory software.co.uk/ppmtoscr/**) load the picture in and set the output format to TAP. Select the destination filename and then click on "Convert!". It is often better to set the output format to SCR initially because the resulting image can be checked in Multiview with the SCR datatype. When you are happy it looks OK, swizzle the format back to TAP, or load the slightly dodgy SCR into PPaint to clean it up and then run it back through PDHFIC to reconvert it.

3. Erm, that' s it. If you save the loader and main program code as separate TAP files (ZXAM saves TAPs), these can be joined together easily with the JOIN command (eg. join loader.tap screen.tap code.tap as program.tap) to create the full tape image.

Hope this is of some use to your readers.

Chris

I want to thank you your efforts doing the ZXF magazine, one of the few new things maded for our beloved Spectrum. It' s really good, and it has very usefull sections, like the instructions to made a SCART adapter for the +2a/+3.

But I' ve written to you to make you a little correction: In page 7, you speak about my

spectrum emulator "Es.pectrum" (Thanks :), and say that you cannot format a disc. By default, all disc images are write-protected in my emu. If you go to menu bar, and select "Files"->"Discs" you'll see a checked mark on "Protected". If you remove that, then you can write or format discs. Not only +3DOS, but also CP/M and some other no-standard formats. I think it's a bit useless, since disk images are not saved until you told so, but I want to emulate the little mark in the 3" disks.

Thanks for reading this mail, and I hope you'll continue making such a good magazine :).

Javier Chocano

Thanks for the correction Javier.

Thank you for letting me and others share your works, in fact ZXF 1 and 2. And for free, this is the spirit I like and appreciate. In return I hereby react and comment your 'zine'. I'm surprised to see the number of reactions you had on issue 1. Not every reader is ready to react, this is my own experience, so the number of downloads must be much larger.

What I liked very much is the listing in issue 1, no proper magazine can go without such. I learned a lot from this kind of "programming" in the old days. I still have pages torn from magazines lying around, that hold "exciting" progs that I "one day" like to type in. Your listing will be on that pile. What I'm trying to say is that although of little practical value (sorry), the presence of a listing still feels good to me.

As my interests (and everybody's I suppose) go along the same lines as yours (to give it a name: "what is done on spectrum nowadays and what new possibilities can be found") I read all with pleasure. I suppose that your purpose and the joy you had in collecting this knowledge shines through.

I personally hate it when "alien" matter comes

along with items in which I am interested. We all have other fields of interests apart from Spectrums like you say, but those are the fields in which we differ! Little chance that we share more than 1 hobby? So I'm sorry to say that I do not like the pages with your "reads". But publishing such along other stuff is your privilege, and I will respect this. And the quality is not bad. Did you ever think of turning your 'stories' into adventure games for Speccy? 'Crash' seemes perfect for such because there is atmosphere and a surprising 'outcome' as rewarding end?

What do I expect from Spectrum nowadays? Where we all do our travelling in a modern car on one hand, but we fancy a trip on a Harley Davidson Liberator on a warm sunny day on the other hand. There is no need to explain the attraction of such ride or of that machine. Nor is there need to explain the pleasures of camping, indeed. So Spectrum will bring me nowhere, as I use it for no real purpose. But being "in charge" of that machine still gives me a good feeling.

What work is there to be done on Spectrum. Plenty I think. There are fields in which still new challenges for ingenuity can be found. I will give some examples.

Mobile phones have an elaborate menu through which you 'walk' with only three keys and which displays only one line of text. I think there is room for developping a similar (but more graphic?) system for Spectrum, in the two lower screen lines.

The extra-ROM in the Spec-128 could be used to devellop a Better Basic, even at the cost of the specific 128 stuff. I think that 'BetaBasic' under your fingertips has more charm nowadays than the silly 128 editor.

Keep up the good work,

Roelof . h.

If it were possible to crown someone *Defender of the Spectrum Flame* then the first of this issue's interviewees would be the logical current candidate for the title. His website, *The World of Spectrum* has won awards from around the globe; it is almost certainly the largest, most comprehensive and most well organised site of its type anywhere on the planet. And unlike many other sites, it just continues to grow and develop on an almost daily basis. In many ways, WOS encompasses all that the Internet should be - and how wonderful it is that the inspiration for all this should be our favourite 8-bit micro.

Ladies and gentlemen, please be upstanding for...

Martijn van der Heide

First off, I have to express my sincere admiration and gratitude for The World of Spectrum. It is an awesome achievement; a site few others on the web (and we're talking all sites here, not just Spectrum sites) can measure up to in so many aspects - its size, its breadth, its longevity: your ongoing commitment to its development is astonishing.

blush

Just how long has WOS been going for now and what did it look like when you started?

WoS started on 30 November 1995 (so we're up for our 7th birthday soon!), just as a single page to host my database program SGD. I don't have a copy of it anymore, unfortunately... even the What's New archive doesn't go back further than 1997. All I recall is that it had a medium blue background.

It very soon got some other bits on it, such as a links list and I believe some emulators - all on the same single page. As this was my first own page and the WWW was relatively new itself, it was riddled with animated GIFs and javascript rubbish. Pretty much the

standard page everyone made in their life when joining the Internet :-) It must have been running the original NCSA httpd server on a Sun Sparc 5 running Solaris 2.4. I ran night shifts in the NOC at Getronics at that time and was merely investigating this thing called webhosting, which was new and scary at that time.

Games downloads didn't appear before the first week of January 1997. See my original message in comp.sys.sinclair for its announcement (opposite).

Until that time, I scoured the 'net for downloads to get as many games catalogued as possible. This was all done in those dreaded night shifts - I used to download some 3 floppy disks worth per shift and would sort these as soon as I got home, before going to sleep. The entire NVG archive was thus 'taken care of' which is how I got in touch with Lee Tonks (Blood), its maintainer at that time. He also took care of my SGD updates on NVG.

Where did the passion come from that drove all this work?

Originally it was the Spectrum itself, the

machine, as it was my only computer from 1983 to 1991. Like Sir Clive intended, it seriously triggered my interest in computers ever since the first day I had it (and the ZX81 before it). In fact, I like to think the Spectrum was the main reason why I decided to study Computer Science to begin with! I was always a hardware guy, with no real interest in games (this hasn't changed at all, by the way). The Speccy was the ultimate machine for me to do hardware related projects with and it also allowed me to program the machine on its core level, in easy Z80 machine code. I've experimented a lot with GUI programming and networking with this machine. One of the results was SlingNET, which I did with my roommate at the time (Jeroen Kwast). This was a network that connected the parallel port from an Opus Discovery with an Amiga. Inspired by the Amiga, I decided

start of Linux. Still interested in hardware, I started kernel hacking on Solaris, at work and on Linux, at home. Since WoS runs on Linux (since 1997), I started investigating its core system, its TCP/IP protocol and the various services that are needed to run a site such as WoS. Lucky for me, we had just started being an ISP at work (1995) and I was the (only) system administrator on it. Abuse started to grow, and I rewrote several system services such as FTP, to withstand it. All of the experience from that time is used on WoS. Over time, I learned more and more, such as on-line searching. I added a first search engine on WoS, which was pretty daft (written in shell and awk), not to mention s-l-o-w! I restarted the project in C. These days, the Sinclair Infoseek database that is the core of WoS, is a fully relational database. Its engine is

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From: Martijn van der Heide (mheide@gns.getronics.nl)

Subject: New games site

Newsgroups: comp.sys.sinclair

Date: 1997/01/03

Hi fellow speccy-lovers,

I can announce that our Spectrum download site will be all up and running somewhere next week.

This will be _the_ site to get Spectrum software.

We will start off with around 4000 titles, excluding utilities.

There will be NO duplicates whatsoever, so I bet this will be the largest site on the net (over 100Mb).

Best of all, all software is fully sorted and can be downloaded by point and click on a game name.

And as this is the home of SGD (Spectrum Games Database), you can always get the latest version here.

Feel welcome at:

WWW: http://pampus.gns.getronics.nl/~mheide/spectrum.html

FTP: ftp.ftp.gns.getronics.nl/pub/os/sinclair

Enjoy!

Martijn van der Heide

I wanted a similar GUI on the PC as well and I wrote Workbench!, the GUI that is used by SGD and later also TAPER. SGD was written just because I needed it and nothing else existed at that time that could be used to catalog games. Of course, once you have a database, you want to share it with others. This was the start of WoS.

These days, my focus is different (shock!). While at Uni, I started using Unix and saw the

written entirely in C, without any third-party package being used (no Oracle, SQL or whatever, it's all my own code). I'm still learning every day, especially in the abuse fighting department (which is also part of my dayjob).

So the drive for WoS is mostly an educational one for myself, like it has been from the start.

Of course this is not the only thing. All of the

side projects keep me busy. A great example is the copyrights project. It's seriously cool to be able to talk to the actual programmers of Speccy games. I'd never have guessed that I could even directly speak with Richard Darling of Codemasters, for example. Amazing!

Not forgetting of course all of these great people that help out. I wouldn't be able to let WoS grow so fast without the vast amount of uploads and database corrections. And let's not forget my dear friends who help maintain projects and give advice (such as Andy Barker, Steve

Brown, Phil Kendall, Lee Tonks and Juan Pablo López-Grao). This joint-effort feeling is what keeps it interesting every day.

So at what point did you begin to visualise the enormity of WOS today? When did the site stop becoming just another site you could download games from and start becoming (in your plans) *the* resource on the Internet for Spectrum downloads?

I've had this vision ever from the start, pretty much wanting to bring anything and everything on-line about the Spectrum era. I always wanted to provide as much information as possible.

If you look at the comp.sys.sinclair message I provided earlier, and the following ones, I started saying that from the first day I hosted downloads :-)

There wasn't a proper archive site at that time; NVG was highly disorganised (sorry, Lee) and I wanted to take over the job. After all, I had been cataloging games forever (since 1986) and had a relatively big database already - not by today's standards, only some 5000 entries, but I thought it was huge at the time anyway.

Games help pages and magazine references and reviews were on my to-do list as well. I was pleasantly surprised one day, to see that other folks were working on magazine sites, such as the legendary YS, Crash and later SU sites. Especially Nick

(The YS Rock' n' Roll Years) became a very good friend. We inter-linked our sites as much as possible, thus providing the visitors with the wealth of information. Another superb project is from Jim Grimwood: SPOT*ON (its name was chosen wisely), the magazine index database. Without this enormous database, WoS wouldn't have had so much detailed information on programs in the Sinclair Infoseek search engine. Lastly, there's the thrilling new site The Tipshop, from Nick Humphries and Gerard Sweeney, which aims at helping out gamers with hints, tips, cheats and complete walkthroughs.

I've been lucky in determining who to work with. I've seen plenty of sites that started and most of them have faded away after a couple of months. Only very few are run by serious Spectrum enthusiasts and these are the ones that continue to update to this day. People such as Ronald Raaijen also provided me with tons of database information (in fact, the current MIA list was created mostly when checking his database!), not forgetting the huge amount of corrections I got from the actual game authors I contacted over time for the copyrights project.

Of course, having the financial possibility to host a site such as WoS and the time to write all necessary (web)tools oneself is also a big plus :-)

You mentioned earlier the thrill of communicating with original program authors - how hard has it been to track these people down and what sort of responses have you received from them?

Finding them is very hard, as many don't have an e-mail address or don't have their address published on the web. When I have lot of time to spare, I tend to just enter names from the WoS database into various search engine and see what pops up. As some names are relatively common, the result can be hundreds of links, which I then check. A tedious job indeed!

Luckily, these days they more often find me, through WoS :-)

So far, the response has been

overwhelmingly positive - I haven' had any deny from single authors (only from a small number of software houses).

Apart from a ' yes' or ' no' they tend to share bits of information about how their games were perceived, how they were written, what they do these days, etc. This was one of the reasons why I decided to make their messages available from the permits pages. Sometimes they even go so far as to provide us with (scans of) material used to develop games; see the ton of pictures (games-extras) that Mark R. Jones sent, containing the original drawings and graphics grids, for example. If possible, they try to help out providing missing (MIA/STP) games, either by making a TZX file themselves or loaning us tapes. Of course it works both ways. I' ve seen quite a bit of replies from authors saying how glad they were to find their work in the archive, as they lost their own copies.

I can tell you that all of this is highly motivating to keep going!

What about the man himself: have you ever communicated with Sir Clive Sinclair?

I' m afraid not, although I' d be thrilled to. It' s partly due to the fact that I live in another country (even though it' s just half an hour flight to London), but also because I don' t want to bother him with it. He did mention a desinterest in his past projects...

Is he aware of your efforts - or, indeed, any part of the modern Spectrum scene?

I honestly have no idea.

As some one who has been at the heart of the Spectrum scene over the last few years, what do you think have been the most significant developments over this period and what do you hope for in the future?

So much happened, I don' t know where to start. The things must crucial for the emulation scene must be the discovery of the details regarding memory/port contention timing, finally allowing perfect emulation, and

the TZX file format and its wide adoption.

Will there be a WOS in 5 years time? In 10 years time? What do you imagine it might look like?

I' d like to continue with WoS as long as possible. So far I' ve thoroughly enjoyed working on it and there doesn' t appear to be an end to it in the near future.

We' ve gone from some 3,500 unique titles to close to 10,000 ones and there are hundreds (if not thousands) that we don' t yet even know about. And that' s "only" games images. How about inlays, adverts and instructions? Or TZX/DSK images of the lot? And how about contacting the remaining 4,500 authors in the database for permission and correcting credit information? Thanks to Juan Pablo Lopez-Grao, we made a start to also cover the Spanish Spectrum history. But how about the Spectrum in other coutries? Work for years to come, I tell you! Lovely! :-) There' s so much work left to be done that we shelved many projects over time and took up only the most ' urgent' ones. We' ll want to pick up the shelved projects again at some point.

The generous uploads don' t seem to dry up, thankfully; in fact, I still see it increase.

Our beloved Speccy has not been forgotten at all! I get the impression that retro-gaming as a whole is still gaining popularity.

WoS changes have also been driven by visitor requests and developments on the Internet. Who knows what will happen in the future? Things will likely get more interactive over time, although I can' t foresee how at this moment. Perhaps everyone will have broadband - or whatever will follow it up - at some point, making it feasible to add more graphical things.

Or yet faster CPUs, making perfect emulation through Java Spectrum emulators possible? And full-screen at that?

Also, don' t forget that we celebrate WoS' s 7th birthday on the 30th this month! The celebration treat is about ready too...

We're not imagining it; Andrew Owen is really here. And then some. Over the last few months, both of Andrew's two main projects - SE BASIC and the ZX Spectrum SE - have taken gigantic leaps in their development. Next issue we'll be looking at SE BASIC in detail; for now it's the turn of the ZXSE, the hardware project of the two. In between all his work on SE BASIC, Andrew has taken the time to answer a few of my questions about his new Super Spectrum; this is what he's had to say.

The ZX Spectrum SE

The ZX Spectrum SE. Just so we're clear, this is completely different from SE BASIC (see news section) insofar as it is a hardware rather than software (or firmware, if you will) project - but I take it the ZX Spectrum SE is intended as a host for SE BASIC? Actually, I have to confess that I initially confused the two projects as being one and the same thing (an ordinary Spectrum running SE BASIC would functionally be an extended Spectrum because of its new capabilities, therefore I - erroneously - took it that 'ZX Spectrum SE' was just another name for SE BASIC). Tell us about the ZX Spectrum SE - is this the project you originally codenamed 'Chloe'?

Well, your confusion is understandable since the ZX Spectrum SE, which is still codenamed ' Chloe' after ZeDex82' s daughter (who is now 2.5 years old) was going to be the name of the ROMs I was working on. Turning it into a hardware project was a later idea. But since I was having difficulties in getting any support it was going to be an emulated hardware project, then I made contact with a Polish genius called Jarek Adamski who was able to realise many of my ideas for a new hardware platform. At that point the hardware and

software sides were separated again. To be clear on the naming, the SE in ZX Spectrum SE and SE Basic mean two very different things. The ZX Spectrum SE is so called because I thought to myself; what if Amstrad had never bought Sinclair, and Sinclair had followed Apple' s naming strategy. First there was the Mac, then the Mac Plus, then the Mac SE. Sinclair had already made a ZX Spectrum and a ZX Spectrum Plus, so a ZX Spectrum SE would have been the next logical step. So in answer to those who ask me what the SE in ZX Spectrum SE stands for, all I can say is: I don' t know - ask Apple! You are right that the new hardware was originally intended as a platform for the new Basic, but when it became clear that the hardware would be finished first, I needed a different name for the Basic. Although the original Basic is often referred to as Spectrum Basic, its proper name is Sinclair Basic. And it' s not the first version. That was Sinclair Integer Basic on the ZX80, which was followed by Sinclair Floating Point Basic on the ZX81. Again, I thought to myself, what would the next version have been called if standard naming strategies were followed and of course the answer was Sinclair Extended Basic. Now I don' t own any rights on the name Sinclair, so I couldn' t exercise any

control over the use of the name of the new Basic in derivative products, and I didn't like the sound of SX Basic. So it became SE Basic. I know it's confusing, but since there's only one ZX Spectrum SE I don't think it will be too much of a problem.

As for the machine itself, the ZX Spectrum SE is a modified Timex Portugal TC2048. One of my main requirements for a new machine was that it had more video modes. I came unstuck trying to figure out how to do this in hardware, but fortunately for me, some of the modes I wanted had already been developed at Timex in 1983. As a result I was able to buy a machine which already had them implemented. Timex did a lot of modifications when they launched the TS2068 in the US, it was the first Spectrum compatible to include an AY sound chip and joystick ports. It also had a horizontal MMU (Memory Management Unit) for managing its own extended BASIC and a 64K cartridge dock. But it had severe compatibility problems. Timex Portugal launched a PAL version called the TC2068, but they also launched a cut down version, the TC2048. The 2048 had no AY chip, no TS2068 joystick ports (but one Kempston compatible) and nothing connected to the horizontal MMU. It also had almost exactly the same version of Basic as the original Spectrum (with a few extra bytes to set the correct screen mode on reset). This seemed like a good base machine to modify. After asking around I managed to find a supplier in Portugal and bought one in good condition. It sat around for a year while I was in Australia. Then shortly after I got back I got in touch with Jarek and started talking about modifications. He's already created a range of hardware mods for various different Spectrums, so a lot of the ground work was there already. In fact the only things unique to the ZXSE are the 128K of sideways RAM connected to the horizontal MMU and the custom ROM (a 128K editor ROM modified to reset the default resolution, and use the original 48 Basic instead of the modified one from the 128). The machine has a total of 280K of RAM available to it, 27K of which can be used by the SCLD (ULA replacement) for the various video modes.

The question that comes to mind when I visit your site is 'how exactly do I get to have one of these?' *Jarek's* site is technically very impressive from the point of view of his achievements - but I guess a 'consciously incompetent non-techie like myself needs a page there titled 'ZX Spectrum SE' there. Or have I missed a point? Is the Spectrum SE something we are expected to build from schematics (in which case where are they) or is this something Jarek builds and sells (in which case, where are the links to order)?

Jarek sells a range of add-ons for various Sinclair, Timex and Amstrad machines. If you want a ZX Spectrum SE you need to buy a Timex TC2048, TC2068 or TS2068 (depending on your country) from somewhere. Then you just email him and tell him you'd like it converted into a ZX Spectrum SE and ask for a price. I'm not sure exactly what it would cost as I supplied several of the components like the SRAM (ordered cheap from the US which is not possible in Poland), and the AY (from a dead Spectrum 128) myself. Oh, and he can't supply the keyboard or the mouse, you have to source those yourself. I got both from online stores.

The custom ROM that you wrote for the ZX Spectrum SE - this is different from SE BASIC (which we will look at in more detail next issue)? Are you able to/will you be able to pull out the custom Spectrum SE ROM and replace it with a ROM modified with SE BASIC?

The custom ROM on the ZX Spectrum SE is a socketed 64K EPROM. You can indeed replace it with SE Basic, although I'm currently using SE Basic by loading it into the sideways RAM. I've also written a Timex 2068 emulator that works by using the sideways RAM. I probably won't bother replacing the EPROM though since I'm going to be adding a ZXATASP IDE interface with a 512K SRAM which sits in place of the normal EPROM. That will be set to default to SE Basic. The ROM that is currently in there is a copy of the

ZXF2003
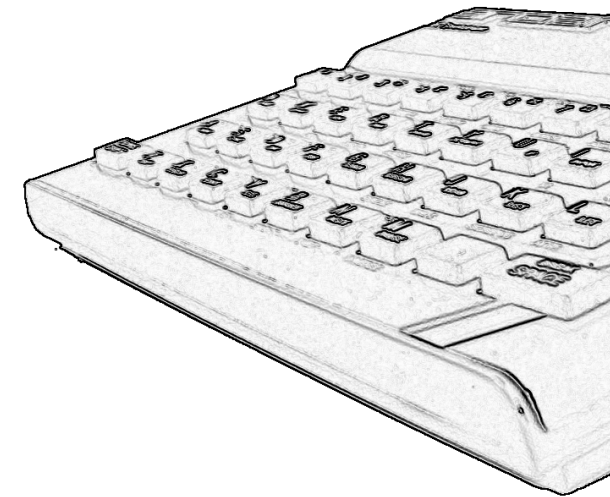
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www.zxf.cjb.net

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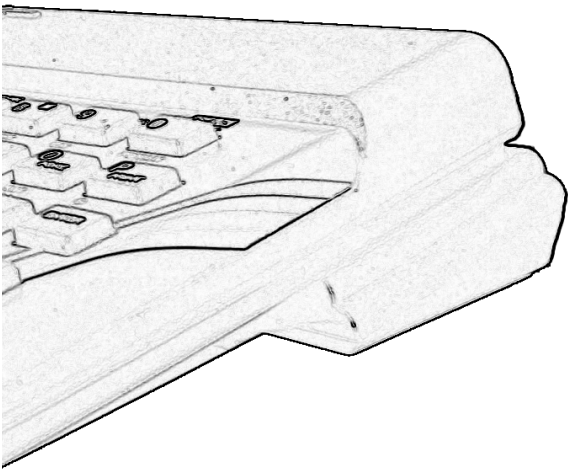
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UK128 Editor with a three byte call to test code in the 128 Basic ROM replaced with three bytes that reset the Timex display modes, combined with a copy of the original Spectrum ROM. This means it is more compatible with pre-128 software than a genuine 128. It will run Bomb Jack for a start, even in 128 mode!

The ZXATASP IDE hard disk interface is a separate creation of Sami Vehmaa. There's a website here: http://home.sol.se/amiga/zxata.html. Sami can supply these to people. Jarek is working on his own IDE interface, but it isn't finished yet. SE Basic should be able to work on any IDE interface though, although it will probably require modification to work with some of them. SE Basic doesn't have to be modified to access the ZXATASP interface because it uses a shadow ROM, like the Interface 1. The interface includes a 128K or 512K SRAM. This is paged in 16K chunks in place of the normal ROMs. When you are installing you get an option to use the standard ROM or a third party ROM, so you just select SE Basic. Sami and Garry are both using SE Basic with their ZXATASPs, which is handy for me, because I haven't got mine yet.

Picking up a point you made earlier, I had no idea that PAL versions of the Timex machines were manufactured - so you answered my planned question about Timex machines and European TVs without my having to ask it! How easy is it to get hold of these machines today? You mentioned a supplier in Portugal.

I would say that eBay is probably you're best bet, but don't pay more than you feel is a reasonable price. Unlike some Sinclair stuff that comes up for auction, TC2048s are actually quite rare. (Lowest production run of all Spectrum compatible machines). However the mod can be performed on a TC2068 and they are quite plentiful, although you do lose the external DOCK and the ability to run TS2068 software if you go for the conversion. The European Timexes were sold exclusively in Portugal and Poland. If you want a

Portuguese one then Johnny Red (of Timex Computer World - check it out on google) may be able to help. As for Poland, you could ask Jarek to keep an eye out for one. If you can't get hold of a Timex machine but you're competent at electronics, Mike Wynne's SpeccyBob design can be expanded to meet the ZX Spectrum SE specification.

You use a separate notebook keyboard for the Chloe - any particular reason for that?

Yeah, I'm a professional writer so I type quite fast on a decent keyboard. The Timex keyboard is far superior to the original Sinclair one, but the keys don't really suit a speed typist like me. Also, if you're running SE Basic, you don't need to know where the TOKENs are, and you get some useful Macros like LOAD "", etc. Plus the built-in keyboard doesn't have separate cursors or a delete key.

So - just for the sake of clarity - the external keyboard is an 'extra option' and the SE works without it?

Yes. However, there will be some benefits to having a PC keyboard attached if you're using SE Basic. The key-mapping used by the ProFace-AT doesn't quite match up to the characters printed on the keyboard. A case in point is the symbols on the number keys. The ZX Spectrum SE version of SE Basic reassigns all the characters so (with one or two unavoidable exceptions) they all show up where they should do (e.g. a quote mark on the '2' key). The ProFace-AT maps four tokens to the function keys F5-F8. In the SE Basic I've trapped these tokens and replaced them with macros so now I have LOAD""[ENTER] available at one key-press. Then there are the HOME, END, PG UP and PG DN keys. At present these are mapped to <=, >=, TRUE VID, INV VID. However, in SE Basic they will actually do what they say on the key. So no, you don't have to have the keyboard, but then most of the modifications in the ZX Spectrum SE are self contained circuits so you can pick and choose what you want. For instance, you could upgrade a plain old 48K Spectrum to the ZX Spectrum SE

specification and all you'd be missing would be the Timex video modes and the 128K of sideways RAM. Jarek has a circuit for the 48K machine that will increase the RAM to 256, it's just paged differently.

And the ZXSE can access this 256k of RAM? I think that, for most people, upgrading a standard 48k Spectrum is likely to be the most viable route to a ZXSE, even if it means sacrificing the extra video modes. I don't know about anyone else, but a rubber keyed 256k Spectrum just by itself sounds fantastic to me.

Well, the RAMdisk drivers for SE Basic will be in software rather than as a direct part of the ROM so it should be easy to add a driver to support the extra RAM of the ZXSE, Jarek's 256K upgrade, or the standard 128K. Of course someone has to write the driver, but if no-one else does it I'll get around to it in the end.

You mention on your site that you would like to see the SE supported by emulators - any sign of this happening?

Gunter Woijk was going to add ZX Spectrum SE support to his zxsp emulator. There's even a 'Chloe' option on the menu in the version for Mac OS 9. However, all that does is use a different set of ROMs. It's a start though. I didn't think Timex emulation was ever going to take off, but ever since I persuaded Chris Cowley to add a TC2048 mode to vbSpec a lot more emulators are supporting it. From an emulator author's point of view, if your emulator already supports the Spectrum 128 and the Timex TC2048, then ZX Spectrum SE emulation isn't very complicated to add.

Stop press: ZX Spectrum SE emulation is pencilled in for possible inclusion in MacFuse although it won't be in the first public release.

I guess it's worth pointing out here that you and Chris have both written demos showing off the TC2048's high colour mode (available from the vbSpec site). Do you have any plans to develop any software for the ZXSE (games,

applications, etc) now that it's complete?

Of course. SE Basic is taking up a lot of my time but the first ZXSE application is already written. It's a Timex 2068 emulator, written with help from Alvin Albrecht. It uses the sideways RAM to install a modified version of the TS2068 ROMs. It even has a certain amount of support for Timex cartridges, although the only one I've tested so far is OS64. I also have plans for a psuedo-multi-taksing program which will allow you to have three 48K programs in memory at once and switch between them using the NMI button. That's a little way off yet, but it's simple in theory. On the games front I really want to do a scrolling shoot-em up using hi-colour mode. However, I don't know if it the screen can be updated quickly enough to make it playable. I do have a game idea for hi-colour mode that isn't dependent on frequent updates, but I can't really go into it now. The other idea I have is for a graphic adventure game. It's possible to switch resolutions mid-display on the Timex hardware, so the idea is that part of the screen will be in hi-colour mode, and the other part will be in hi-res mode, with the switch timed via the maskable interrupt. The text will be 80 or 85 columns, and the pictures will be 24-bit BMPs rendered to hi-colour by LCD's excellent BMP2SCR program.

Here's a screenshot of split-screen mode, although it relies on having the colour turned down:
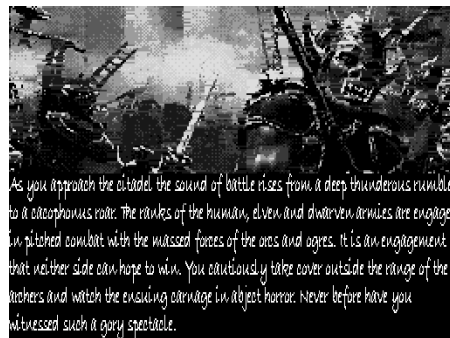
As you approach the citadel the sound of battle rises from a deep thunderous rumble to a cacophonous roar. The ranks of the human, elven and dwarven armies are engaged in pitched combat with the massed forces of the orcs and ogres. It is an engagement that neither side can hope to win. You cautiously take cover outside the range of the archers and watch the ensuing carnage in abject horror. Never before have you witnessed such a gory spectacle.

The ZX Spectrum SE

Codename:	Chloe
I/N:	TC2280
CPU:	Z80A @ 3.528Mhz
Total RAM:	280K
Video RAM:	27K
ROM:	32K
Sound:	AY-3-8910
Keyboard:	Cherry PS/2 notebook
Mouse:	Amiga 2-button
Joystick:	Kempston
Extra video modes:	Hi-resolution (512x192 pixel) 2 colour
	Hi-colour 6144 byte attribute area (no vertical colour clash)

Back to the Spectrum

Part Two. A look at some of the 'added extras' that come with modern Spectrum emulators.

So far we've looked at emulation from the point of view of how all the stuff you used to do is implemented in virtual terms. But many emulators also have additional features - they offer you tools which are in addition to the hardware and software features being emulated (so you can do things now which you couldn't do then).

Let's start with POKEs. Although, strictly speaking, of course, POKEing an address, for example to give you infinite lives in a game, *was* something you could do on your old hardware, but often not without going to an awful lot of trouble. It's much simpler on Spectrum emulators, a number of which offer the direct entry of a POKE into the game currently running via an option from one of the main menus. A good example of this is **SPIN**'s implementation, which not only gives you direct POKE access, but also allows you to build up a database of POKEs and other hints and tips for the games you enjoy playing. Where do you get all this information from in the first place? Visit Gerard Sweeney and Nick Humphries' **The Tipshop** (**www.the-tipshop.co.uk**) for the largest online collection of hints, POKEs and tips for Spectrum games.

Above: SPIN's Pokes and Tips feature
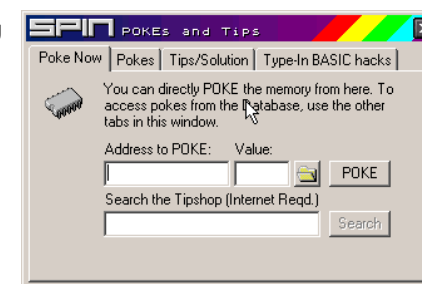
Input recording

Of course written hints and tips on how to get through a games are a poor substitute for actually seeing it done. Previously this involved finding a suitably skilled friend and peering over his/her (ok - let's be honest - probably *his*) shoulder. The modern equivalent of this is **input recording**, the function of which is to record all the things you do whilst using your emulated Spectrum (key presses and joystick waggles, that is; they don't record brewing a cup of tea whilst waiting for a game to load or cheering on the little matchstick men in Football Manager) for future playback - when you then do so the emulated Spectrum will appear to work all by itself - as though instructed by an invisible user - replicating your every move in the game you recorded. In this way a personal best performance can be kept for posterity and shared around for others to learn from. It works well on most games, where the movement of alien beasties is pre-determined in one way or another, but on those where hostile activity is randomly generated, disaster is not far away.

Apart from self-admiration and helping out a friend in need, input recording is used on an annual basis for the **Speccy Games Tournament**, in which ZX enthusiasts compete against each other for the highest score on a selected range of titles. Usually an 'official' snapshot file of each of the games is prepared by the competition administrator and distributed to all participants, who then

play the games and submit the input recordings they made whilst doing so; it's a fair, reasonably non-corruptable, way of ensuring everybody is competing on a level playing field and that nobody can pass off grossly exaggerated figures as their own high score. It also allows players to learn from others' successes.

The two input recording file formats in use are .AIR and .RZX, with the latter introduced as the successor to the former. The problem with AIR files was that they could only be played back on the emulator which created them: this meant in the past that all competitors in games tournaments had to use the same emulator (usually **RealSpectrum**); even if your own preferred emulator supported AIR file recording, one created by another emulator would not work (you were even more excluded if you used a different platform, such as RiscOs, where a RealSpectrum AIR file - for example - would then become completely inaccessible because the emulator is not available for that platform). RZX, on the other hand, works across emulators, so all programs which support this format (regardless of their platform) should be able to run any RZX file created by any emulator (so an RZX file created with RealSpectrum should play back equally well on SPIN for Windows or Philip Kendall's **Fuse** for Unix).

Audio/Video

Input recording is fine if you want to show off to friends with a Spectrum emulator, but it is just possible, of course, that you might want something portable that can play on a computer without such software installed. .AVI and .WAV files are - as you are no doubt already aware - standard Windows formats for video and audio respectively, and both are supported by RealSpectrum (the most comprehensive of the Spectrum emulators - for the moment, at least). They're certainly not the most efficient of file formats for these purposes - not by a very long stretch - but an advantage of recording

in these formats is that the files created will play on much older PCs than the current ' standard.'And you could always use additional tools to convert them into - say - MPG/MP3 files; conceivably you could even encode and burn video onto a DVD if you so desired and watch it on your TV (there's full circle for you) - so then the recipient of your recording wouldn't even have to own a computer, let alone a Spectrum emulator.

Graphics

If all that sounds a bit too exotic for your needs, there are, of course, options on most emulators to create standard Windows graphics files. Quite a number allow you to save screenshots as .BMP (Windows bitmap) files - and have done for some time - for editing in a standard graphics package (where you could convert to - say - GIF format for publication on a web page) and just recently BMP export has also been created for the **ZX Printer**, so you can now print from your emulated Spectrum to an emulated ZX Printer and save the printer's output as a BMP file.

And what about doing it the other way around - wouldn't it be cool to turn a Windows BMP into a Spectrum screen? **Z80**, the shareware Spectrum emulator by **Gerton Lunter**, has offered a BMP import feature for several years now, although the control this option offers you is quite limited. A much better way is using the .SCR file format - essentially a graphics format for Spectrum screens that is supported by most emlators today. SCRs cannot be edited by standard Windows graphics packages, but there are a whole host of freeware programs that can - and these will also convert bitmaps into SCRs for you (see last issue's tutorial on creating a Spectrum loading screen for an example of how this can be done).

Which brings us nicely to the next part of this guide: the many PC utilities in existence to support and enhance your Spectrum experience. That's what we'll explore next issue.

ZX Utilities of Yesteryear

Sir Clive didn't slave away on the the Spectrum *just* so you could screw up your education playing *RoboCop* instead of doing your homework properly. There was more to the Spectrum than games. Here **Equinox Tetrachloride** investigates some of the lesser known utilities. If only we'd spent a little time with these we might be better people today...

Ever heard of The Home Knitter or Wizard Prang's Headache Mantra?

We've all squinted at the tiny text in **Tasword Two**, and most of us have experimented with one of the **Jet Set Willy** editors. Moreover, it is an indisputable fact that anyone who has ever been to a car-boot sale has at least two copies of **Make-a-Chip**.

All the same, we don't tend to remember utility programs as fondly or as vividly as games. Utilities are software tools, not playthings, and the gradual obsolescence of the Spectrum made most of its utilities obsolete too.

Of course, there's still a handful of demo groups making music and graphics with **Soundtracker** and **Art Studio**, and I wouldn't be surprised if **Tornado** or **Zeus** is compiling someone's Z80 code at this very moment; but there are dozens of lesser-known utilities that, in the twenty-first century, can only be described as quaint toys or historical footnotes for the curious.

I number myself among the curious, so I ventured into the **World of Spectrum** archive to dust off the cases of some of the more interesting titles.

Macro for Construction and Animation (1983) is a rudimentary programming language for creating animated stories. The lengthy introduction demonstrates the use of text, sound, and various moving characters. It's slow, but charming: the MCA interpreter is written in BASIC and certainly not intended

for anything as complex as the creation of stand-alone code.

Audiogenic's **Icon Graphix** (year unknown) is an art package with icons instead of text menus. Drawing and colouring are done separately, and the panels of icons force you to ' drag' the page to reach the screen edge, but it would be quite passable if only it was more stable. As it is, Icon Graphix almost invariably crashes after an hour's work. Still, Sinclair User liked it enough to include it on their cover tape.

Codemasters' **CD Loader** (1990) is another piece of technology that garnered attention from the magazines. Stored on cassette, this program gave you the ability to load games from an audio CD via the joystick port. ("The Codies' system bears little resemblance to CD-ROMs," Your Sinclair explained. "The CD-ROM involves piles of expensive equipment and is really only of any use to boring businesses and things.")

Games loaded from the Codemasters CD in about 30 seconds, and you could press Q-U-I-T to return to the loader and switch to another game. Unfortunately, most households with CD players had also bought a more up-to-date computer, and Codemasters never repeated the experiment.

What about utilities that are designed to facilitate a non-computer hobby? Well, there's **The Home Knitter** (1984), which asks you some questions about the desired garment (round or vee neck? how many buttons down the front?) and then produces a

table of measurements and instructions. "Be with you in a tick," the program advises as it does its calculations.

Informal language and entertaining sonic and visual feedback were quite common in utility programs of the 1980s, when home computing was new and users were more willingly amused (and more easily intimidated!) by the software they bought. Clippit, the dancing paperclip assistant who was recently ditched by the Microsoft Office team, was not by any means the first animated annoyance in a utility program.

Computer Cookery (1984) rewards incorrect keypresses with cheeky error messages - including "Cosmic colanders! You have got it wrong!" and "Press the right key or I'll have to sue!" - along with a crazy zapping noise that would be more at home in a shoot-'em-up game. On the other hand, if *you* behave then the program will behave, serving up recipes in imperial or metric for a specified number of guests. It even adds accented characters to the Sinclair font: fancy some Chicken Sauté Bercy or Duck à l'Orange?

If you're thinking that no modern program could be so flippant, have a look at **Prime Number Generator** (2001). It offers six options, including Prime Factorisation, Goldbach Conjecture, and Do Something Less Sad (also known as Quit). The scrolling message is even better: "This program should never have been written in BASIC and employs no clever algorithms to make it faster."

Kids can have utilities, too. **My Secret File** (1984) is a "do-it-yourself dossier for your darkest thoughts", based on the Puffin book by children's illustrator John Astrop. A very blocky spy requests your password before allowing you to view and edit such confidential documents as My Favourite Relations and Ten Descriptions of Mum. Aw, bless.

The Real You (year unknown) is a pointer-driven multiload that analyses your views, personality, and love life based on your responses to a number of quizzes. Am I a high-tech person? That depends. "Have you

ever felt anxious about the TV exploding?" "Do you own a battery-driven pepper mill?" Wade through enough of these questions and you are presented with a mystifying bar graph.

If you'd rather measure your intellect than your anxiety levels, you might prefer the **Cattell IIIA Intelligence Tests** (year unknown). Endorsed by Professor Cattell himself, this program puts you through a multiple-choice marathon designed to gauge your mental aptitude. The interface is very slick for its time. Did I mention the time limit?

Moving from the general to the specialised: **Audio Frequency Generator** (1989) produces sixty seconds of pure tone at any of six frequencies, just like it says on the tin, while Wizard Prang's Headache Mantra (year unknown) is a sound-and-fury routine for use in your own BASIC programs. You can try it out by guiding a hapless figure under a falling object.

But the Golden Solar-Powered Torch award - for forgetting that 'utility' means 'usefulness' - must go to **Car Seating Arrangement Designer** (1991), "a seating arrangement compiler for the Renault Espace". Enter the names of up to five passengers, and the computer randomly decides who gets which seat. It's guaranteed to settle your Espace seating squabbles forever, and to top it all there's a three-channel musical introduction.

The utility that brings back memories for me is **Superfile 128**. It was bundled with the Spectrum +2 as a token database program, and my sister and I used to play with it when we were nine and seven years old. We'd go through all the menu options, change the system colours, and invent meanings for mysterious terms like 'microdrive' and 'transaction'. It's a good thing we didn't have Activision's Hacker 2, or we'd really have thought we were onto something.

Find Spectrum utilities online at www.worldofspectrum.org/utils/

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The Post-Turkey Boredom Period (PTBP) is approaching. Fear not: this issue's **read** brings you distractions aplenty to fill the gap between the Queen's speech and the suicide-inducing broadcast known as *The Eastenders Christmas Special*. My thanks to **Equinox Tetrachloride** for providing the anagrams and crossword (answers in Emulator News).

ZX ANAGRAMS

Unscramble each set of anagrams to find a group of related words or phrases having something to do with the Spectrum.

1

Of tram (6)

I damn zero (9)

Red Rob (6)

Still (5)

2

Roaming mother (9,4)

Anger Roy (8)

Closed rot (4,5)

We'll race in (4,6)

3

Spying S.O.S. (9)

Charring glimpse (7,8)

A brat is worn (7,4)

Jaws force protest (8,8)

The **ULTIMATE** wordsearch

14 games to find...

read □

ZX CROSSWORD

The unclued answers share a common theme.

Across

3 ? (6,6)
6 BASIC keyword that definitely isn' BRIGHT (3)
8 Hewson puzzler, something like Chaos? (7)
9 A software house, or its target audience (7)
12 ? (5)
13 Dizzy game with no egg in it! (4)
15 ? (4-1-4)
18 Joystick manufacturer (6)
20 Ant Attack: "My hero! Take me ____" (4,4,3,4)
21 Error N, or a problem in court (9,4)
22 Macsen arcade game involving soap? (10

Down

1 Ultimate classic: Dark Justice, say? (6,4)
2 Colour five (4)
4 Forgotten location in Jet Set Willy (5)
5 At which one would write to a byte? (7)
7 ? (5,5)
10 ____ Cecco, author of Cybernoid and Stormlord (8)
11 They published Dynamite Dan and Tetris (10)
14 ? (10)
16 Challenging game that you might throw down (8)
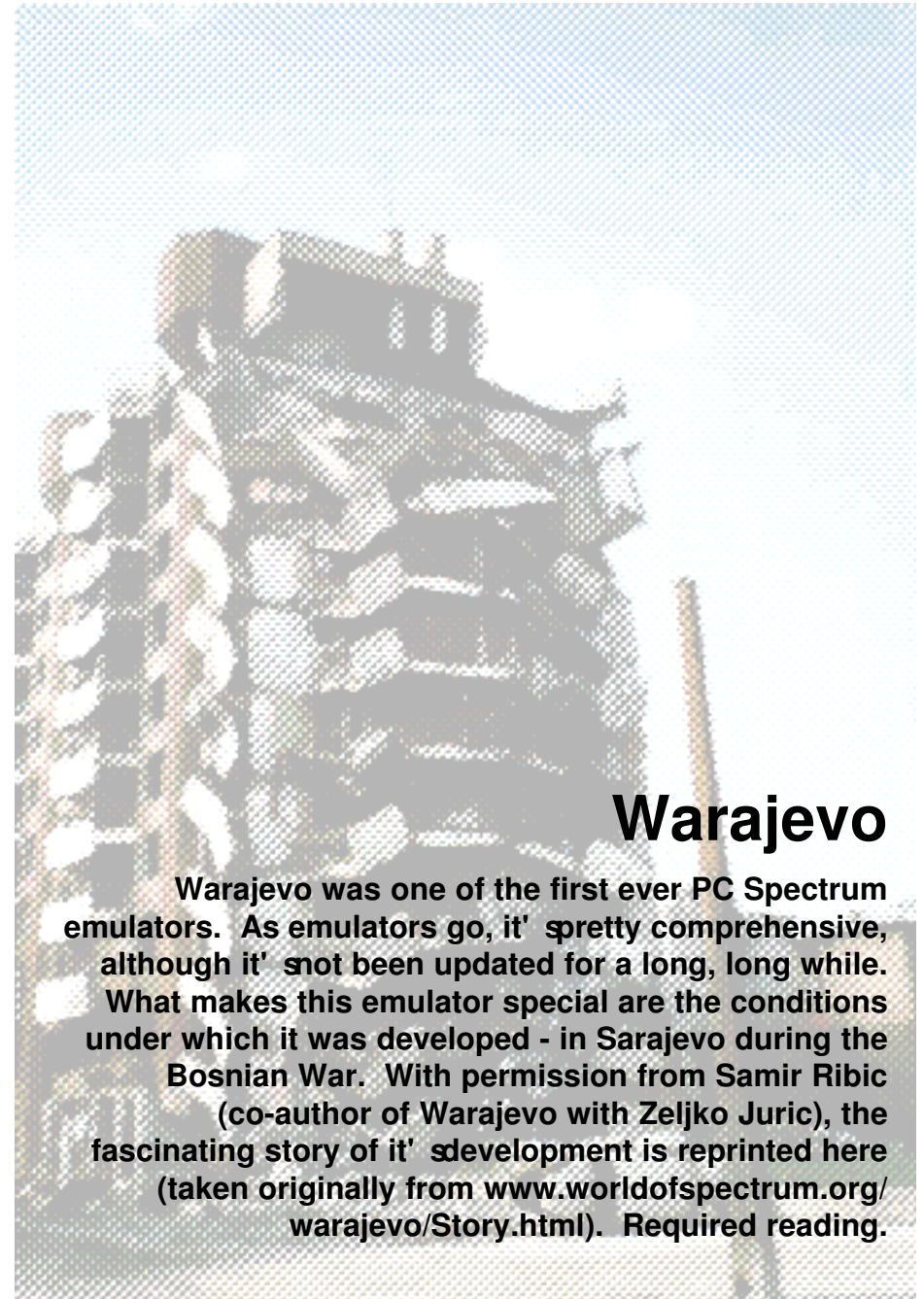17 BASIC keyword found in a river, if you please! (7)
19 John ____, Aquaplane author
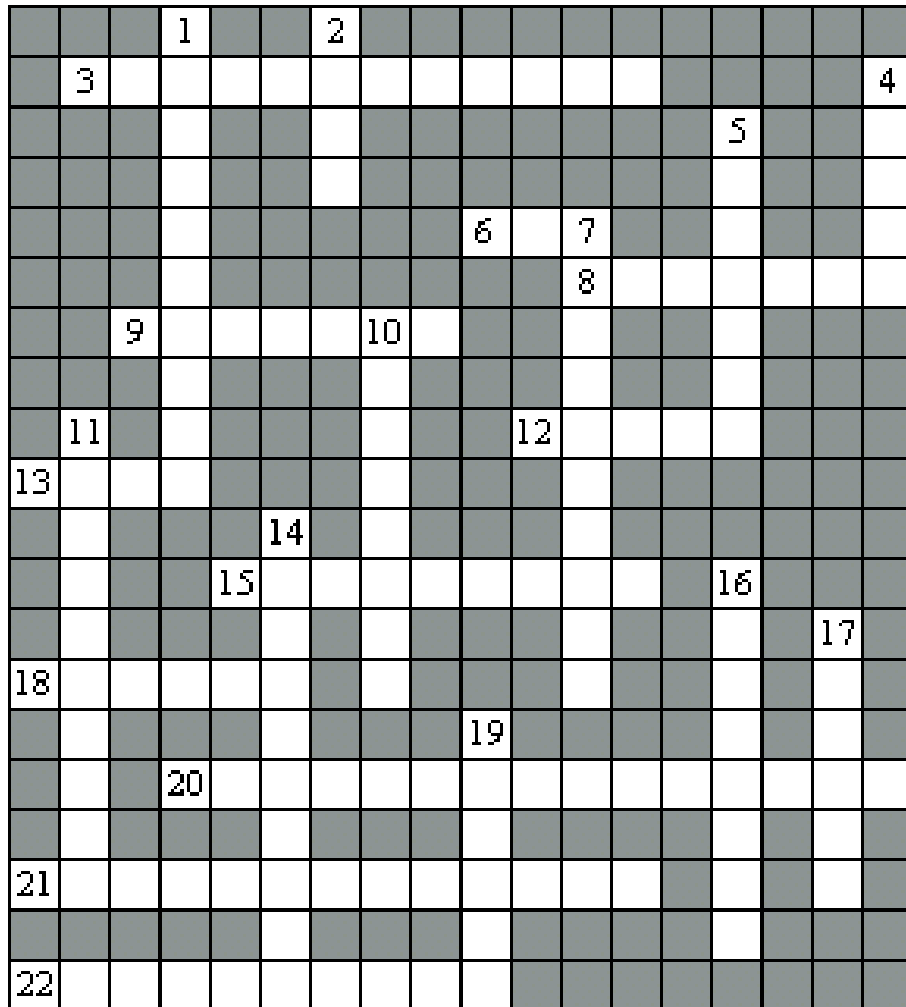
Warajevo

Warajevo was one of the first ever PC Spectrum emulators. As emulators go, it' spretty comprehensive, although it' snot been updated for a long, long while. What makes this emulator special are the conditions under which it was developed - in Sarajevo during the Bosnian War. With permission from Samir Ribic (co-author of Warajevo with Zeljko Juric), the fascinating story of it' sdevelopment is reprinted here (taken originally from www.worldofspectrum.org/warajevo/Story.html). Required reading.

Maybe this program is not too interesting in itself,

but it is a fact that this program comes from Bosnia and Herzegovina, from the city of Sarajevo which has been surrounded for more than three years. After reading this story, you will understand why this emulator has such strange name "Warajevo"...

Even in our secondary school days, about ten years before, we began to build an interest in computers thanks to the ZX Spectrum. For this reason, we are a bit sentimentally tied with this computer. This computer reminds us of all of the times when, in our neighbourhoods, the life was nice and normal.

When we bought AT 286 computers at the end of 1990, we did not forget our Spectrums however. We had great interest when, in June 1991, we got a Spectrum emulator, which, without underestimating anybody's work, had very bad characteristics (it was slow, quite incompatible with the original machine, with unpractical emulation of the tape recorder etc.). It's origin is unknown to us (we suppose, in according to some newspapers, that the program is from the Slovenia Republic, and that the author is Peter Kroselj), and when starting it displays the copyright message '(C) 1991. Roman & easy inc.'. When the war started in our country, we wanted to remove the dark thoughts from our heads as much as possible. So, in April 1993, we started the development of our Spectrum emulator, symbolically called 'Warajevo Spectrum emulator' which should have much better characteristics. We should mention that we were known as quite good programmers, especially in assembly language.

The program was developed in horrible conditions. The grenades fell everywhere, there was little electrical power (at one time even the hospitals didn't have power for two months!). When we had electricity it was only for 2-3 hours during the night. However, we did not quit and caught every moment when the electricity was on to develop the program. Zeljko worked at home on his 80286/12 MHz, 1.44" floppy, 40 Mb hard disc, Hercules card and Citizen 180D printer. He used TASM assembler. It was very interesting waiting for days of electricity. Samir worked mainly in army camp barack on 80286/16 MHz, 5,25" + 1.44" floppy, 2400 bps modem, VGA mono monitor, WITHOUT HARD DISC because it crashed. The power generator in the army camp was

an improvised generator, with a voltage that varied from 150 V to 300 V! It was in fact car engine without carburator, connected to natural gas pipeline. This car engine was tied with shunted electromotor giving about 30 kW for 100 rooms.

It was often situation that when one user switch caffe aparat on, Samir's computer resets itself. UPS? What is this??? As you can expect, such 'stable' voltage distroyed Samir's hard disc...

Zeljko's task was mainly writting of the emulator kernel, and Samir's task was to write conversion and tape file utilities. So, he used Turbo Pascal 5.5. First version of such utility was called ZXTOOLS, and existed up to release 1.5. In this situation, we decided that our tape file format will be compressed, as we had not enough diskettes, nor we belived that we will ever have money for puchasing bigger hard disc.

As Zeljko has real Spectrum 128, we made cable for transfering Spectrum software using RS232. During times when we was free of army activities, Samir visited the last Spectrum software pirate in Sarajevo and borrowed casettes. But, this pirate was located in one of the most dangerous places in the city, practically on the first front line. He had to use a river bed (instead of streets) for moving, to skip continous sniper's fire. So, Samir risked his life to bring up Spectrum software! Later he transfered programs using RS232, mainly in the army camp.

The program was developed in horrible conditions. The grenades fell everywhere.

The summer of 1993 was the worst period during the whole Bosnian war, 1 kg of sugar had price of even 60 DM, and about 3000-4000 grenades fall every day on the town. This was a period when only miracle saved Sarajevo of fall. However, we progressed very well...

Zeljko catched every second of presence of electrical power to finish the emulator kernel, and Samir hed not even leave the army building during this period. While he waited for a new

battle tasks, he developed the compression algorythm. He spent more than 30 days in developing algorythm, analysing of some archivers, optimizing compression speed (it is still slow, but acceptable), and he worked mostly on paper, because it was days mainly without any electric power, water and food. Keep in mind that in this period we lost about 1 kg weekly!

In November 1993, reading some newspapers that came from the enemy's territory, we got some information about the emulator 'Z80', written by Gerton Lunter. The fact that we didn't hear about Lunter's 'Z80' earlier is a fortune for today Warajevo users, because we very probably would not even start this project if we have had information that a good quality Spectrum emulator already exists. But, in even worse winter conditions, we continued the development (in the rooms where we slept the water was frozen), hoping to get this emulator to compare our program and his program.

In 1994, one Samir's friend who worked with him in the army put his own hard disc (40M) into the computer , and Samir developed ZXSHELL (the database program for the emulator written in Clipper). In April 1994, the foundation Sorosh opened the first electronic mail in Sarajevo. We sent a general request and in June 1994, we got Lunter's emulator. From documentation we got information about many Spectrum emulators around Europe, but we thought that our program was surely better than all the others, except maybe Lunter's program. We think that it is a great success, considering the conditions where the program was developed and the quality of Gerton's program. When we contacted Gerton, he had the same opinion about it.

The first public release of the Warajevo emulator was sent to the world at end of 1994 (release 1.0). Other releases made during war was 1.1 (March 1995), and 1.11 (May 1995). This was just a bugfixes of release 1.1 with slight improvements.

Dayton peace came (November 1995), and we was released from army. Release 1.2 was prepared for uploading. It was 1.1 with a new design of utility ZXTOOLS. This release was finished in December 1995. But, Samir decided to improve the emulator to be his graduate thesis (Zeljko already finished study, he graduated in January 1995), and he

puchased 486SX-33 board, 4 Mb of RAM and 400 Mb hard disc. Zeljko continued development on his old 286 machine, but Samir had now enough power to compile programs using extended memory and we released version 1.5 (in July 1996) after Samir's graduating and getting job. In this release, utilities ZXTOOLS and ZXSHELL are not separate tools. Instead, they are integrated into the environment of the emulator.

Release 2.0 was developed in much better conditions. The war is finished, but the economical situation is terrible. Our payments was under 50 DM. However, Zeljko succeed to purchase faster computer, and he finally had goal to develop accurate speed version of the Warajevo kernel. So, we worked on Pentium 133 MHz/1.2 Gb disc and Pentium 100 MHz/1.6 Gb hard disc, both with 16 Mb of RAM, Sound Blaster cards and VGA graphic card (this is mainly our today configuration too). First real-time release of Warajevo, release 2.0, was uploaded in February 1998. As you can see, Warajevo 2.0 is uploaded after a long delay (about nearly 1.5 year) from previous release. This is mainly consequence of adaptation to post-war conditions. Finishing of the war brings a lot of new problems which took a lot of our time, so developing of the emulator was stopped for a while...

The last release of Warajevo is currently Warajevo 2.51. Recently, a number of new emulators have appeared. Some of them are very good, especially X128 by James McKay, and there are a number of emulators for the Windows platform (we want to point out ZX32 by Vaggelis Kapartzianis and MultiMachine by Paul Hodgson). However, we still think that Warajevo 2.51. is the best emulator for pure DOS. We want to tell you that the Warajevo emulator still does not have a good emulation of the video system like in the ZX32 emulator (although it is much better than in release 2.0. which was a considerable improvment itself over release 1.5.), perfect emulation of the bits 3 and 5 in the F register, emulation of the disc interfaces, Multiface 128, AMX mouse, full emulation of the RS232 socket or emulation of the Spectrum +3, which are supported in some other emulators. However, we want to emphasize that Warajevo still has a lot of features which make it unique. For more details see: **www.worldofspectrum.org/ warajevo/Features.html**

Well, what do you think, after this story, about today MS Windows programs that require 100 Mb for relative simple task??? Obviously, the Spectrum times were the best computer times. Nowadays, for playing a game in a PC you need a Pentium 200 MHz, 32 Mb of RAM and a fast graphic card. If you haven' got these requirements, you can`t play the game. But, with the Spectrum everything was quite different. The Spectrum wasn' t upgradeable and the programmers had to make big efforts to develope a very good game. And the games were also cheaper than the PC ones...

Between April 1995 and December 1997 we received E-MAIL messages from 28 countries, from all 6 continents (Argentina, Australia, Austria, Canada, Czech, Croatia, Danish, France, Germany, Great Britain, Netherlands, Hungary, India, Italy, Latvia, Macedonia, Norway, Portugal, Romania, Russia, Slovakia, Slovenia, South Africa, Spain, Sweden, USA, Uruguay, Yugoslavia), with greetings, questions, new ideas and bug remarks. We apologise if any message remain unanswered because E-MAIL in Sarajevo is still sometimes unstable so it doesn' t work from time to time.

IF YOU LIKE THE WARAJEVO EMULATOR, AND IF YOU ARE FROM A COUNTRY NOT LISTED ABOVE, PLEASE SEND AN E-MAIL TO US!!!

Retro Computer Mart

8-bit computing is alive and well in the mainstream press, thanks to Shaun Bebbington, whose weekly column in Micro Mart covers all the latest developments in the retro computing world. Here Shaun describes how he brought the Spectrum and its peers back to the pages of something you can browse in WHSmith.

Nine years ago now. I had recently left school and started work. It was late spring, and I found myself in my local newsagents. There I was, and for the first time in a long time I was by the magazine section. There I saw Your Sinclair and more importantly Commodore Force. Obviously, being a Commodore enthusiast it was Commodore Force that interested me. I purchased 2 copies of issue 7, and the last 2 issues of YS. From then on, I would buy Commodore Scene until its final issue.

Time passed. I worked, then started college to start a part time job, and in 1994 I purchased a Commodore 64c, a machine that would serve me well. I also purchased a Spectrum 48k, which died. However, in May 1994 something changed. Commodore Format, the final commercial Commodore publication for the UK had become sparse of new developments, that is until the April issue when they had a preview of Penguin Towers.

New software for the Commodore! Obviously, this helped to fill a few pages, and spark something as the next issue contained news of twenty-six new software developments and (for the first time that year) four new games reviewed! Slowly, news came through of hardware upgrades for the Commodore 64 and 128, 4GB hard drives, dedicated intelligent mice, 3.5" disk drives, ram expansions upto 16mb and more. It seemed the Commodore 64' s revival had turned into a revolution. Unfortunately, poor sales led to higher prices. An unbreakable circle - the UK importer needed a mass order to bring the price down, but because of the initial price there was no mass order forthcoming! Despite this, GEOS (Graphical Environment Operating System) was a limited sucess some time after.

Why do you need to know all of this? This is, after all a Sinclair publication... Now to my point.

Let us skip a few years. Last year (2001) around May or June, I noticed a letter filled with news of current Amiga developments in the magazine Micro Mart. I was surprised that a PC magazine would pay such attention to a non-PC platform, so I emailed the editor (and everyone listed as editorial) enthusiastically telling them about my slghtly upgraded Commodore, which has a 20Mhz accelerator, 1.6mb 3.5" disk and 20mb or RAM (among other things) and suggesting to them that it would be a good idea to start a column supporting all old computers on the basis of "Okay, so you remember the C64, well today you can....." rather than just "Remember the C64? Well so do we. Here is what we remember....." I, of course, offered my services to write about my beloved Commodore. The reply I recieved was a simple "we' ll think about it.." At the time, I was happy not to be totally ignored.

A short time later, I had given up on Micro Mart even starting any further columns beyond their Linux, Amiga and of course PC articles. On New Years eve 2001, I decided to take matters into my own hands, and Retro Computing Today was thought up to support all platforms except PC' s I then went to work on a demonstration issue, after a good initial response to my ideas. Unfortunately, the magazine depended on pre-orders to exsist. I couldn' t afford the printing costs unless I had at least 250 people who where willing to pay for a copy of the first issue. This was not time and work wasted though. Simon Brew, managing editor of Micro Mart, downloaded the sample issue of R.C.T, printed it out and handed it around the office. He said that everyone was very impressed with my work (I thought he was being nice) and asked if I could write a retro feature for Micro Mart on a weekly basis. At first I was a little taken back. Simon said that I did sound a little surprised at the time of the phone call. My main concern was writing to a high enough standard for a professional publication, after all (although it does not affect my reading and writing too much nowadays) I am dyslexic.

I excepted an eight week trial, which soon turned into a "can you carry it on for a while longer" and is not virtually a perminant fixture in the magazine. So, from my vast knowledge of the Commodore 64 I now write about and own a really broad range of technologies (I am almost multi-lingual). This is also where I need your help. Working full time in the public sector (I wont mention names) and writing the column, as well as being very disorganised like many dyslexics, I have little time, or at least I struggle with the concept of time. Please, if you know of any Sinclair developments (for the real machines), or you have any opinions on the column, or you just want to talk all things "retro", please drop me a line. My email address should appear elsewhere in this publication. I will support you, could you also return the favour?

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Fact Files Update

Did anyone else here collect *The Star Trek Fact Files* until the bitter end? Boy, did that publication go on. Now that it' s finally finished, a bit of fun that I wrote a few years ago seems timely...

Yesterday, the final issue of The Star Trek Fact Files went on sale in all good newsagents. Whilst cubic measurements approaching the size of a small portacabin are often cited in discussions over the storage of a complete collection, you might be surprised to know that a large amount of official star trek information never made it to the peel-away pages of this weekly publication. The following article is a small taster of the material. Other titles include:

- *Door sounds: 2292 - 2341*

- *Kirk and shoelaces*

- *Warp nacelles and particle beams: Freudian imagery in the 24th century*

USS ENTERPRISE NCC 1701-D: Lavatories

Jokes about the Captain's dog aside, toilets aboard the Enterprise D are at the cutting edge of Starfleet technology. The traditional bowl design maintained on previous starships has been replaced in all Galaxy-class vessels by a waste removal unit that puts transporter technology to a new and innovative use.

Uniforms stay put

The Enterprise D's toilets work by transporting human waste out of their bodies to the ship's **Central Matter Container**, where it is stored for eventual reprocessing into Klingon delicacies for the **food replicators**. Thanks to transporter accuracy, crew members no longer have to remove clothing in order to relieve themselves, so the old association of privacy is long forgotten. In fact, Excretion Removal Units (ERUs) can be built into almost any chair - including those at workstations - and programmed to remove waste as and when necessary, without any bystanders knowing that the process is in operation. The incorporation of such chairs into the Enterprise D's **main bridge** has resulted in a marked reduction in distracting odours known to occur when, for example, a Romulan Warbird drops out of hyperspace with its weapons targeted on your ship's warp core.

Early problems

Developed at the lavatory laboratory at Utopia Fleet Yards on Mars, the ERU was not an immediate success. Early versions, designed specifically for humans, failed to carry a warning notice and there are many stories of non-human personnel or visiting dignitaries losing their lower intestines after sitting on what looked to them like a comfortable seat. Modern ERUs are adapted for all known anatomies, however great care still has to be taken in the seating arrangements for any first contact meetings with a new species.

Klingon comforts

Least appreciative of the ERU are **Klingons**. Klingons, who have 37 different words to describe a bowel movement, feel that the ERU robs the process of its honour and refuse to make use of the technology. This has led to the development of **Klingon Flatulence Compensators** (KFCs) for use in situations where Starfleet personnel are required to work alongside their Klingon counterparts. Even **Worf**, the Klingon posted on the Enterprise D, has been known to protest strongly against the ubiquity of ERUs on the ship, stating on more than one occasion, "A Klingon considers that a P' Ta [good dump] should be a challenging and character building experience," (TNG: Retention), and "The TorPChi [fart] is a most effective weapon in the Klingon warrior's close combat armoury," (DS9: Easy does it).

Developing technology

Nonetheless, the ERU has been rated the most popular new invention since the **holodeck doorlock** and is set to be developed into yet more areas of personal hygiene and sanitation. Proposals on the drawing board include manicure, hair styling and nose dirt removal subroutines. It has also been suggested by the Vulcans that a modified ERU could serve as a highly efficient replacement for the mating process, but, surprisingly, it wasn't just the Klingons that protested against that one.

The ERU has turned excretion into a convenient, dignified and painless process. Whilst its history has not been without complications it looks set to remain an essential part of a starship's equipment compliment for many years to come.

Other cards in this file:

Operation of the ERU in a shipwide power failure

Bowel re-training for undercover operatives in ERU-free environments

How to re-program ERU waste destinations, or ' The turd in the Captain's chair' scenario

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WHITE ☩ CROSS MISSION

After Ceaucescu' s death in 1990 over 120,000 children were discovered living in grim institutions. In the county of Jud Bihor in Western Romania, children who had been assessed as ' mentally retarded' at the age of three were sent to an institution in the country village of Cadea. They were housed in old buildings that had broken windows and no heating or plumbing. It was dark and dirty and for the majority of the time the children were confined to their cots. Most of them were tied to the bars by strips of cloth tied tightly around their wrists and ankles.

The children were always dirty, hungry and cold - sixty to seventy died every winter. Their original ' retardation' was the result of early illnesses such as pneumonia and bronchitis, and years of confinement at Cadea only compounded the problem. When they were finally released in January 1991, many could neither walk nor speak. All of the children rocked backwards and forwards in their distress; their eyes were glazed and unseeing. On release, many of the children were sent to hospital buildings in the mountain villages of Remeti and Bratca. It is here that the White Cross started assisting the local Romanian staff in their care.

Since the White Cross has been working with the children, over 600 people have travelled with the Mission to Romania. Some have only been able to give a few days of concentrated work, most average two months and one stayed for four years! Some work with the children, others repair the buildings and yet others deliver goods. Every volunteer is special. They raise their own money for air and train fares, insurance, food and electricity and more than half of them do it all over again and go out for a second or even third time. Old or young, with or without qualifications, the combined work and presence of these many different people has had an amazing impact on the children.

Children with blank, unseeing eyes, rocking in a world of their own are now healthy, laughing and boisterous. The accumulative effect of the White Cross volunteers with their mixture of naivety and experience, their energy, their perseverance, their hopes, their dreams and their many different ways of showing love has created a rainbow effect of bouncy, confident and individual children.

Fundatia Crucea Alba has helped White Cross Mission with the legalities of purchasing small farms, employing assistants and moving children from the mental institutions in order to live a normal family village life. We intend that these farms will be the children's homes for as long as they need. All their lives if necessary.

Buying the farms is only the beginning of a lifetime commitment to those children we take out of State care. Without a regular financial safety net we would be irresponsible if we established too many homes. We do, however, believe that this is the only way forward and are desperate for substantial funding.