ØRIC

USER

MONTHLY

Keeping the

Oric alive

with Alternative Micros

All the news...

THE EDITORIAL

Hi and Welcome,

To the April issue of OUM, which is going to be a biggie!

Plenty happening on the NET. A few of you are seriously contemplating going on-line, and therefore I have included some things that may be of interest for future reference.

I have been busy catching up on the backlog of software orders, and should be up to date with them by next month, or the month after or the month after that.....................

I have recently had one of THOSE letters from our friend at the EINSTEIN/Steam Computer Group. My first reaction was to reply in a sociable sort of way, whilst I then thought better of it and decided that a one word reply would suffice. That word was: BO..OC.S!! I'll let you deduce where the Ls and the K go.

Do you want me to publish the letter from our venereal (or is it venerable) friend?

And so without further ado, let's get to the Index for this issue.

INDEX

MAY O.U.M

Articles for inclusion in the May issue of Oric User Monthly should reach me by April 24th at latest please. We are hoping for a few more surprises, some interviews, and all the latest!

OUM ISSUES TO COME

Due to holidays it is necessary to plan for the Summer issues of OUM. The June issue will either go out early (before end of May) or late (mid-June). To ensure inclusion in the June issue, would you please send your articles to me by May 15th. at latest.

The August issue is number 120, which means we will be 10 years old. To celebrate, we want as much material from you as possible.

The September issue will not be published, but there will be a double issue for October.

EUPHORIC - your queries!

Just recently I have had many queries raised on certain aspects of EUPHORIC. Some I am able to answer, whilst others need explanation from Fabrice or Jon. In the next issue of OUM I will publish some of the questions that you have asked with the known answers.

THE DRAGON 32 in its death throes!

LONG LIVE THE ORIC!!!!!!!!!!!

News.......News.........News

Lambing Time

Congratulations to Pierre Ferron and wife on the arrival of a baby daughter in mid - March.
Not an OUM reader, but active on the Oric mailing List of the NET, Pierre has recently bought one of Steve Hopps's disk interface.
Due next is an arrival to OUM reader Garry Egerton - hope all goes well at the end of April.

HENRY'S

Based in London's Edgware Road, Henry's Audio Electronics (Cubegate Ltd) is someone that I bought a supply of switched mode P.S.U's from some years ago. For a copy of their new colour catalogue, send a cheque/P.O for £4 to them at: Cubegate Ltd, 404 Edgware Road, London, W2 1ED. Those in European Community countries can send them £5 (or send me £5 and I'll sort it out for you). Callers can pick up a catalogue from the shop for just £2.
You can check out their web site - http://www.henrys.co.uk
E-mail: sales@henrys.demon.co.uk

ON THE MOVE YET AGAIN!!!!

Yet again Robert Cook has a new address. He is now to be found at:
12 Liford Lane, Stirchley, Birmingham. B30 3DY.......Tel: 0121 433 3916
The CSA will catch up with him in the end!

PARIS MEET

The next French Oric Meet will take place in Paris on Saturday June 7th.
With special deals on Eurostar, why not take the opportunity to visit Paris and see the sights - Laurent, Jean, Claude et al.

AYLESBURY ORIC MEET

Don't forget to get your tickets for the annual Aylesbury Oric Meet on Saturday July 12th.
Full details were in last month's OUM. Already promising to appear are: Jon Haworth, David Wilkin, Bob Terry, Brian Kidd, Steve Kennard, David Goodrum, Peter Bragg, Robert Cook, Jim Groom and Peter Thornburn.
Come and see the latest software, check out a Telestrat, try Euphoric for yourself, amaze at the Oric Web Sites, and see what's to be found on the Emulator Bulletin Board. Bring all you problems, and loads of money.
Don't forget the **GRAND RAFFLE** - we are looking for you to donate prizes.
IF YOU ARE NOT COMING then please buy some raffle tickets at £1 each.

EUPHORIC V 0.99i

Fabrice has announced the latest version of the emulator. V0.99i will have mouse and lightpen support.
When I have a copy then I'll let you know more about it.
Meanwhile Fabrice is looking for a volunteer to translate the new manual from French to English.
Come on out there - how about offering your services???

INTERVIEWS

Unfortunately the interviews with Paul Kaufman and John Sandham (LOKI) are not yet ready.
We hope to have one or both for the May issue of ORIC USER MONTHLY.

LOOKING AT MORE GAMES
with Arnt Erik Isaksen (Part 2)

PLAYGROUND 21. IJK Software 1985.
Description. Climb ladders and paint the playground.
O = e+ , G = d , S = f , A = e+. Score: **28%**.

CHUCKFORD. FGC Software 1986.
Description. Another ladder game.
O = e , G = e , S = f , A = d. Score: **27%**.

BIG BASTON. Sprites.
Description. Boxing simulation.
O = f+ , G = e , S = e , A = f+. Score: **14%**.

THEM. Virgin Games 1983. Andrew Green.
Description. Original tasks in the style of Ultima Zone from the same author.
O = c , G = d , S = d , A = e+. Score: **38%**.

TROUBLE IN STORE. Orpheus Software 1984.
Description. Collect the keys.
O = d+ , G = c , S = c , A = e+. Score: **44%**.

QUACK A JACK. Servern Software.
Description. Collect the eggs.
O = d+ , G = d , S = e , A = f. Score: **19%**.

STYX. No Man´s Land.
Description. Shoot-em-up game.
O = e , G = d , S = d , A = d. Score: **37%**.

DRACULA´S REVENGE. Softek 1983.
Description. Kill ghosts and draculas in this ladder game.
O = d , G = e+ , S = e , A = d. Score: **35%**.

STARTER 3D. Landscape 1984.
Description. Car racing simulation.
O = e , G = c , S = e , A = e. Score: **28%**.

WINTERGAMES. HGC Software 1989.
Description. Winter sports simulation.
O = e , G = c+ , S = f , A = e. Score: **27%**.

JEUX OLYMPIQUES. Micropuce 1984.
Description. Summer sports simulation.
O = e , G = d , S = f+ , A = e. Score: **23%**.

CHESS MADNESS. O.N.Software 1989.
Description. Control the horse in this chess game with a twist.
O = b , G = e+ , S = f , A = e+. Score: **33%**.

LOKI. Joe the Lion 1983.
Description. Shoot-em-up game.
O = d , G = e+ , S = f+ , A = e. Score: **24%**.

FIRE FLASH. No Man´s Land 1984.
Description. Scramble type of game.
O = e , G = d , S = e+ , A = e. Score: **26%**.

ACHERON´S RAGE. Softek 1983.
Description. Shoot-em-up game.
O = e , G = e+, S = f+ , A = f. Score: **11%**.

ZOOLYMPICS. Noman´s Land 1984.
Description. Summer sports featuring animals.
O = e , G = d , S = f+ , A = f+. Score: **18%**.

GOLDMINE. FGC Software 1986.
Description. Boulderdash clone.
O = d , G = f+ , S = f+ , A = d. Score: **30%**.

MAZE RALLY. FGC Software 1986.
Description. As the title says.
O = d , G = d+ , S = d+ , A = c. Score: **54%**.

DRIVER. Dialog Informatique.
Description. Similar to Maze Rally.
O = d , G = d , S = b , A = d+. Score: **51%**.

GUBBIE. IJK Software 1985.
Description. Collect gold bags in a maze.
O = d , G = c , S = e+ , A = d+. Score: **48%**.

COBRA PINBALL. Cobrasoft 1984.
Description. As the title says.
O = e , G = d , S = e , A = e. Score: **24%**.

SPOOKY MANSION. M.C.Lothlorien 1984.
Description. Who cares?
O = e , G = e+ , S = f+ , A = f. Score: **11%**.

DIGGER. M.C.Lothlorien 1984.
Description. Fast ladder game.
O = e+ , G = f , S = e , A = f+. Score: **13%**.

KARATE. Gasoline 1985.
Description. Combat sport simulation.
O = e , G = e+ , S = e , A = e+. Score: **27%**.

ROLAND GARROS. Sprites 1985.
Description. Tennis simulation.
O = e , G = d , S = d+ , A = d. Score: **39%**.

SNAKE VENOM. FGC Software 1986.
Description. Fast light-cycle game.
O = e , G = d , S = d+ , A = c. Score: **49%**.

PANIC. No Man´s Land.
Description. Climb ladders and bomb nasties.
O = d , G = d , S = e+ , A = e. Score: **29%**.

ATLANTID. Cyti Sprites.
Description. Shoot-em-up game.
O = e , G = e , S = f+ , A = f+. Score: **14%**.

LANCELOT. Sprites 1984.
Description. Arcade adventure.
O = d , G = e+ , S = f+ , A = f. Score: **14%**.

LE 7EME DAN. FJP 1984.
Description. Combat sport simulation.
O = f , G = e+ , S = f+ , A = f. Score: **8%**.

CABBAGE PARCH. K.Freeman (type-in).
Description. Collect the apples in the garden in this lightning fast game.
O = e , G = f+ , S = e , A = d. Score: **28%**.

DOTMAN. K.Pedersen (type-in).
Description. Pac Man clone.
O = f , G = e+ , S = f+ , A = e. Score: **18%**.

Look forward to the next issue of OUM and the "THE ULTIMATE TOP 100 ORIC ARCADES". See you.

On The NET

>Help, I have just obtained a Telestrat. Can anyone help with Roms and Software? I hear the Sedoric can be found on rom???
- Steve K

Reply

You can download some Telestrat-specific software from: - http://www.ensica.fr/oric/archive_english.html
i.e. Stratsed disk, file manager disk (Hypercat), and QVC disk.
These disks are to be used with the Hyper-Basic cartridge.
Now, if you want to use Sedoric disks with the machine, you need to replace the Hyper-Basic cartridge with the Stratoric cartridge (the only one which has Sedoric in ROM).

Hope this helps...
Laurent Chiacchierini

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CLUB EUROPE ORIC

E-mail: laurentch@compuserve.com
Home Page: http://ourworld.compuserve.com/homepages/laurentch/
* ***************************** * * * * * * * * *   *   ** ******************** * * * *

Dear Dave,
I've just received your mail with the oric software list, which is very interesting..
I'm going to study it to update my page...
Sorry for not subscribing to OUM, but because of some money problems (crisis ? what crisis ??), I couldn't subscribe at the moment you sent me the 2 free editions. But it's going better now, so you'll hear about me very soon ! Your mag is just great, very interesting and pleasant to read, great work, congratulations !!
Well, I hope OUM will keep going
Sincerly,
Jean David

******************************* * * * * * * * * * *** * * *
Hello,
I'm looking for old issues of " Theoric", specialy :
Issues: 17 , 22 , 26 , 27 , 28 , 30 , 33 , 34 , 35 , 36 .
If you think you can help me, please E-mail me.
Regards. - Dominique Pessan .... pessan@pratique.fr
* * * * * ******************************** * * * * * * * * * ***************************** ** ************ * *

Your following message has been delivered to the 111 members of the list : oric@lyghtforce.com at 12:24:00 on 4 Mar 1997.

The 1997 ORIC MEET will be held on Saturday July 12th in Aylesbury, Buckinghamshire, England.
Bar a food facilities during the day. Local accommodation available. A GREAT day out!
For further details, telephone Dave Dick on: 01296 26050 or e-mail: dave@oum.softnet .co.uk
* * * * * ** ******************** * * * * * ***************************** * * * * * ******************** * * * * * *

dave@oum.softnet.co.uk wrote:>
> Hi Fabrice,
>   I have an Oric contact on the Internet who wants a copy of an OUMDISK . He wants it on Linux - not my scene. Help!!
>   Regards - Dave

Hi Dave, disks images are the same for dos and linux. With linux, you can read dos floppies, so you can send him a dos disk, no problem. You can even compress the image with your usual compression tool (pkzip or else), he will be able to decompress it too.
Cheers,
Fabrice

The History of the ORIC just £4.50 from Jon Haworth or OUM

BITS 'n' BOBS

DOPPEL-GANGER
Steve Marshall has sent me a copy of a Public Domain disk text file from the Atari ST for Doppel-Ganger adventures. If you want a copy of the Gazzette with all the latest news from Crowley's House, then just send an S.A.E to OUM.

HISTORY OF THE ORIC
For those who may of missed it and want a jolly good read - get your copy of "ORIC - The Story So Far" from Jon Haworth. Price of this super publication is just £4.50

LOTTERY - the bitter truth!
You may remember that Robert Cook won our last competition and so received 5 tickets for the National Lottery, with numbers to be used as thrown up in John Hurley's program. You may have noticed that Robert Cook is on the move again. Is it to mansion? Were the numbers successful? Were they heck as like! Not even the sniff of a tenner! What do you get for 2 numbers - 2 in total that is on a total of 5 lines! Never mind -eh! Meanwhile Robert is plodding on with his machine code arcade game. We hope to have more news on it next month.

LE VIRUS INFORMATIQUE
Thanks to Dominique Pessan I now have issue 1 of the French magazine 'Le Virus Informatique'. With a cover price of 10 francs this 26 page glossy will take me some time to get to grips with, mainly because of the language barrier. It didn't need much commmand of the French language to understand the 'Toilet' cartoon. Topics covered include: Windows 95, Hewlett Packard, other Micro mags., software, add-ons, The Internet, Acorn Risc PC, Radio, Forth, Pentium bugs, and cartoons. No sign of anything remotely to do with 8-bit machines. An issue of OUM is on its way to Dominique.

WELCOME TO OUR NEW READERS
Following a posting on the Internet we had 6 new requests for the April OUM within 24 hours. We welcome: Karim Kamar from London, Anthony Clarke from Australia, Geir Pisani from Norway, Vaggelis Blathras from Greece, Alexios Chouchoulas originally from Greece and currently residing in Scotland, and Keith Adams from Blackpool. By the time we go to press we could also have some more new readers. Welcome to one and all, and a big thank you to our regular readers for supporting us over nearly ten years of OUM. We are certainly a multi-national group as we currently have readers in: England,Wales,Scotland,Eire,France,Norway,Finland, Sweden, Austria, Germany,Australia, and Greece.
This issue will go out to at least 94 readers.
Since I took over the Editorship of OUM I have given a membership number to everyone who has ever taken a copy of the magazine. Geir Pisani will incredibly be our 300th reader - a gift is on it's way to him.

OUMDISC No.7
Well it certainly isn't lucky 7 as far as the latest OUMDISC is concerned. There are still problems with it - perhaps next month will see it's release.
Don't forget that OUMDISCs 1 to 6 are still available at £3.50 each or 3 for £10 or 6 for £18. If you want them as an attached file on an e-mail, then write for a quote.

DO YOU PLAY OTHELLO/REVERSI? - Fabrice Frances

After visiting Hakan Karlson's archive, where I found some **Reversi** programs that I didn't know of, I had the idea to write a comparative review of the best programs. Here it is; unfortunately it might not be complete since I can only review programs that I can put my hands on. Also, I am only interested in commercial programs; there are so many programs written by amateurs... (I did review two Nordic programs, but they can't compare with commercial ones. If you know an un-edited program which is worth-while, I will have a look). Even with commercial programs, this review is not exhaustive: a first look at Jean-David Olekhnovitch's list on the web shows that I have not reviewed **Othello** games from **Epsilon, Kenema, Sigma** and **Tran** (and maybe two others Jean- David does not know where they come from). Ok, here we go, if you don't know **Othello/Reversi**, jump to **IJK's Reverse 8.3**, which has a tutorial.

Reversi from CDS:

This program has a rudimentary user interface: you enter the co-ordinates of a piece to play, and despite using hires mode, the pieces are awful squares (it could be done with text mode). Also, sound cannot be removed.

>From a playing point, only one play level exists, the program requires about 20 seconds for a move. The strategy used is obviously of positional nature, the program is written in Basic, it doesn't look at future moves, so the program strength is weak. I played only one game with it: **Fabrice 56 Reversi 8**.

Reverse 8.3 from IJK

This program is the only one in this review to have a tutorial. If you don't know how to play, this is the program to start with, the tutorial won't give you champions' recipes but it is animated and quite nice. Also, there is a demonstration level where the computer plays against itself, so you get a deeper idea of the game.

Let's look at the user interface: you move a cursor on the board with arrows, but you have to press G (go) to put a piece, and M (?) to skip your turn if you cannot move.

To the game now: you can play **Othello** or **Reversi** (straight and diagonal starts are allowed), and something unusual with White being able to start. Whatever the level you choose (1 to 4), the program takes about 20 to 30 seconds per move. Obviously, the strategy is positional too. The program is written in Basic and limits the inspected area to a rectangle surrounding the already played pieces. Curiously, it seems playable and unplayable moves require a similar lengthy time, so the 'Deep Thought' messages displayed at level 4 makes me smile. I have tried 3 games with it, the program strength is again rather weak.
Level 1: Fabrice 59 Reverse 5
Level 2: Fabrice 55 Reverse 8
Though Level 4 ("Deep ht"): Fabrice 48 Reverse 16
(don't assume scores reflect a precise strength)

Reversi Champion from Loriciels

With **Reversi Champion**, we enter the arena of machine code programs. **Reversi Champion** starts straight with the choice of a level, there are no less than 30 of them ! That's surely too much for the occasional player, as the highest levels are very, very time consuming. If you wanted to learn a little about the game, you will have to wait for the display of the board, there you can select "instructions" with the M key.

Don't even ask for the rules of the games unless you want to read them summarized in one phrase...

About the user interface first: the display is in hires mode with quite big round pieces, but they are rather oblate, and the board lacks colour. The space key is used to browse the possible moves, this is very simple but from time to time, you will repeat space too fast, pass the move you wished and be obliged to go through all the moves again. Return is needed only for your move, the program plays without waiting for you (if you don't see which move the program has played, last moves' coordinates are displayed on screen). **Reversi Champion** is very flexible with regards to which turn it is: you can ask the program to play in your turn with the J key (useful at the beginning of the game if you want to be White), or play both sides with the L key instead of Return, etc. At your turn, you can also ask for advice, but don't be too confident in the move the program suggests, the advice comes really too fast.

Let's see if it is a champion. With 15 levels and two strategies (beginner or expert), you can easily choose a good partner. I have not been able to feel the precise difference between beginner and expert strategies. At least, the difference does not heavily interfere with the average time required for a move. However, the times announced with the levels all are under- estimated, you should count with 50 to 100% more at each level. The 15th level is said to require infinite time, I have not played a full game with it but it may be interesting (you have to press the S key to make the program play).

Until this review, I was playing with **Reversi Challenger** (well, I don't play every day. It really was a long time I hadn't played in fact) because of its strength. Having eaten the two previous programs with ease, I under-estimated this one and should have trained a little as this can be seen from the following scores:

Level 1 Beginner Fabrice 53 Champion 11
Level 1 Expert   Fabrice 30 Champion 34 (ouch, have I played too fast ?)
Level 4 Expert   Fabrice 18 Champion 46 (ahem...)
Level 6 Beginner Fabrice 24 Champion 40 (ouch, it hurts...)
Level 8 Beginner Fabrice 37 Champion 27 (Haha, good job, boy !)
Level 8 Expert   Fabrice 11 Champion 53 (ok, this program is a killer...)

Reversi Challenger from CobraSoft

This is a highly configurable program, and it is bilingual (English/french). You can choose the sound level, and the shape of pieces (round or square). The user interface needs some familiarization, but after a while, it proves rather practical: you use the up and right arrow keys to scan the possible moves (in either direction), Return to put a piece on the board, and curiously you also have to press Return when the program shows where it wants to play (so you see the effect of his move). The display in hires mode is bigger than with other programs, but white round pieces have a surrounding magenta square.

Now to the play: **Challenger** knows two strategies (A and B) and you can choose for each one the analysis' depth during the game (from 1 to 8 moves), and at the end of the game (from 8 to 12 moves). Strategy B is much more time consuming. Unfortunately, you don't know the time a strategy+depth requires for every move. From the games I have played, strategy-A/depth-1 is immediate, and strategy-B/depth-1 too. Strategy-A/depth-3 requires about 2 seconds per move, strategy-A/depth-5 about 20 seconds, strategy-B/depth-4 about 20 seconds too, and strategy-B/depth-5 about 3 minutes.

I have not been able to detect what precise sort of strategies are A and B, but they surely give you a rough time all the game long, as they clearly diminish your move possibilities. However, the program seems to be sensible to the horizon effect, which often results in a corner given by the program if you have been able to resist up to that time. One interesting feature is that **Challenger** is the only program allowing you to enter problems, this is mainly useful if you want to know the best play at the end of a game. Finally, **Challenger** allows you to cancel not only your last move, but also whatever move you or the program played during the game, so you can try several possible moves and see what happens after.

Here are the results of games I played for the review:

Strat-A/depth-1.8 Fabrice 56 Challenger 0
Strat-B/depth-1.8 Fabrice 51 Challenger 11 (victim of horizon effect)
Strat-A/depth-3.8 Fabrice 39 Challenger 24
Strat-A/depth-5.8 Fabrice 34 Challenger 30
Strat-B/depth-5.12 Fabrice 25 Challenger 35
Strat-A/depth-5.12 Fabrice 58 Challenger 5
Strat-B/depth-4.8 Fabrice 42 Challenger 22 (horizon effect again)

Conclusion ?

For those who like tables, here is a summary:

	Reversi CDS	Reverse IJK	Champion Loriciels	Challenger CobraSoft
User Interface				
Display	+	+	+++	++++
Move entry	+	+++	++	+++
Game Play				
Strategies	1	1	2	2
Depths	1	1	1-14+	1-8 (8-12)
Time limited levels	no	no	no	no
Infinite time level	no	no	yes	no
Thinks during human play	no	no	no	no
Openings library	no	no	no	no
Strength	+	+	+++++	++++
Strength/Time ratio	+	+	+++++	+++
Misc.				
Rules	+	++++	+	+
Problem entry	no	no	no	yes
Replay capability	no	no	1 move	yes

So, what's the overall winner ? No one of them is perfect, it depends what you are looking for. If you want the strongest opponent, look at **Champion** from Loriciels (**Challenger** is interesting too). From an ergonomic point of view, all these programs are not very good: the display could be better, and entering moves is far from being perfect. **Champion** and **Challenger** ensure you make a valid entry by letting the cursor go only on valid moves, but these moves are sorted in a

list, and you don't have such a list in your mind, so it is not immediate to predict which position the cursor will go to next. I prefer a simple cursor move like IJK's one, but there should be an option to see which moves are valid (dots on valid positions for example). From a player point of view, all the programs lack time limited levels for tournaments, like in Chess programs (IJK Chess for example). And they could exploit the human turn to start thinking. Having no openings library is understandable: all these programs were on tapes. I have been rather impressed by **Reversi Champion**, I'm not a champion myself and I spent little time for every move in order to review all these programs (plus two others from Anders Bostrom and Stig Ronand Odling, both rating lower than **CDS' Reversi**, with scores 55/8 and 62/0 respectively), and also I ran the programs with Oric boosted at 6 MHZ (**Euphoric** of course) so this **Champion** has to give me a revenge, but nevertheless, it proves you don't need a mega-pentium to have a fairly good opponent. I haven't mentioned I also tested a shareware program for the PC: it had superior exploration power of course, and showed figures around 200000 positions analysed. It gave me a rough time, looking at more than 10 moves in advance, and minimizing my move possibilities. But this way, it doesn't figure out it was minimizing its pieces count too, and I was (luckily) able to turn all its pieces (**Fabrice:47 PC:0, hurrah!**). This shows that brute force is not all...

DeathMatch: Reversi Champion VS Reversi Challenger

Making **Champion** play against **Challenger** better exhibited their respective strategies. It is quite difficult to give them equal chances since none of them has a limited time level, so I have tried some levels with near equal average times. Here is a very summarized outlook of the match.

Black: Challenger level 5.12 A
White: Champion level 6 Expert
Challenger wins 46/18.
(**Champion** keeps a good inner position but diminish its possible moves too much. **Challenger** "packs the defence". 12 moves at the end is rather too lengthy)

Black: Champion level 7 Expert   White: Challenger level 5.10 A
Champion wins 43/21.   (**Champion** keeps a good inner position and plays a nice "gambit". **Challenger** "packs the defence")

Black: Challenger level 5.10 A   White: Champion level 7 Expert
Champion wins 33/31.

Black: Champion level 6 Expert   White: Challenger level 5.10 A
Champion wins 34/30.

Black: Challenger level 4.10 B   White: Champion level 6 Expert
Champion wins 41/23.

Black: Champion level 6 Expert   White: Challenger level 4.11 B
Champion wins 36/28.

RETROGAMES

I have recently received a couple of issues of **RETROGAMES** - a bi-monthly magazine for those into the old machines. With a cover price of £2.50 per issue (average 21 pages), this initially seems a trifle expensive for a publication that is of no better quality than **OUM**. However, the editor explains that no profit is made - they are on their third photocopier, and as well as this expense, they pay to advertise. Also they probably can't top up their funds as we do by doing our annual raffle.

Anyway, enough of that, on to the nitty gritty!

Front page of issue 7 (Nov/Dec) has a review of the **RETROGAMES SHOW**, and a few little snippets. One such is: "I was recently quoted in **C & VG** as saying that the Oric had a chance against the Spectrum because they ran the same games! I have never ever said anything like that, and since I have owned an Oric for many years, am completely aware that it is a useless lump of plastic." Well - first reaction was to call the editor an arsehole!. Then I thought - perhaps he is trying to be funny, after all, I am often less than nice about the Speccy.

The magazine contains many interesting Retrofacts, photos/gen on many obscure machines/ add-ons, readers letters, a nice little feature on Wristwatch games, reviews of classic games (with photos of the covers), and a catalogue of software for sale . The bulk of the software is for the Spectrum and Commodore 64, but there is plenty for other machines, including the rarer ones such as the **AQUARIUS, COLECOVISION, INTELLIVISION, JUPITER ACE, PRINZTRONIC, VECTREX and VIDEOPAC.** For the ORIC there are about a dozen titles - would you pay £6 for **MUSHROOM MANIA** or **DINKY KONG**? Must be classy games these, as you can get a Speccy game from 50 pence!

You can buy hardware or even do a trade-in. Fancy a Steering wheel & SEGA turbo game for your COLECOVISION? - have one for £30. A VECTREX machine will set you back £200.

Even though I am not a collector of old machines, I must admit to of enjoyed reading about them - did you know about the ATARI 2600 REMOTE? Have you sen a TIMEX SINCLAIR 2068? Ever played a tank game on a SOUNDIC 1 games console?

If you are into the obscure, or just enjoy gaming on the old machines, or want to add to your software/hardware collection, then this magazine is for you.

Editor Jason Moore tells me that he has about 1000 readers, including many from the U.S.A.

I have an agreement with Jason that OUM can re-print any little snippets on our ALTERNATIVE MICROS page of OUM - I won't nick too much. I shall be subscribing so that OUM readers can be kept up to date. I've sent Jason a couple of issues of OUM, plus the HISTORY OF THE ORIC. I also intend to do an Oric feature for his magazine - we may gain a few new readers.

Subscription rates are: 6 issues (1 year) of RETROGAMES for £14. A year's subscription to the separate GAMEFINDER XTRA is £6 - I'll have to find out more about this publication.

There is no reduction for subscribing to both. Issue 9 of RETROGAMES was due out on March 20th, whilst issue 8 of GAMEFINDER is due out April 20th.

If you are looking for a classic machine, then Jason is the guy to talk to. You can telephone him on: 0181 203 8868, between 10.30.a.m and 6 p.m. - works telephone number. Letters and subscriptions should be sent to: J.Moore, c/o 61 Baccara Grove, Bletchley, Milton Keynes. MK2 3AS. Cheques payable to "J.MOORE".

- DAVE DICK

RETROGAMES

READERS LETTERS

DEAR DAVE,

Quite enjoyed the History Of Computer pages.
- Paul Baker (Weston Coyney)

DEAR PAUL,

The 'Muso' will be pleased to hear that his articles are popular.
- Dave

==

DEAR DAVE,

Ta for recent letter - I'd like to subscribe to **OUM**.
I enclose a couple of circuit diagrams. If this sort of thing is of any use to you or any member, feel free to pass it on. I have folders full of the stuff, which I would be happy to send.
I thought it might be appropriate to tell you about myself. Firstly, my English is teerible! What I'm really into is old computers. I don't really consider myself as a hoarder. I just amass these things. My collection goes back to about 1977 with two **SUPERBRAINS**, which run under CP/M, and right up to an **ATARI STE**. If it is not too unusual, then I probably have it. My wife and I moved our bedroom downstairs just to make room. I suppose I have around 2000 software titles, 400 hardware items, and around 40 computers, and it's not even April the first!
- Kevin Gurd (Southampton)

DEAR KEVIN,

You are certainly keen on your computers. You must have a really understanding wife.
I thank you for the diagrams - 'Building a Game Console' is to be found in this issue.
Perhaps you could send me a list of your projects.
- Dave

==

DEAR DAVE,

I've just finished building my **PC** (5x86, 100mhz) . I've taken out a subscription with **AOL** on the Internet, and would you believe it - my first connection to the **NET** (while searching **ORIC** out of idle curiosity) and I find the **ORIC** scene to be alive and well (and residing in Aylesbury of all places). I sold my original **ORIC** some 6-7 years ago and now a PC emulator is available and it brings back the memories. So I am keen to re-collect the software I once owned - can you please help?
I originally had an **ORIC ATMOS** bought cheaply in **RUMBELOWS**, just as **ORIC** went into receivership. I later had Oric and Cumana drives, and a vast amount of software from both England and France. I sold all my **ORIC** related bits to finance an **ATARI ST** (regretted ever since). Any help or information will be gratefully received - with the added bonus that you also live in Aylesbury.
- Martin Bateman (Aylesbury)

DEAR MARTIN,

We met many years ago. You were about to sell your **ORIC** collection, but you introduced me to some great French software. You also informed me of the **I.O.U.G,** which in turn led me to **ORIC USER MONTHLY** and the then editor Robert Cook. The rest, as they say, is history.
- Dave

WELCOME

A NEW ISSUE , AND
ANOTHER NEW LAYOUT

I LIKE THE ODD CHANGE
- I THINK IT KEEPS ME
ON MY TOES , WHILE
PROVIDING YOU THE
READER WITH A
NEW INTEREST
(I HOPE !)

MY THANKS GO OUT TO
ALL THOSE WHO
SHOWED AN INTEREST
IN BUYING THE
COMPUTERS I HAD ON
OFFER LAST MONTH -
ALL BAR THE MAC
WENT TO NEW HOMES -
THOSE DISAPPOINTED -
I'M SORRY , BUT IT WAS
A CASE OF 1st COME ,
1st SERVED .

MUCH APPRECIATION
ALSO , FOR THE
SUPPORT GIVEN WITH
REGARDS TO THESE
PAGES .

COMMENTS AND THE
LIKE ARE ALWAYS
WELCOMED - SO AIR
YOUR VIEWS , AND
WHY NOT ENTER THE
MYSTERY PRIZE PUZZLE
IN THIS ISSUE .

MY ADDRESS IS :

32 KIER HARDIE CRES.
TREBERTH FARM
NEWPORT
S. WALES
NP9 9DQ

ANSWERS

WELL   IT'S   AS   GOOD
A PLACE TO START AS
ANY   ,   SO   HEAR
GOES   ......

1) 3 PEGS / 4 RINGS

IT CAN BE DONE IN 15
MOVES - HOW ?

1stly LABEL THE RINGS
1-4 , STARTING WITH
THE   SMALLEST FIRST -
THEN   MOVE   AS
FOLLOWS (eg 1C = RING
1 TO PEG C)

1C , 2B , 1B , 3C , 1A ,
2C , 1C , 4B , 1B , 2A ,
1A , 3B , 1C , 2B , 1B .

FOR THOSE OUT THERE
WHO DELIGHT IN SUCH
THINKING , THERE IS A
FORMULA FOR THIS - TO
COVER ANY NUMBER OF
DISCS , WHERE 'x' IS
THE NUMBER OF RINGS
, IT IS ($2 \wedge x$) - 1 .

FURTHER MORE , ONLY
WITH AN EVEN NUMBER
OF RINGS CAN PEG 'B'
BE USED - PEG 'C' FOR
ODD NUMBERS .

----
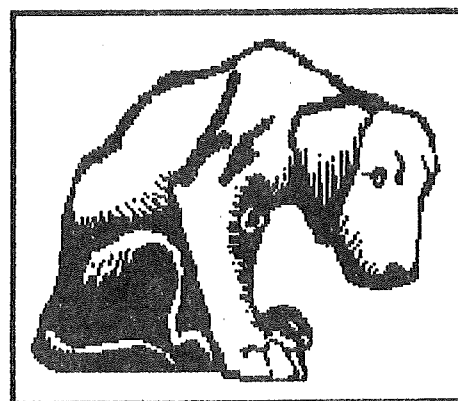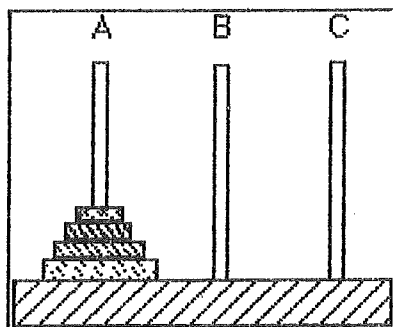
*I STILL DON'T GET
MANY REPLIES !*

ANSWERS   Continued :

2 / 3   THE SWISS CROSS

DISSECT WHERE SHOWN
- THEN YOU CAN FLIP /
ROTATE   TO   GET   THE
DESIRED SHAPES

2) SQUARE
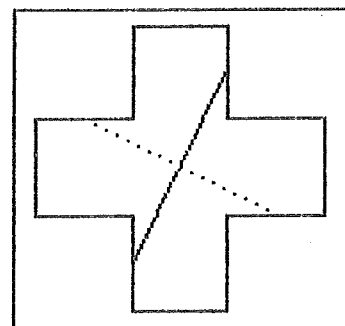
3) TRIANGLE
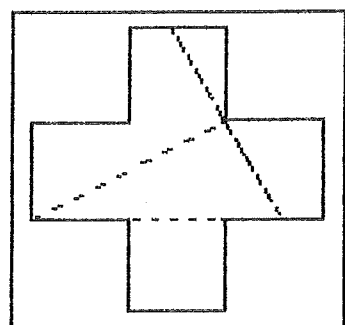
IT'S POSER TIME !

1) 3 ISLANDS & 3 PLANKS

A

(TO SCALE)

B   C
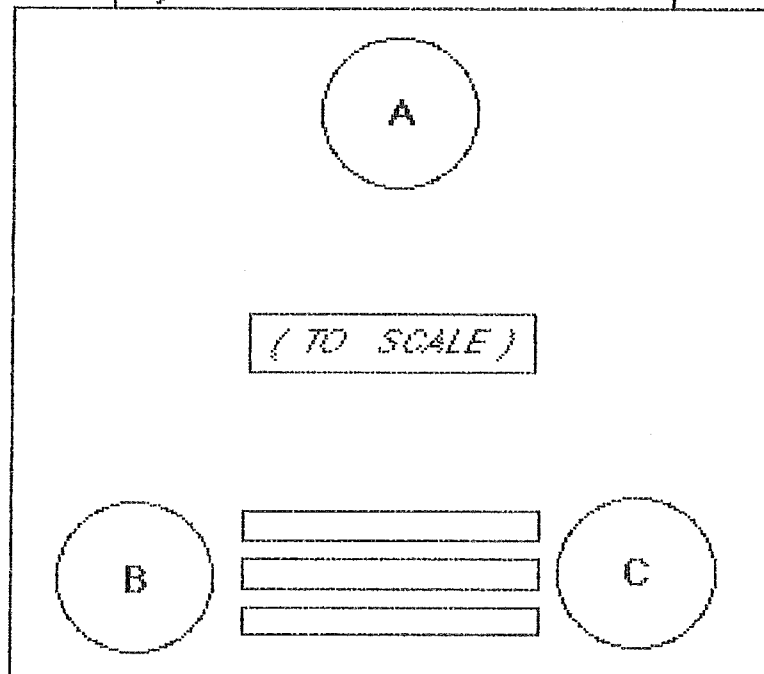
THERE ARE 3 ISLANDS ; A , B & C .

ON EACH ISLAND IS A MAN , WITH A PLANK OF WOOD , NOT QUITE LONG ENOUGH TO REACH ANOTHER ISLAND . HOW DO THEY FORM A BRIDGE ACROSS LINKING ALL 3 ISLANDS ?

2) CONTINUED ......

A   B   A   B

1   2

C   D   C   D

A   B

3

C   D
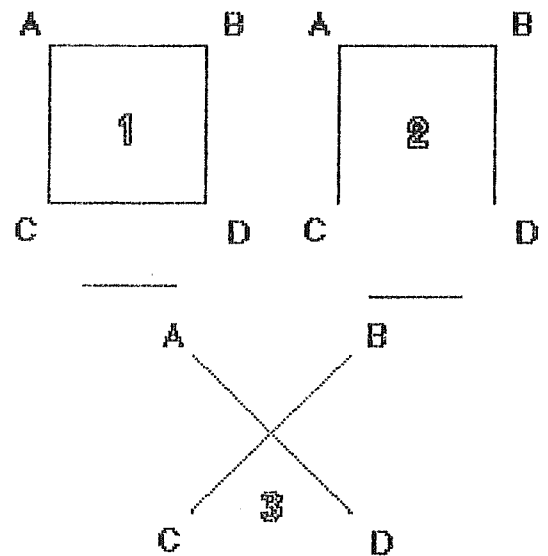
(THIS IS THE PRIZE PUZZLE)

3) FAST or WHAT ?

WHAT WAS THE FIRST MAN-MADE OBJECT TO BREAK THE SPEED OF SOUND ?

2) A ROAD TO NOWHERE - OR IS IT SOMEWHERE ?

ORICLAND HAD BEEN THE CENTRE OF A BOOM , AND AS A RESULT , NOW HAD FOUR MAJOR TOWNS . HOWEVER TO IMPROVE COMMUNICATIONS BETWEEN THE TOWNS , A NEW ROAD LINKING ALL FOUR HAS TO BE BUILT .
HOWEVER , THE BOOM IS OVER , AND WITH SPENDING CAPS IN PLACE , IT WAS DECIDED THAT THE NEW ROAD SYSTEM , SHOULD BE AS SHORT AS POSSIBLE , WHILE STILL ALLOWING ACCESS TO ALL TOWNS .
ENGINEERS CAME UP WITH THREE ROUTES , AS SHOWN ABOVE . No. 1 USES 40 MILES OF ROAD ; 2 USES 30 ; 3 USES 28.3 MILES. HOWEVER , WHEN SUBMITTED TO THE MINISTER OF FINANCE - CHANCELLOR JON , HE ACCUSED THEM OF EXTRAVAGANCE , AND QUICKLY POINTED OUT TO A BETTER DESIGN , THAT REQUIRED EVEN LESS ROAD SURFACE . WHAT WAS IT ?

Machine Code for the Oric Atmos (Part 63)   Peter N. Bragg

The Story so far
---------------- We have been looking at Interrupts in recent articles and
we had reached the stage in the last article, of producing a demonstration
("Test Indicator") routine, plus two short routines that would link that
demo routine, to the Oric's Interrupt system.

The two short routines were, an "Interrupt Extension" routine, which allowed
the demo routine to be included in the system's Interrupt software without
"crashing" the system and a "Set New Interrupt Vector" routine which put the
calling address of the extension (and demo) routines, into one of the
operating system Interrupt vectors.

The demo routine was just that, a demo nothing more. It could be replaced by
any other software operation you might wish to incorporate into Oric's
Interrupt system. That could then be simply called by the Interrupt
Extension routine, in the same way as the demo routine was called.

The Interrupt Extension routine is used to ensure that any operation called
by it (ie. the demo routine), is able to make a clean entry and exit from
the Interrupt system, without corrupting any of the microprocessor's
registers. This routine is the essential minimum needed to call any software
operation that you may wish to add to the Interrupt system.

Setting a New Interrupt Vector
------------------------------- This brings us to the third routine, which
was "Set New Interrupt Vector". This aimed to provide an illustration of how
to link into the Interrupt system, by writing the Extension routine calling
instruction into one of the Operating System vectors.

The routine simply set the Accumulator and poked the instruction, one byte
at a time, into the vector location. OK as an illustration of what is needed,
but not a good piece of software writing.

It is not the best way to set the vector because it tends to be a bit of a
"one shot" affair. Once you have called it, thats it and you are stuck with
it, until you switch off the computer. There are better ways to provide the
link-up, which can provide more control and thats what we will look at next.

Essentially, we can leave the demo and the extension routines exactly as
they are now and concentrate on improving the method of setting a new
interrupt vector.

The best way to do this is to set aside a small area of memory to use as a
parameter block and use this to store the two lots of vector contents. Now
we can start up our own Interrupt extension operation by first copying the
vector (#024A/4C) contents into the Parameter Block at #8002/04, to preserve
it for future use and then replace it with the instruction to call our own
extension routine, which can be found in the Parameter Block at #8006/08.

The two routines that do this, are exactly the same in operation, the only
difference between them, are the addresses of the items copied and their
destinations, as noted above. The two routines "Copy Vector" JSR#8010 and
"Set New Vector" JSR#8026, are linked together into a single operation by
the short routine "Set Extension Vector" and are put into operation by the
CALL#8054. Once again this will run the Interrupt demonstration routine as
before, but in addition, it will preserve the original system vector.

Now all we need is another routine, exactly the same operation as above, to copy and restore the original system vector, using the copy stored in the Parameter Block. This is done by the routine "Restore Orig Vector" CALL#8040, which, when called, will immediately restore the system to normal operation and disable the extension (and demo) routine.

So we now have the means to turn the demonstration, on or off, whenever we wish. Simply CALL#8054 to set the Interrupt demo routine in motion and CALL#8040 to stop it. Better still, we can do the same to any other interrupt operation, that we may wish to substitute for the demonstration routine (JSR#8070), in other words, it can be started up or stopped at any time, by making those two calls, or using JSR instructions to call them instead.

This is not a perfect software operation as it is open to improvement. One such improvement, might be to change the "RTI" (40h) instruction at #806D to a jump (4C 02 80 ie JMP#8002), which would then handle any other changes made by other software to the Operating System vector. There are others. However, to follow them up here, would be getting away from the original aim, which was simply to show an example of how to set up your own interrupt operation. Just remember, there is more than one way to achieve a result.

In the meantime, here is the complete listing, as described above, ready for your assembler or code writer. CALL#8054 to run it and CALL#8040 to stop it. That's about it for this set of routines.................See you next month.

```
Oric                          Demo Routines                    26 Dec 96
----                          -------------                    --------
[-------------------------------[ Param Block  8000 ]-------------------------[1/2]
              ---start---
8000:FF            :          : Param Block Marker (optional)

8001:              :          :    .....'not used.......

8002:40            : RTI      : Usual contents of "INTSL" vector as they
8003:00            :          :  would appear after being copied by
8004:00            :          :    the routine at #8010-022.

8005:              :          :    .....not used.......

8006:4C            : "JMP" to : The instruction which is copied into the
8007:60            :   #8060  :  "INTSL" vector, by the routine
8008:80            :          :    at #8026-38.
              ---end---

[ JSR 8010 ]-----------------[ Copy Vector ]---------------------------------]
              ---start---
8010:AD 4A 02 : LDA 024A      : Load Accumulator with vector 024A item
8013:8D 02 80 : STA 8002      :  and copy it into Param 8002.

8016:AD 4B 02 : LDA 024B      : Load Accumulator with vector 024B item
8019:8D 03 80 : STA 8003      :  and copy it into Param 8003.

801C:AD 4C 02 : LDA 024C      : Load Accumulator with vector 024C item
801F:8D 04 80 : STA 8004      :  and copy it into Param 8004.
              ---Finish---
8022:60            : RTS       : Exit
              ---end---
```

```
Oric                       Demo Routines                    26 Dec 96
----                       -------------                    --------
[ JSR 8026 ]---------------[ Set New Interrupt Vector ]-------------[2/2]
          ---start---
8026:AD 06 80 : LDA 8006    : Load Accumulator with Param 8006 item
8029:8D 4A 02 : STA 024A    :  and copy it into vector at #024A.

802C:AD 07 80 : LDA 8007    : Load Accumulator with Param 8007 item
802F:8D 4B 02 : STA 024B    :  and copy it into vector at #024B.

8032:AD 08 80 : LDA 8008    : Load Accumulator with Param 8008 item
8035:8D 4C 02 : STA 024C    :  and copy it into vector at #024C.
                            ---Finish---
8038:60       : RTS         : Exit
          ---end---
[ JSR 8040 ]---------------[ Restore Orig Vector ]-------------------]
          ---start---
8040:AD 02 80 : LDA 8002    : Load Accumulator with Param 8002 item
8043:8D 4A 02 : STA 024A    :  and copy it into vector at #024A.

8046:AD 03 80 : LDA 8003    : Load Accumulator with Param 8003 item
8049:8D 4B 02 : STA 024B    :  and copy it into vector at #024B.

804C:AD 04 80 : LDA 8004    : Load Accumulator with Param 8004 item
804F:8D 4C 02 : STA 024C    :  and copy it into vector at #024C.
                            ---Finish---
8052:60       : RTS         : Exit
          ---end---
[ JSR 8054 ]---------------[ Set Extension Vector ]-----------------]
          ---start---
8054:20 10 80 : JSR 8010    : Copy orig vector into Params 8002/04 and then
8057:20 26 80 : STA 8026    :  set new vector jump from Params 8006/08.
                            ---Finish---
805A:60       : RTS         : Exit
          ---end---
[------------------------------------------------------------------]
   Interrupt Extension routine.        Test Indicator routine.
          ---start---                          ---start---
   8060:48       : PHA          8070:EE A5 BB : INC BBA5

   8061:8A       : TXA          8073:AD A5 BB : LDA BBA5
   8062:48       : PHA          8076:C9 80    : CMP #80
                                8078:D0 05    : BNE"807F"
   8063:98       : TYA
   8064:48       : PHA          807A:A9 20    : LDA #20
                                807C:8D A5 BB : STA BBA5
   8065:20 70 80 : JSR 8070
                                807F:60       : RTS
   8068:68       : PLA                 ---end---
   8069:A8       : TAY          [------------------------]

   806A:68       : PLA       The additional two routines, listed
   806B:AA       : TAX       in brief here, were more fully
                             covered in the listings and notes
   806C:68       : PLA       in Part 61 and are only included to
                             complete the operation, described in
   806D:40       : RTI       this article.
          ---end---
```

Build your own game console?

Building your own game console must surely be the stuff dreams
are made of. It is possible however and acheived with very little
electronic experience? But why would you, I hear you ask as surely
it couldn't compare with a Nintendo or Sega? Maybe not and it's
as basic as basic can be, but the sense of achievement however when
you first switch on is overwhelming.
So where do we start?

We have seen computers and game consoles grow from 8 bit to 16,32,
64.... but what did we do before computers?
It seems such a long time ago but I remember sitting down in front
of the T.V watching those telly-tennis, and pong games listening
to it "ping-pip-ping" as your bat went up and down.
Well the chip behind all those devices was the General Instruments
AY-3-8500-1.
(I wonder if there are any collectors out there?)
As far as a game controller chip goes this one was really quite
good, allowing for six game options, serve, speed, rebound and bat
size. It was possible to put everything on just one 28-pin chip
using very few external components.

Following the diagrams you will see that the picture output is
video only. There is however no problem running this to an RF modul
ator. The chip requires a 2 MHZ clock input at pin 17. I decided
to use a crystal as this is probably the easiest method.
All the items come from Maplins except the AY chip which can be
purchased from Greenwelds. There is also provision for a light
gun to be added to pins 26 and 27. Connecting the "trigger" pulse
to pin 27 and the "hit" pulse to pin 26. It may also be possible
to convert the speccy light gun?
I used a regulated 5v supply to power the unit using a speccy 9v
P.S.U.
The whole unit with regulator was housed in a plastic box measuring
10cmx8cmx8cm.
The controllers were attached to the tops of two plastic baking
powder tubs?

This project is relatively quick to build following the circuit
diagram, and there should be very few problems if any to overcome.

The letter "S" indicates where an on/off switch should be attached.
A 6 position switch should be used for the game select options and
"RS"is the reset button which should be a "push to make" type.

With the circuit being adapted to run on the speccy modulator means
that it would be possible to switch between game/wordprocessor/
database or whatever and console at the flick of a switch.

KEVIN GURD

5V FROM REG SUPPLY

RIFLE CIRCUIT

74LS04

1K
2MHz
4·7pF
10M

100Ω

8Ω

+5

1M
1M

10K
10K

2N2222

15K

220Ω
220Ω

220Ω

1µF
1µF

"S"

"R"S"

"S"

"S" "S" "S"

28   AY-3-8500-1   15

14

510Ω   510Ω

+5

330Ω

14   4072   8

7

VIDEO OUT

B
E   C

BELOW BASE
2N2222

HOMEMADE GAME CONSOLE?

+9V

SPECTRUM
PSU

I/P   7805   O/P
COM

+5V

220n

470n
4.k7

0V

0V

+5V REGULATED SUPPLY
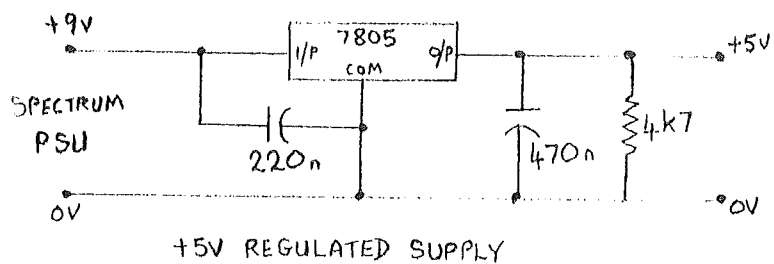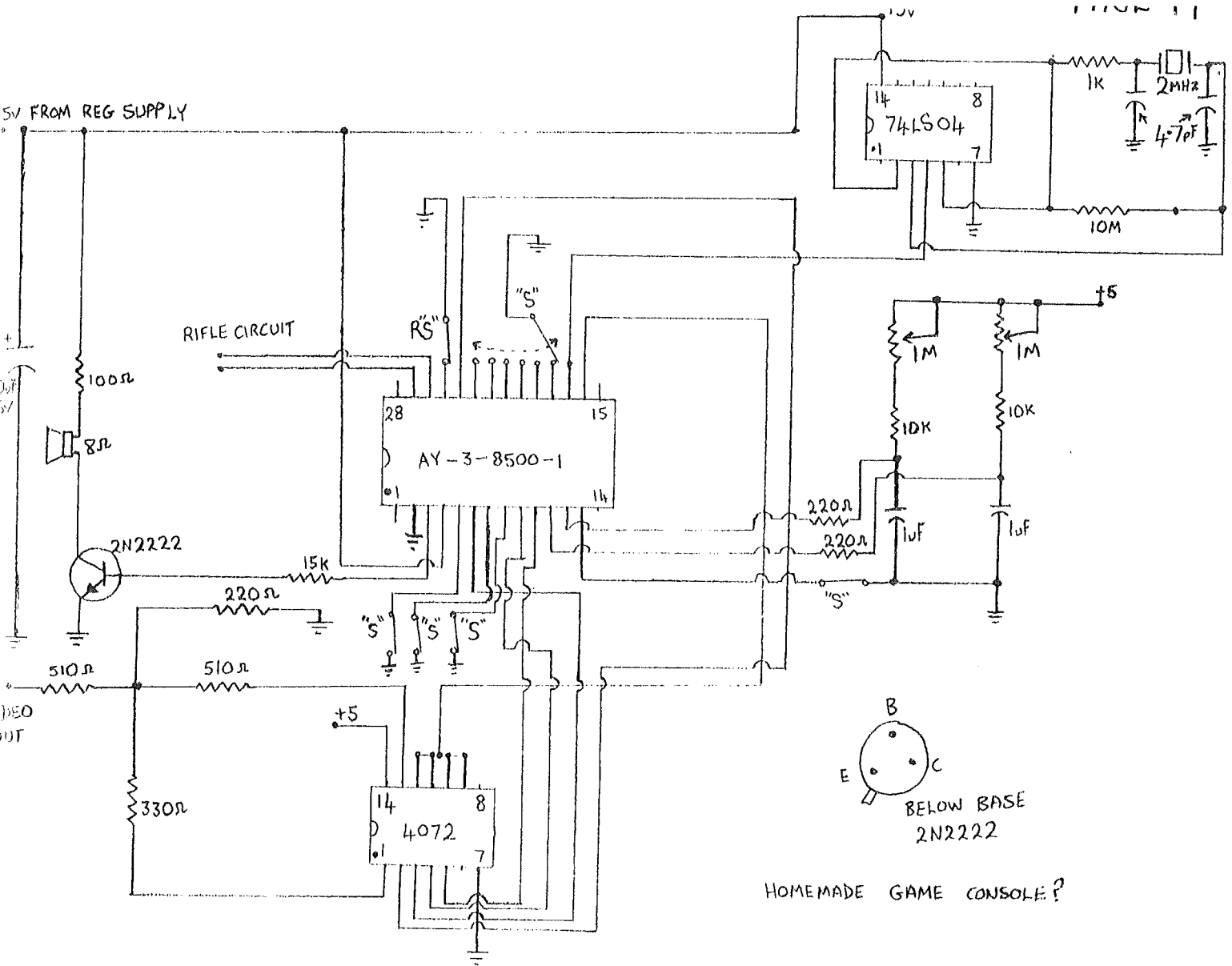
"O.U.M"

1ST FOR PROJECTS.

MORE LETTERS

DEAR DAVE,

SONIX is an excellent piece of software, highly recommended for anyone who wishes to push the ORIC's sound capabilities.

I glanced over a letter in OUM about Dr.Ray's proposed EPROM. Basically, anything regarding hardware or software development for the ORIC, in my books, is a bonus, so put me down as a potential purchaser.

Also with regards to Trevor Shaw's letter in issue 112 - I, for one, would be very interested in Mouse Driver software. I think it's a great idea; perfect for word processing, educational, games etc.

- David Clifford (Bandon, Co.Cork, EIRE)

DEAR DAVID,

Thanks for the input. Your letter should of been included a couple of months back, but I mislaid it - oops!

Somewhere in this issue should be news of a Mouse Driver for the Oric - but only for Emulator users.

- Dave

DEAR DAVE,

I spoke to John Hurley on the phone about my Turbo Tape routines and the problem he was having (page 5 - issue 115) became clear. Someone had given him a box of tapes that wouldn't load, and he thought that the Turbo Tape would load them. They won't of course. Here are the answers to the points raised about the Turbo Tape routines:

1) They have nothing to do with the method for accessing Dos from assembler.
2) They should work with an Oric-1, though I Haven't got one to test them on.
3) They don't use interrupts.

The answer to Robert Cook's question (page11 - issue 115) about using the WAIT command from assembler wasn't complete. There has to be something in the interrupt server that decrements the counter being used. The 'typer' routine in 'A General Method of Accessing Dos from Assembler' does this.

- Stephen Meachen (London)

DEAR STEVE,

Many thanks for telephoning John direct. I'm sure he appreciated it. It's nice to see that the spirit within the group is as strong, if not stronger than ever.

- Dave

Letters - we get Letters
Lots and lots of Letters!!!!!!!!!!!!!!!

More from the NET

At 02:15 04/03/97 GMT, you wrote:
> On 7th Feb., Fabrice sent a message via lyghtforce re-disk tools. re-update of 'oric2mfin' - what are CRCs?
> What is meant by fixing CRCs or I/O Errors.? ———— dave@oum.softnet.co.uk

Are ya ready? --

Cyclic Redundancy Check (CRC)

Introduction

The CRC is a very powerful but easily implemented technique to obtain data reliability. The CRC technique is used to protect blocks of data called Frames. Using this technique, the transmitter appends an extra n- bit sequence to every frame called Frame Check Sequence (FCS). The FCS holds redundant information about the frame that helps the transmitter detect errors in the frame. The CRC is one of the most used techniques for error detection in data communications. The technique gained its popularity because it combines three advantages:

•Extreme error detection capabilities. •Little overhead. •Ease of implementation.

In other words, it's an error-checking piece of code built into the routine that saves to/reads from disk - it means it is more reliable. Regards, Jon Haworth, Cambridge, UK

jon@cam.dungeon.com

===

|
Sent to the Oric Mailing List was an advert for a WINDOWS 95 INFO GUIDE
Our Greek Orician replied with the following:
Didn't know Windoze 95 runs on an Oric.

Damn, I knew I shouldn't have eaten SPAM last night.

The OUM Index just £1.50

088 08880 08880 --
8808' `88' `88 Alexios Chouchoulas: axc@dcs.ed.ac.uk, alexiosc@aisb.ed.ac.uk
88' ,88' ,88' (aka The Unpronounceable One)   alexios@vennea.demon.co.uk
08888888888888888 "Eimai mia micri soupiera"   http://www.dcs.ed.ac.uk/~axc

===

Hi all.

I have just started a new discussion list for people who collect/maintain old computers. If this kind of thing interests you read on...

CLASSICCMP - The "Classic Computers" Discussion List
NAQ (Never Asked Questions) 0.1

What is it?

This list is for the discussion of Classic Computers - primarily for those people who collect and restore old machines. It is brand new - no subscribers yet so sign up. The collection and restoration of computers is becoming a big enough hobby that I felt a need for a place to talk about it.

What is a classic computer?

Well that's hard to say but since I created the list I'll do it anyway. A classic computer is a machine that has not been produced for 10 years or more. It's an arbitrary definition but at least uncomplicated.

What are the guidelines?

The list is designed for discussion of collecting, restoring, and maintaining old computers. I'm not going to be heavy handed with restricting discussion. I'd just like it to be clear that the list is not the proper place for discussion of technical problems with the standard PCS and Macs (other than the really old stuff). Anyone can lurk - if you're going to post, just use your own good judgement.

This IS NOT and will NEVER BE a list for discussion of "which computer is best?" and anyone who posts the ubiquitous "why don't you just go buy a PC you moron" will be immediately unsubbed.
Beyond this - have fun! That what keeps us going with these old machines.

How do I subscribe?

Subscribing to this list is slightly more challenging than most. Read the instructions below.
1. Send a message to listproc@u.washington.edu with the line
        subscribe CLASSICCMP your-address
in the body of the message.

2. Send a message to bill@booster.u.washington.edu introducing yourself and explaining why you wish to be added to the list.

That's it. I require the letter of introduction for several reasons. 1 - Only people who really want to be on the list will bother. 2 - If you can't follow directions I won't hear from you. 3 - It helps me get an idea of who's on the list and what they hope to get out of it. 4 - I like to respond personally to new members rather than run a robot list.

The Gamester

Hi-Scores
Peter Thornburn has come up with some new Hi-Scores, many of which are on games that have not previously shown up on the **Ultimate Hi-Score Table.** Here we go:

    BREAKOUT (IJK)........... 7330 - single wall - level 4
                             7180 - double wall
                             6400 - wide double wall
                             7650 - every option i.e : big bat, slow speed
INVADERS (Arcadia).......... 3870
CABBAGE PATCH.............. 2699
ACHERONS RAGE............. 7590
DOTMAN......................... 2950
BREAKOUT (OumDisc 6) . 1015

===

QUOTE OF THE MONTH FROM FABRICE FRANCES

"I enjoy playing IJK CHESS on the Emulator at 4 or 6 MHZ - makes a pretty good opponent!"

TAPES SURPLUS!
Robert Cook has a few Oric cassettes duplicated in his collection. They are yours for the price of postage, and consist of: *Dambusters, Xenon-1, Zorgons Revenge, 3DMaze/Breakout, Probe 3, & Ghost Gobbler.*   Check out Robert's address for this month on page 3.

Meanwhile Robert is looking for some tapes to complete his collection. If you have any to offload, then please let us know at OUM so that we can advertise the fact.

TYRANN II
'Le Fer d'Amnukor' was the follow-up to 'TYRANN' (dungeons & dragons game from No Mans Land). A guide to the game is now available on:
                www.geocities.com/paris/7150/amnukor/.htm
I will check out the site sometime, and let you know of any useful information

ORIC DISC SOFTWARE
        Special offer on disc games software extended to May 31st. **GALACTOSMASH, GRENDEL, ZEBULON, & DON'T PANIC** - £2.50 each on 3" or 3.5" disc (all 4 for £7).
For those on the NET I can send the games as attached files on an e-mail at £2 each, all 4 for £6.

MINER - Tina Billett
In the January issue I promised to review **MINER** from the pen of Tina Billett, as it was tops with Hakan Karlsson. So here we go: This is a text strategy game in Basic. You run a Mining company in a developing country. You can buy mine workings, lorries, barges, ships etc.
   You typical text strategy, and as far as I'm concerned - Boring!

KRYSTAL WORLDS II
From the pen of Robert Cook, the text adventure **KRYSTAL WORLDS II** is now available in cassette format. Price is £3.50

Sorry for the delay again folks. This time I've been slaving away under a pile of saxophones. (Honestly ! I repair musical instruments – special offer prices to all OUM members !!! Anyone interseted should drop me a line.) Running my own business is leaving me less time to play with computers so these, (and future), articles may appear at somewhat irregular intervals from now on !

We are getting near to the end of this series of articles. I don't know of many, if any, computers in the 'U' to 'Z' range. Somehow I've got to sort out the Tandy nightmare; they had some half dozen computers and desided to call them all 'TRS 80'. Why, I'll never be quite sure, but for know let's continue with the 'S's.

It seems I've missed one again so we are going to back-track. The machine in question is the Sam Coupe which actually fits in nicely here as one of its main features was its compatability with the Sinclair Spectrum.

* **Sam Coupe** Unfortunately I seem to have lost my Sam info. , so I'm afraid it's back to the old memory banks – and I've just turned 30 so I'm not sure if the old brain can work like it used to. Can't always doo-dah my wotsits, you know? Anyway, The Coupe was pretty much like a 16-bit machine – all the fancy graphics, heaps of memory and a disk drive, but it had a Z80 trying to cope with all that fancy modern stuff. The main reason they used a Z80 seems to be that they wanted the machine to be able to run Spectrum software, (so ensuring a large amount of software already existing which the machine could use. No 'lack of software' which the Oric and similar machines suffered from).

I can't quite see why the manufacturer couldn't have produced a proper 16-bit machine with a Z80 co-processor for Spectrum compatability. A machine like that might have sold. As it was the Sam Coupe, which was quite a nice machine, just didn't attract much interest except for Speccy owners who already had a Speccy and so didn't need some flashy gadget to load all those dodgy games.

Meanwhile in Russia a company had produced a straight forward 8 colour 8-bit with Spectrum emulation. This was called the Hobbit. They sold quite a few over there, seem to have been quite good, but no one over here has seen one so don't bother looking for one at the next car boot sale.

* **Spectravideo 318 & 328** Famed makers of wiggly joysticks, Spectravideo jumped on the bandwagon like everyone else and introduced to the world what they thought would be a marvelous gadget to keep the kids quiet for a few days.

The 318 was one of those funny machines with a built-in joystick , (that was bright red!). In this case thay used it to replace the cursor keys it must have been prone to wearing out which may cause some troubles – an external joystick can just be chucked out when it fails. If an internal one breaks you've got to open up the computer and somehow make a repair. In fact, the bright red handle of the joystick was removable leaving you with a small disk which was much nicer for controlling the cursor than the joystick. The 318 had also got one of those Spectrum mimicking rubber monstrosities. Fortunately the 328 had a proper keyboard and no silly in-built joystick thing.

Very close to MSX specifications, this machine had a cartridge slot on top, an MSX type keyboard layout, and a BASIC very close to MSX BASIC without WHILE....WEND and REPEAT....UNTIL loops but it does have 16 colours.

SPEC.Z80 CPU. 32K RAM (318)(of which only 12K is usable in BASIC progs.(328)80K RAM 32K ROM.SCREENS: 24 X 40 text,256 x 192 high resolution graphics in 16b colours with sprites. (80 column available.)PORTS: 2x joystick, expansion and cartridge. Three channel sound played back through the TV.

The Spectravideo needed its own cassette recorder, (like Atari and Commodore). The 328 had another extra – a built-in word processorThere was an interesting add-on in the Coleco games adaptor which allowed you to use cartridges from the Coleco television console.

These sort of machines are quite rare but remember that Commodore 64s can be had for £15 with software so don't hand over much money. I would only buy after seeing a machine working or buy from a shop that should refund you. If you are going to spend money , make sure you get a pile of software or you could regret it !!!

MUSO

RAMBLING IN THE ROM
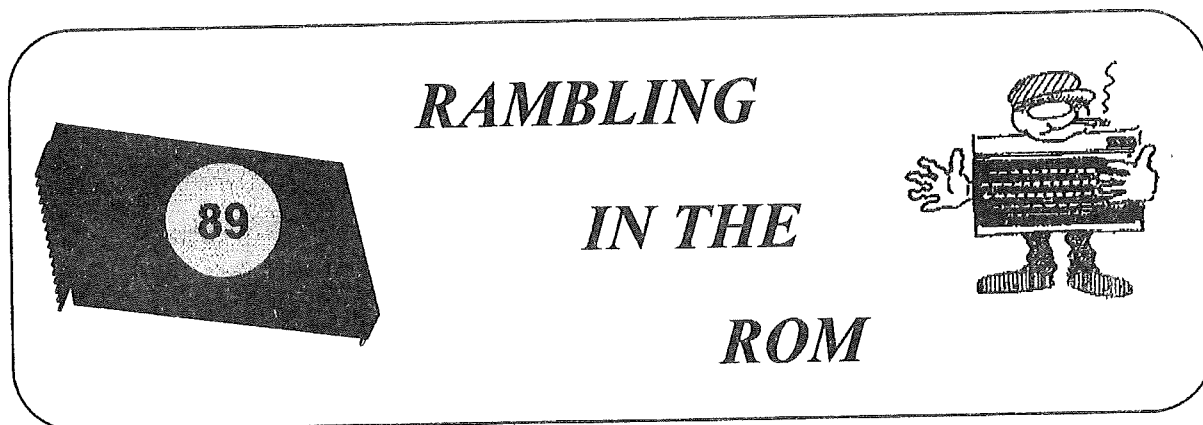
The Pravetz 8D...

A week ago I was sent some email by Laurent. He had been contacted by a chap called Alexander in Bulgaria, who had written:

'I'm very glad to see Oric emulators, I have a big collection of programs on tapes, but I have no games. I do not have an original Oric, my version is Bulgarian, it's named a 'Pravetz 8D'. I have 8/10 friends who are fans of Oric.'

And following a boot the 'Ready' message he gets is:

BRV PRAVETZ
37361 BAITA CBOBODNI

GOTOV

Apparently he has Cyrillic and QWERTY keys! I suspect this is one of Steve Hopps' ventures into Eastern Europe with Opel - can you add any more, Steve?

Rambling on....

On with the cassette routines...

DISPLAY NAME OF PROGRAM AND ITS TYPE

Entry: AY contains the address of the name
Exit: Nothing special...

....	....	E5B6	JSR $F865	display the name indexed by AY
....	....	E5B9	INX	place cursor on next column
....	....	E5BA	LDY #00	index B(asic)
....	....	E5BC	STY 025F	place terminator of the type (#00)
....	....	E5BF	LDA 02AE	take BASIC flag
....	....	E5C2	BEQ E5D7	yes, OK
....	....	E5C4	INY	index C(ode)
....	....	E5C5	BIT 02AE	test for machine code
....	....	E5C8	BMI E5D7	yes, OK
....	....	E5CA	INY	index S(tring)
....	....	E5CB	BIT 02AF	and test string flag
....	....	E5CE	BMI E5D7	yes, OK
....	....	E5D0	INY	index I(nteger)
....	....	E5D1	BIT 02B0	test integer flag
....	....	E5D4	BMI E5D7	yes, OK
....	....	E5D6	INY	no, it's R(eal)
....	....	E5D7	LDA E5E5, Y	take indicator

....	E5DA	STA 025E	and save it at the address
....	E5DD	LDA #5E	
....	E5DF	LDY #02	index address of the type (#025E)
....	E5E1	JSR $F865	and display the type
....	E5E4	RTS	

.... E5E5		BYT 'B', 'C', 'S', 'I', 'R'	

WRITE TO THE START OF THE STATUS LINE

Entry: AY indexes the message to display (which must be terminated with a NULL (#00))

Exit: the message is displayed (except in HIRES mode) and X points 2 columns beyond the end of the message.

....	E5EA	JSR $E5F5	clear status line
....	E5ED	LDX #00	indicate to start in column 0
....	E5EF	JSR $F865	and display the message
....	E5F2	INX	
....	E5F3	INX	place the cursor 2 columns further on
....	E5F4	RTS	

CLEAR STATUS LINE

Entry. nothing special
Exit: A preserved in V1.1(?)
Bug: the line is cleared in HIRES mode as well in V1.0

....	E5F5	PHA	save A		
....	E5F6	LDA 021F	take HIRES flag		
....	E5F9	BNE E605	yes, exit		
E563	LDX #1C	E5FB	LDX #22	clear 28/34 characters	
E565	LDA #10	E5FD	LDA #10	take black paper attribute	
E567	STA BB80, X	E5FF	STA BB80, X	and erase	
E56A	DEX	E602	DEX		
E56B	BPL E567	E603	BPL E5FF		
....	E605	PLA	recover A		
E56D	RTS	E606	RTS		

DISPLAY NAME OF PROGRAM

E56E	INX	....		
E56F	INX	....		
E570	INX	....	move to 3 columns after the message	
E571	LDA #35	....		
E573	LDY #00	....	index the name sought (#0035)	
E575	BYT #2C	....	and jump to the next instruction	

DISPLAY AT THE START OF THE STATUS LINE

Entry: AY indexes the message to display
Exit: X pointsto the first free column after the message

E576	LDX #00	....	place cursir at start of the line (column 0)
E578	JMP $F436	....	and display the message

CSAVE SUBROUTINE / SAVE HEADER

E57B	JSR $E6BA	E607	JSR $E75A	save the start of the tape
E57E	LDA #24	E60A	LDA #24	
E580	JSR $E5C6	Et0C	JSR $E65E	and the indicator of the start of the header
E583	LDX #09	E60F	LDX #09	
E585	LDA 5D, X	E611	LDA 02A7, X	takethe header
E587	JSR $E5C6	E614	JSR $E65E	and save on the cassette
E58A	DEX	E617	DEX	
E58B	BNE E585	E618	BNE E611	exit X=0
E58D	LDA 35, X	E61A	LDA 027F, X	take the name
E58F	BEQ E597	E61D	BEQ E625	if last character, jump
E591	JSR $E5C6	E61F	JSR $E65E	save the name
E594	INX	E622	INX	index next character
E595	BNE E58D	E623	BNE E61A	unconditional: continue
E597	JSR $E5C6	E625	JSR $E65E	save the terminator (#00) as well
E59A	JSR $E563	....	....	clear the status line
E59D	LDA #BC	....	....	
E59F	LDY #E5	....	....	index the 'Save ..' message
E5A1	JSR $E576	....	....	and display it
E5A4	JSR $E56E	....	....	display the program name
....	....	E628	LDX #00	
....	....	E62A	DEX	wait about 1280 μs
....	....	E62B	BNE E62A	(the time taken to display the name)
....	....	E62D	RTS	

SAVE A PROGRAM ON CASSETTE

E5A7	LDA 5F	E62E	LDA 92A9	
E5A9	LDY 60	E631	LDY 02AA	take start address
E5AB	STA 33	E634	STA 33	
E5AD	STY 34	E636	STY 34	and save in work pointer
E5AF	LDY #00	E638	LDY #00	index =0
E5B1	LDA (33), Y	E63A	LDA (33), Y	take byte in memory
E5B3	JSR $E5C6	E63C	JSR $E65E	and save on cassette
ESB6	JSR $E554	E63F	JSR $E56C	increment and test if end
E5B9	BCC E5B1	E642	BCC E63A	no, continue
E5BB	RTS	E644	RTS	

MESSAGE FOR SAVE

E5BC	E645	BYT #10,#07
E5BE	E647	BYT 'Saving '
....	E64E	BYT '..'
E5C5	E650	BYT #00

TEST FORMAT ERROR

....	....	E651	LDA 02B1	test error flag
....	....	E654	BEQ E65D	if 0, it's OK
....	....	E656	LDA #27	
....	....	E658	LDY #E5	index 'Errors found ...'
....	....	E65A	JSR $CCB0	and display the message
....	....	E65B	RTS	
....	....	E65E	STA 2F	

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Oric Mailing List: oric@lyghtforce.com

ANTICS/(SINGERIE)	131,372	Peter Thornburn	
ARCHERONS RAGE	7,590	Peter Thornburn	
ARENA 3000	2,953,750	James Groom	level 200 - 13 lives
ATLANTID	13,990	Matthew Dick	Duree 62
ATTACK OF THE CYBERMEN	4,730	Henry Marke	
ATTACK ON KIXI	12,500	Steve Marshall	
A.T.M	67,990	Robert Cook	
BERING	168 Days	Graeme Burton	
BOMBYX	28,530	Robert Cook	
BOTTLE, THE	81	Steve Marshall	Hic !!!
BOZY BOA	4,270	Steve Marshall	
BREAKOUT (IJK)	7,650	Peter Thornburn	Option 4
BREAKOUT (IJK)	7,330	Peter Thornburn	Option 1
BREAKOUT (IJK)	7,180	Peter Thornburn	Option 2
BREAKOUT (IJK)	6,400	Peter Thornburn	Option 3
BREAKOUT (OUM 6)	1,015	Peter Thornburn	
BRICKY	356	Steve Marshall	
CABBAGE PATCH	2,699	Peter Thornburn	
CATEGORIC	23,057	James Groom	
CENTIPEDE	59,240	Henry Marke	
CHOPPER	69,950	Vincent Talvas	
CHUCKFORD	185,050	Robert Cook	
COBRA	2,699,993	Rene Marke	
COCK' IN	133,057	Steve Marshall	
COCORIC	3,620	Stephane Rezette	
columns	Should be	at the end	
COSMORIC	908	Steve Marshall	
CROCKY	142,735	Steve Marshall	
DAMSEL IN DISTRESS	4,860	Graeme Burton	
DEFENCE FORCE	1,268,020	Tim Colgate	
DELTA FOUR	9,810	Steve Marshall	
DOGGY	16,250	Stephane Rezette	
DON'T PANIC	25,490	Henry Marke	
DON'T PRESS THE LETTER Q	1,229,620	Bruno Dossier	
DOTMAN	2,950	Peter Thornburn	
DRACULAS REVENGE	13,600	Graeme Burton	
DRIVER	66,500	J-Yves Brun	
ELECTROSTORM	25,600	Tim Colgate	
ESQUIRE	5,650	Steve Marshall	
FIREFLASH	69,010	Romain Dasse	
FLY FOR YOUR LIFE	172	Graeme Burton	
FORMULE 1	27,487	Arnt Isaksen	
FRELON	17,095	Stephane Rezette	
FRIGATE COMMANDER	569	Robert Cook	
GALACTOSMASH	50	Matthew Coates	
GALAXIANS	69,600	R. Cook & Nicholas Menoux	
GASTRONON	11,050	DAVE DICK	Your Ed scores!
GHOST GOBBLER	32,505	Steffan Jacobsson	
GHOSTMAN	70,000	Elise Dasse	
GOLDMINE	60,900	Henry Marke	Game completed
GRAVITATOR	5,204	Arnt Isaksen	
GRID WARRIORS	55,494	Graeme Burton	
GUBBIE	339,360	Staale Eikbraaten	
HARRIER ATTACK	105,700	Staale Eikbraaten	
HELLION	257,550	Matthew Green	
HONEY KONG	11,436	Peter Thornburn	level 11
HOPPER	40,170	Tim Colgate	
HU*BERT	3,120	Steve Marshall	
HUNCHBACK	750,200	Stephane Rezette	
ICE GIANT	17,050	Robert Cook	
IMAGO	8,010	Stephane Rezette	
INSECT INSANITY	149,250	Dennis Bonfield	
INTERTRON	10,800	Brian Kidd	level 15
INVADERS (Arcadia)	3,870	Peter Thornburn	Oops! Forgot this last time
INVADERS (IJK)	23,650	Peter Thornburn	
INVADERS (PSS)	5,530	James Groom	
JET ATTACK	6,160	Robert Cook	
JEUX OLYMPIQUES	50,147	Arnt Isaksen	
JIMMY POUBELLE	11,440	Peter Thornburn	
KARATE	23,800	Arnt Isaksen	
KINGDOM	109	Graeme Burton	
KRILLYS	28,290	Graeme Burton	
KROKATILE WALTZ	10,025	Graeme Burton	
LIGHT CYCLES	4,530	Steve Marshall	
LOCHNESS MONSTERS	14,683	Graeme Burton	
LODE RUNNER	16,738	Arnt Isaksen	
LOKI	62,675	Tim Colgate	
LONE RAIDER	80,500	Espen Andersen	

Game	Score	Player	Note
LUNAR MISSION	13,129	Graeme Burton	
MACADAM BUMPER	197,500	Irene Marke	
MAHJONG	16,200	Henry Marke	
MANIC MINER	38,156	Greame Burton	Cleared lev.5 twice
MANIC MINER	115,583	Robert Cook	At the centre of the Earth
MARIO BROS.	396	Steve Marshall	With inf. lives
MAZE RALLY	88,920	Graeme Burton	
MIDNIGHT FEAST	1,500,120	Henry Marke	
MINED OUT	4,100	Graeme Burton	
MLUCH	22,000	Henry Marke	Completed with 7 lives left
MR WIMPY	16,549	Espen Andersen	
MUSHROOM MANIA	471,420	Tim Colgate	
M.A.R.C	1,560	Graeme Burton	
OLIVE AND POPEYE	69,570	Rene Marke	
OPERATION GREMLIN	22,617	Graeme Burton	
ORIC MUNCH	859,439	Michel Lecrerc	
ORICAL INVADERS	1,790	Steve Marshall	
ORION	61,200	Stephane Rezette	
PAINTER	103,850	J-Phillipe Merc	
PAINTER	143,310	Peter Thornburn	
PANIC	823	Peter Thornburn	(With 255 lives)
PASTA BLASTA	34,480	Matthew Coates	
PIERROT	6,270	Steve Marshall	
PLAYGROUND 21	92,000	Tim Colgate	
PROBE 3	2,450	Robert Cook	
PROTECTOR	99,594	Thierry Avannier	
PSYCHIATRIC	41,070	Henry Marke	
Q*BERT	15,470	Dave Dick	
QUACK A JACK	95,671	Colin Cook	
QUARKFLIGHT	709	Graeme Burton	
RABBIT	169,760	Peter Thornburn	(level 29)
RATSPLAT	20,150	Staale Eikbraaten	
ROCK RUN	2,264	Paul Hutton	
SCUBA DIVE	9,000	James Groom	
SLIME	186,540	Peter Thornburn	
SNAKE VENOM	102,822	Staale Eikbraaten	
SORVIVOR	1,185	Robert Cook	
SPACE WALL	3,248	Brain Kidd	
SPOOKY MANSION	2,100	Steve Marshall	On the 3rd screen !
STANLEY	43,480	Romain Dasse	
STOCKMARKET	82,936	Graeme Burton	
STRESS	1,688	Peter Thornburn	
STYX	194,600	Graeme Burton	Wave 18
SUPER ADVANCED BREAKOUT	17,050	Arnt Isaksen	
SUPER JEEP	138,250	Stephane Rezette	
SUPER METEORS	364,700	Graeme Burton	
TALISMAN	8,068	Elise Dasse	
TETRIS	2,411	Jon Haworth	
TETRIS GB	15,835	Henry Marke	
TETRIX	9,983	Henry Marke	
THEM	2,400	Steve Marshall	
TRIATHLON	5,270	Stephane Rezette	
TRICKSHOT	4,128	James Groom	Screen 14
TRIDENT NEPTUNE	7,200	Dave Dick	
TROUBLE IN STORE	1,060,758	Graeme Burton	
TWO GUN TURTLE	9,980	Steve Marshall	
ULTIMA ZONE	148,860	Staale Eikbraaten	
ULTRA	35,780	Peter Thornburn	Level 32
VIDEO FLIPPER	55,350	Graeme Burton	
VISION	285	Brian Kidd	
WILLY	624	P. Hutton	
XENON I	117,230	Eric Eduezi	
XENON III	9,927	Staale Eikbraaten	
YAHTZEE	306	Dave Dick	
ZEBBIE	945,560	Staale Eikbraaten	
ZEBULON	Completed b	Henry Marke	in 8 minutes
ZOOLYMPICS	13,677	Graeme Burton	
ZORGONS REVENGE	155,830	E. Tollemer	level 6.0
3D BATTLESTAR	68,540	Steve Marshall	
3D FONGUS	150,850	Stephane Rezette	
3D STARTER	75,400	Robert Cook	

COLUMNS -
O/E- 235,650 - Brian Kidd   O/N- 16,485 - Henry Marke
O/H- 4,725 - Liz Coates   F/E- 3 secs - Brian Kidd
F/N- 5 secs - Brian Kidd   F/H- 8 secs - Henry Marke

10kHz Sample Player by Stephen Meachen

You'll never impress your friends by playing 4 bit samples on an Oric but that doesn't mean it can't be fun.

I've only seen one other sample playing routine so I don't know if this ground has been covered before. Anyway, the features of this routine are:

1) the sample can be upto 8.75 seconds
2) plays on all three channels so the output is quite loud
3) plays at 10kHz

```
.PCR.   EQU #30C
.PORTAH.EQU #30F

.play sample
\stop interrupts then set the sound chip
sei
jsr set sound chip
\set the start address of the sample (#900)
ldy @9
sty data+1
ldy @0
sty data
\get the length of the sample from its
header for use as a counter in 8-9
ldy #8fc
sty 8
ldy #8fd
sty 9
\y=put sound chip to write data mode
ldy @%11111101
\put sound chip into select register mode
ldx @%11111111
stx pcr
```

\each byte contains two samples, the carry flag is used as a control variable. When the carry flag is clear the low nibble (first sample) is output, when the carry flag is set the high nibble is output.

```
\initialise the carry flag
clc
```

\Below is the start of the loop that plays the sample. It starts with a delay table of NOP instructions which are used to fine tune the play rate. Because different code is executed when outputting the high and low nibbles, different delays are needed. There are three entry points I, I1 and I2. I is the delay before a high nibble is output, I1 is the delay before a low nibble is output and I2 is the delay before a low nibble is output if the high byte of the data counter #09 was decremented.

```
,I
nop
nop
nop
,I1
nop
nop
nop
,I2
nop
```

\get two samples
```
.data. equ *+1
lda #900
```
\1st sample being output?
```
bcc out it
```
\no 2nd is, shift it into low nibble
```
lsr a
lsr a
lsr a
lsr a
```
\set carry in case last 'lsr a' cleared it
```
sec
.out it
```
\I2 between 1st and 2nd sample, 3 between 2nd and 1st sample **

\Where the code executed is different on the two pases of the loop, I addup the clock cycles taken between outputting the samples order to find the entry points in the delay table.

\maskout high nibble
```
and @%00001111
```
\write to each volume register in turn
\select register 8
```
ldx @8
stx portah
```
\set sound chip to write mode
```
sty pcr
```
\set the volume
```
sta portah
```
\put sound chip back to select register mode
```
ldx @%11111111
stx pcr
```

10kHz Sample Player by Stephen Meachen

```
\repeat for the other two channels
ldx @9
stx portah
sty pcr
sta portah
ldx @%11111111
stx pcr

ldx @10
stx portah
sty pcr
sta portah
ldx @%11111111
stx pcr

\second sample played?
bcs next byte
\no, set carry and execute loop again
sec
bcs l
\7 between 1st and 2nd, 3 between 2nd
and 1st **

.next byte
\yes second sample played, clear the carry
flag and increment the data address
clc
inc data
bne *+5
inc data+1

\decrement sample counter
dec 8
bne l1
\19 between 2nd and 1st **
dec 9
\branch back to loop if there's more to do
bne l2
\an extra 7 between 2nd and 1st **
```

\the code executed between 1st and 2nd samples is 12+7=19 cycles
\the code executed between 2nd and 1st samples is 3+3+19=25 cycles
So, when outputting a 1st sample the delay should be 6 clock cycles less than the delay before outputting a 2nd sample. If 09 was decremented it should be 6+7=13 clock cycles less. Er, I hope that's clear.

```
\all done so silence sound chip and return
jsr set sound chip
cli
rts

.set sound chip
\switch noise and tone off on all channels
ldx @7
lda @%01111111
jsr a to sound register x

\set volume to zero on all channels
inx
lda @0
jsr a to sound register x
inx
jsr a to sound register x
inx

.A to sound register X
\set sound chip to select register mode
ldy @%11111111
sty pcr
\write register number to 6522 porta
stx portah
\set sound chip to write data mode
ldy @%11111101
sty pcr
\write data to 6522 porta
sta portah
\put sound chip back to inert mode, set
ca2,cb2=0
ldy @%11011101
sty pcr
rts
```
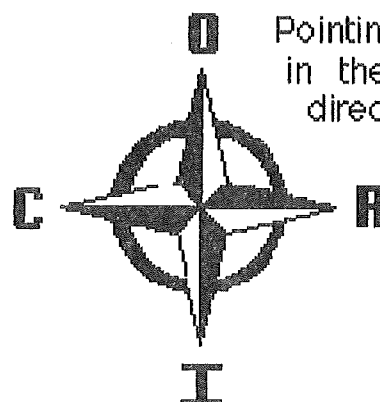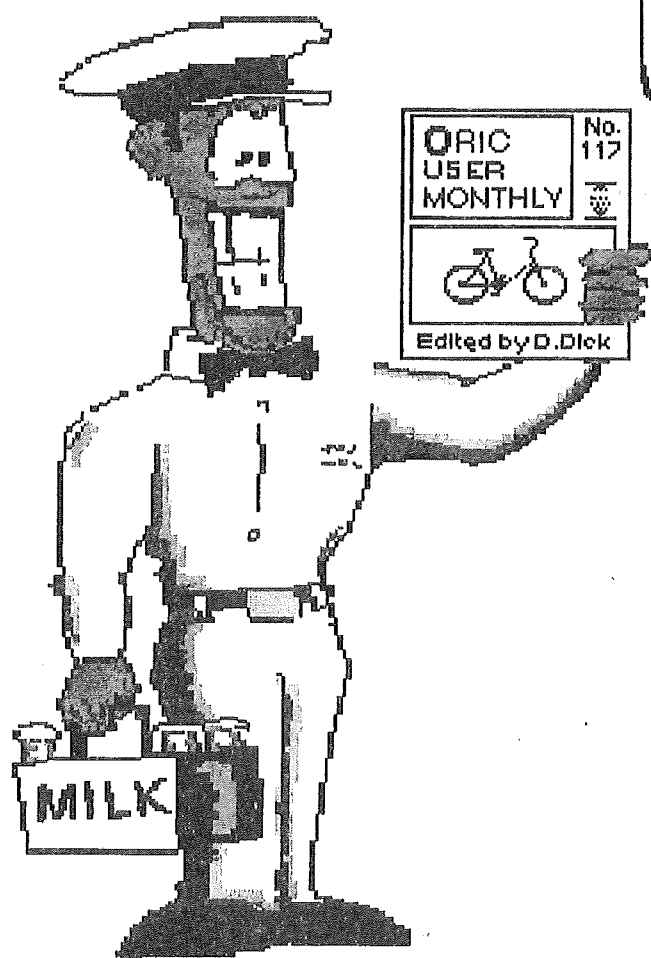
ORIC
USER MONTHLY

O

Pointing you
in the right
direction !

C   R

I

Not satisfied with
Milk , Eggs etc , I
can now offer you
a subscription to
O.U.M.

ORIC
USER
MONTHLY
No.
117

Edited by D.Dick

MILK

ORIC
USER
MONTHLY
No.
117

Edited by D.Dick