ORIC USER MONTHLY

with Oric Enthusiasts

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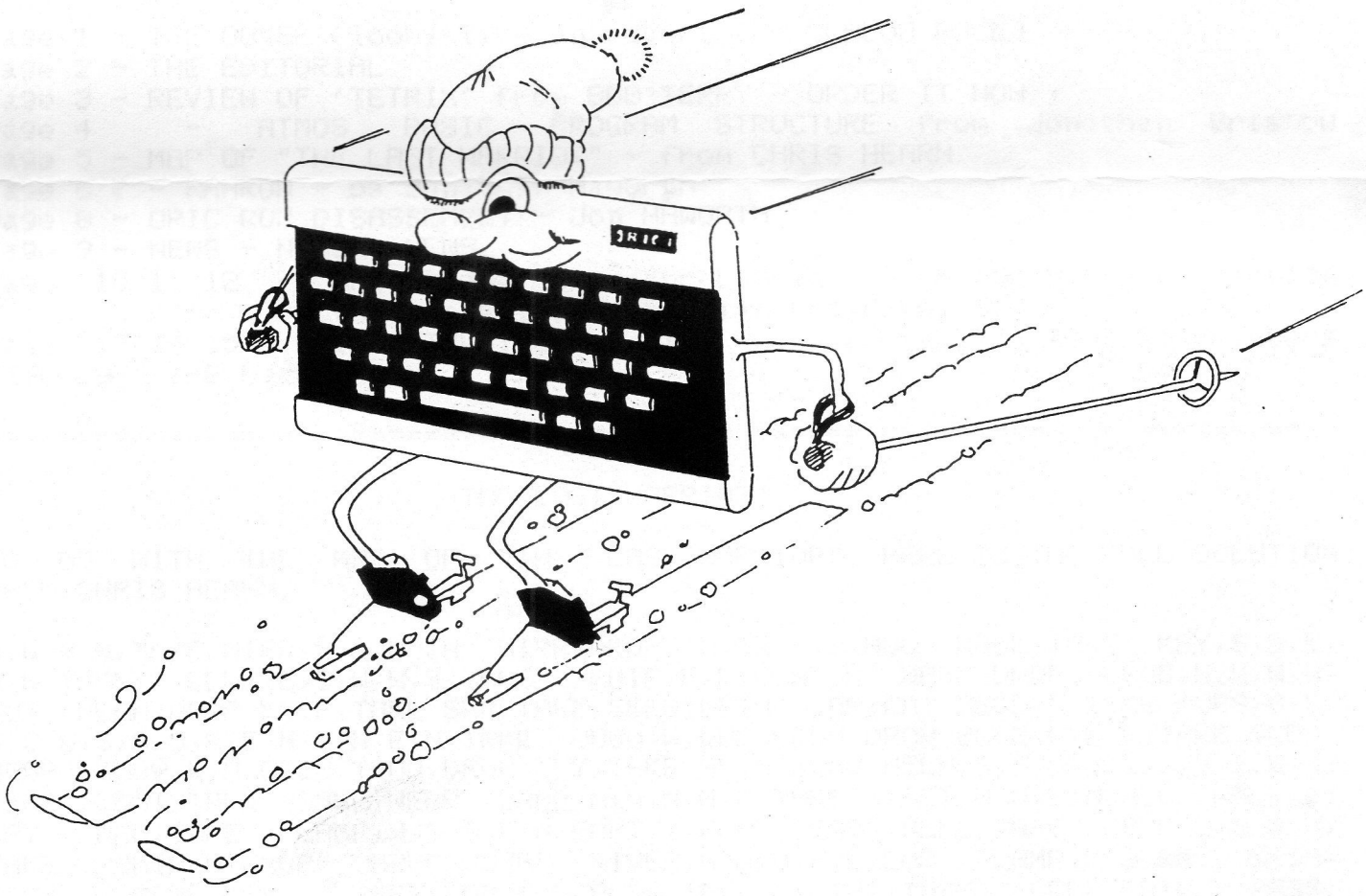

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EDITORIAL

HI AND WELCOME TO 1991.
I TRUST YOU ALL HAD AN ENJOYABLE XMAS AND ARE LOOKING FORWARD TO A GOOD NEW YEAR.
Here at O.U.M ,things have been hectic. My job has been extremely busy all through December (some 7 day weeks and 14 hour days). Combined with the steady flow of letters etc. from new contacts that Steve HoPPs has Passed on as well as the mail from regular readers,the workload has been somewhat overwhelming. On Boxing Day I started to clear the backlog and should be back to normal very soon. I thank those readers who have helPed to sort out some of the queries and articles relating to these are in this issue. All other offers of helP are gradually being dealt with. To those who are doing translations and listings,I thank you. The MAIL ORDER section has been very successful and all orders for software and PeriPherals should of got to you for XMAS.
This issue is of 16 Pages and I hope you find it an enjoyable read. A lot of technical information is included and therefore I will use the Pages that I have at my disPosal to concentrate on the lighter side of your ORIC.

ISSUE 41 INDEX

THE LAST WARRIOR

TO GO WITH THE MAP OF "THE LAST WARRIOR", HERE IS THE FULL SOLUTION FROM CHRIS HEARN.

N,W,W,W,TAKE,MIRR,N,N,POIN MIRR,DROP MIRR,E,N,HUG WALL,TAKE KEY,S,S,E, N,W,TAKE CLUB,E,S,W,W,S,TAKE KNIF,E,E,E,ATTA WARR,DROP CLUB,N,N,W,W, CUT PLAN,DROP KNIF,TAKE SAP,TAKE SEED,DRINK SAP,EAT SEED,N,TAKE PURS,S,E, S,S,S,S,S,S,E,E,N,N,N,E,N,TAKE BOOM,W,LOB BOOM,DROP BOOM,N,E,E,TAKE GLOV, WEAR GLOV,W,N,OPEN TRUN,DROP KEY,TAKE HELM,WEAR HELM,S,S,S,S,S,S,S,S,W,W, SEAR CRAT,TAKE SAND,WEAR SAND,N,N,N,W,W,TAKE TEET,W,N,E,N,HUG WALL,E, SAY MAN,TAKE LAMP,W,S,S,E,N,EMPT FLAS,SEAR WELL,TAKE CRUC,S,W,W,N, TAKE SKIN,N,DROP ARMO,JUMP RIVER,N,N,N,E,E,LOB LAMP,E,SCRA SKIN, TAKE SCAL,LOB TEET,LOB SCAL,S,TAKE STAT,INSE CRUC,ENTE PASS.

FOR THOSE WHO DIDN'T KNOW, "THE LAST WARRIOR" IS A SUPER GRAPHICS ADVENTURE TRANSLATED INTO ENGLISH BY JON HAWORTH AND AVAILABLE THROUGH O.U.M ON CASSETTE FOR JUST 4.50 (ATMOS ONLY). FOR DISC VERSION WRITE FOR DETAILS.

Title: TETRIX Author: ANDRE WIDHANI Publisher: MIRAGE
Format: ATMOS and ORIC 1 (16k/48k) Cassette or Disc.
Price: Cassette - 3.99 or Disc - 6.00
AVAILABLE NOW DIRECT FROM O.U.M

When Andre wrote this game he must have used all the "Trix" he knew. An excellent new version of the arcade game TETRIS with new features which make it better than the French version.
As my daughter found out;this is not an easy game when using a B/W or a green screen as the shapes become a little difficult to see. My son (the games expert) couldn't beat your Editor's score on the standard game and didn't even beat me on the alternate character game. Definitely a game that needs practise,but the cries of 'Just one more go';show this is going to be an addictive game.
The blocks on screen are more colorful than the French version. The game emits an unusual sound when a line is completed. All instructions are on screen and the whole thing has a Professional look about it. Like the French version you can save your scores to disc;but a big Plus is the fact that you can save the high scores to cassette as well. A volume control is handy for keeping the wife awake late at night. You can tell that many hours have been spent in the developement of this marvellous game and all of Andre's hard work has paid off. The outcome being a game which is worthy of inclusion in any ORIC owner's collection. Of course you may need to buy another ORIC to use yourself or get a crowbar to remove the family from the keyboard so that you can play.

~ BOB TERRY

TETRIX TETRIX TETRIX TETRIX TETRIX TETRIX TETRIX TETRIX TETRIX
T E T R I X T E T R I X T E T R I X T E T R I X

THE SECOND ORIC MEET

THE EVENT TAKES PLACE ON SATURDAY FEBRUARY 9th IN AYLESBURY. TICKETS ARE 2 POUND EACH. SEND OFF FOR THEM NOW AS I DO NOT WANT TO COLLECT MONIES ON THE DAY. THOSE WANTING TO DEMONSTRATE SHOULD CONTACT ME NOW BY LETTER OR BY RINGING ME ON 0296 26050.
THOSE ALREADY BOOKED TO APPEAR INCLUDE JON HAWORTH,ROBERT COOK,DAVID GOODRUM,PETER BRAGG,BOB TERRY,ALISTAIR WAY AND MANY OTHERS.
DO NOT DELAY - SEND OFF TODAY.

ORIC MEET.....ORIC MEET.....ORIC MEET.....ORIC MEET.....ORIC MEET.....

ORIC USER MONTHLY ISSUE 40 WENT OUT TO 72 SUBSCRIBERS AND ENQUIRIES FROM ORIC USERS ARE STEADILY FLOWING IN.

O.U.M - ISSUE 42

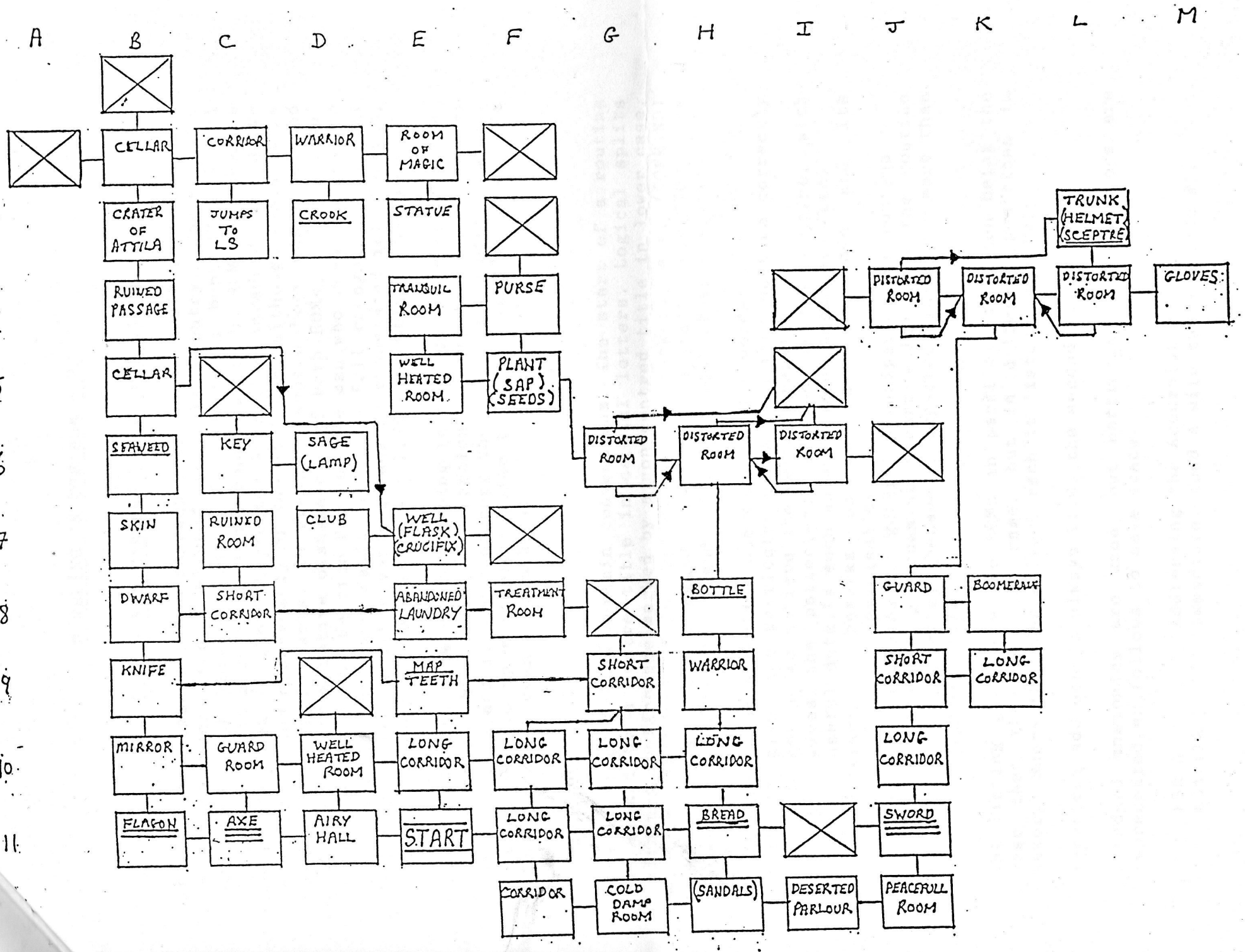
ARTICLES FOR INCLUSION IN THE FEBRUARY EDITION SHOULD REACH ME BY JANUARY 20th.
IN THE NEXT ISSUE WILL BE FURTHER RAMBLINGS ON "VORTEX",REVIEWS,NEWS AND LOTS LOTS MORE.
ALSO MANY ARTICLES WHICH SPACE AND TIME DID NOT ALLOW ME TO PRINT IN THIS ISSUE.

ORIC ATMOS BASIC PROGRAM STRUCTURE

When designing programs in BASIC, it is sometimes neccesary to make the program run as fast as possible. There are several hard and FAST rules that even though they may not individually speed up the program dramatically, when they are put together, they do significantly.

1. SHORTER MAIN LOOPS
This is proberbly the most profitable method. In most applications there is always a main loop of one sort or another.
1.1 NO SPACES!
Spaces are only required in programs for punctuation within quotes or strings and are not needed in your main loops so omit them.
1.2 LONGER LINES
The standard basic line can take up to eighty characters.Try to compact your program onto as little number of lines as possible.
1.3 ELSE EMIT
Use the ELSE statement to compact your lines by placing it at the end of a shorter line that has one IF statement in it. This enables you to shorten your number of lines.
1.4 PRINT to ?
Use the abreviation for PRINT ("?") instead of the word for It will help you to be left with less lines.
1.5 USE DECIMAL!
Use decimal numbers instead of hexadecimal as it would omit the # symbol required for all hexadecimal numbers. (makes the statement shorter)
1.6 SIZE
You will find that if the main loop streches no more than three quarters of the screen then the loop will run at a good speed.
2 LOWER NUMBERS
By lowering the line numbers of the main loop,it enables the computer to not keep searching through the whole program for your main loop.
Use numbers lower than 100.
3 MORE OMITTMENTS
3.1
Use the following instead of KEY$ for checking keyboard entry as you can switch down the keyboard response to a very slow speed but still read the keyboardfrom peeking.

Omit A$=KEY$
Replace with P=PEEK(#0208)
Also use peek(#0209) for shift,ctrl and function key entries.
3.2
switch off the screen when it is not required.
Use CTRL S to do so.



"THE LAST WARRIOR"

RAMBLING IN THE ROM - 22

ORIC ROM DISASSEMBLY - V1.0 & V1.1

A complete comparative disassembly of both versions of the Oric ROM has never been published in this country. There is a disassembly of Version 1.0 in Bob Maunder's book 'The Oric-1 Companion', but much more is now known about the ROM than when he wrote the book in 1983. Leycester Whewell's Advanced User Guide contains a good disassembly of the V1.1 ROM, although again it is rather sketchy in parts. In France a superb book was published containing a comparative disassembly of both ROMs, 'L'Oric a Nu' (The Naked Oric) by Fabrice Broche, the man who co-wrote Sedoric and the Telestrat Hyper-Basic. It is in full recognition of that valuable source, which never will now be translated into English, that I have decided to present a full disassembly in English.

It is a mammoth task which is going to take many issues of O.U.M. to complete. But doing a portion a month is within my capabilities, and if you photocopy the successive pages, you will gradually build up a complete guide to both Oric ROMs. When it's done, it might even make a book!

Conventions

The listings follow certain conventions. The start of a routine is marked by a centre title in capital letters. Logical splits within a routine are marked by a non-centred title in lower case. A title can include an explanation in brackets, e.g. (COMMAND) indicates a Basic command is here executed, (FUNCTION) the execution of a function, and (OPERATOR) that of an operator.

Commentaries on a routine use some regular words:

- Entry: gives the particular parameters that must be correctly set up to achieve the desired result
- Exit: gives the parameters returned by the routine, with useful details such as unchanged parameters, etc.
- Programming: remarks on the use of code and its optimisation
- Principal: explains the general principal of the routine
- Bug: highlights programming errors which mean the routine does not always behave as expected. There are more than you may think!

The listing gives the two ROMs in parallel, it often being the case that they are the same, but in different positions in memory. Where the ROMs differ, each is listed separately.

The first address is always V1.0, the second that of V1.1.

Standard mnemonics are used, but particular address modes are represented as follows to save space:

```
LSR A          Addressing the Accumulator
LDA #12        Immediate: load A with the hex code #12
```

```
STX 0230        Absolute (argument in hexadecimal)
ADC 91          Page 0 (argument in hexadecimal)
TXA             Implicit
LDA (12,X)      Pre-indexed indirect (not used in the ROM)
LDA (E9),Y      Post-indexed indirect (argument in hex)
STA 40,X        Page 0 indexed
LDY 0235,X      Absolute indexed
BNE C570        Relative jump
JMP $C000       Absolute jump
JMP (0091)      Indirect jump
```

A special mnemonic is used: BYT, which indicates the entry of bytes, of an address (stored low byte first of course), or of character strings.

Abbreviations

All the 6502 registers and flags are represented by their capital letter:

A = Accumulator	C = Carry flag
X = X Index Register	N = Negative flag
Y = Y Index Register	V = Overflow flag
P = Status Register	I = IRQ authorisation flag
S = Stack Pointer	B = BRK flag
Z = Zero flag	D = Decimal flag

A byte is represented in the form: b7 b6 b5 b4 b3 b2 b1 b0. Thus b3 is a reference to bit 3 of the byte.

The floating accumulators are represented by ACC1, ACC2, ACC3, ACC4, ACC5:

```
ACC1 : #D0-#D5  (main accumulator)
ACC2 : #D8-#DD          ACC4 : #C6-#CA
ACC3 : #95-#98          ACC5 : #CB-#CF
```

After rounding, the accumulators are referred to as AACC1, AACC2, etc.
Values held by the registers are listed low byte/high byte in the conventional way:
YA --> ACC1 means place the number of which the low byte is in Y and the high byte in A in the main accumulator.

When memory pointers are used, the high and low bytes are separated by a dash, e.g. #9A-#9B

As usual, brackets indicate indirect addressing: "the contents of the address pointed to by"; thus, if A gives #04 and Y gives #C0, then AY signifies #C004, YA signifies #04C0, and (AY) signifies the contents of memory at #C004.

Since there are no standard routine labels, it would be wrong to invent some. Therefore when a routine or pointer is referred to in the text, its address is used; where the addresses are different in each ROM, the form #F276/#F30A is used. There is one exception: the start of BASIC pointer is called TXTPTR in the commentary but not in the listing. TXTPTR = #00E9.

No tail-ender...Here we go...>>>>>>>

ORIC ROM DISASSEMBLY - V1.0 & V1.1

Logically the ROM starts with the interpreter, followed by the essential commands, then by the calculation routines. This 8k forms the heart of Microsoft Basic, to which are added the sound and graphics routines.

THE TABLES

1- Address Tables

SYSTEM VECTORS

Although never used by the ROM, these vectors are very practicable for the user.

```
C000  JMP $EA59      C000  JMP $ECCC      BASIC cold start
C003  JMP $C475      C003  JMP $C471      BASIC warm start
```

ADDRESS TABLE

The command routine addresses are stored with their value -1 because they are called by an RTS.

```
C006  C006      BYT  #C941-1/#C973-1      ;END
C008  C008      BYT  #C6A5-1/#C692-1      ;EDIT
C00A  C00A      BYT  #CFE4-1/#E987-1      ;INVERSE/STORE
C00C  C00C      BYT  #CFE4-1/#E9D1-1      ;NORMAL/RECALL
C00E  C00E      BYT  #CC8C-1/#CD16-1      ;TRON
C010  C010      BYT  #CC8F-1/#CD19-1      ;TROFF
C012  C012      BYT  #C9E0-1/#CA12-1      ;POP
C014  C014      BYT  #D9C6-1/#DA51-1      ;PLOT
C016  C016      BYT  #DA16-1/#DAA1-1      ;PULL
C018  C018      BYT  #D937-1/#D9DE-1      ;LORES
C01A  C01A      BYT  #D8AC-1/#D967-1      ;DOKE
C01C  C01C      BYT  #D9FA-1/#DA85-1      ;REPEAT
C01E  C01E      BYT  #DA16-1/#DAA1-1      ;UNTIL
C020  C020      BYT  #C841-1/#c855-1      ;FOR
C022  C022      BYT  #C824-1/#C7FD-1      ;LLIST
C024  C024      BYT  #C832-1/#C809-1      ;LPRINT
C026  C026      BYT  #CE0C-1/#CE98-1      ;NEXT
C028  C028      BYT  #CA0A-1/#CA3C-1      ;DATA
C02A  C02A      BYT  #CCC9-1/#CD55-1      ;INPUT
C02C  C02C      BYT  #D0F2-1/#D17E-1      ;DIM
C02E  C02E      BYT  #CC0A-1/#CCCE-1      ;CLS
C030  C030      BYT  #CCFD-1/#CD89-1      ;READ
C032  C032      BYT  #CAD2-1/#CB1C-1      ;LET
C034  C034      BYT  #C9B3-1/#C9E5-1      ;GOTO
C036  C036      BYT  #C98B-1/#C98D-1      ;RUN
C038  C038      BYT  #CA3E-1/#CA70-1      ;IF
C03A  C03A      BYT  #C91F-1/#C952-1      ;RESTORE
C03C  C03C      BYT  #C996-1/#C9C8-1      ;GOSUB
C03E  C03E      BYT  #C9E0-1/#CA12-1      ;RETURN
C040  C040      BYT  #CA61-1/#CA99-1      ;REM
C042  C042      BYT  #E95B-1/#EBCE-1      ;HIMEM
C044  C044      BYT  #E974-1/#EBE7-1      ;GRAB
C046  C046      BYT  #E994-1/#EC0C-1      ;RELEASE
```

NEWS.....NEWS.....NEWS.....NEWS.....NEWS.....NEWS...

LOTS OF NEWS - LITTLE SPACE - THUS A PRECISE

5.25" DRIVES

80 track,double sided 5.25" reconditioned drives,uncased. Now set-up on Rob Kimberley's system. Only 25 Pounds each. Ring TEKDATA on 0782 577677 and ask for Tony Jenkins. The serial number is : TEAC FD55FV -13-U.

CLUB EUROPE ORIC now boasts 95 members of whom 33% are British. The CEO is ceasing the disc/cassette journal. However,there will be a quarterly disc/cassette released containing software.
TETRIS is now available to CEO members on cassette.
Negotiations are continuing between O.U.M and the C.E.O so that French software can be made available to O.U.M readers. I know many of you are interested in TETRIS,ROLAND GARROS and VORTEX etc.

QUOTE OF THE YEAR SO FAR - "Finally here it is. I finished it at 4 a.m this morning (DEC 18th). If TETRIX had robbed me for 2 or 3 more nights; I would Probably have shot myself" - Andre Widhani.
NOTE FROM THE EDITOR - At 12 noon on DEC.22nd I was Playing the finished version. WELL DONE Andre.

OPELCO

The Price of the OPELCO complete 3" disc system is now only 129 Pounds. Well done to Steve HoPPs. Steve's mailshot is excellent. The various drive oPtions are documented in such a way that each oPtion has a list of the extras needed to build your own system.
New ATMOS's are available for 35 Pounds or 49 Pounds with 10 games.

HEBREW!!!!!

The quote of 1984 sPotted by David Goodrum in Personal ComPuter World - "Portugese,Swedish and Hebrew versions of Tansoft's Language Linkwords are due later this year"

CHARED 90

CHARED 90 is a utility Program enabling the user to design characters from the standard ORIC set of 180 characters.The shaPe of the character can be changed and characters can be freely matched together on screen. There is also a facility for animation with the oPtion to change the sPeed of movement. All in Basic,written by Jonathan Bristow (a new subscriber),excellent documentation,and an easy on-screen menu. A well Presented Package thet will be available shortly.

DATA PROTECTION ACT

To make life easier for your editor, it is ProPosed that all OUM,CEO & other current ORIC users known to myself or Jon Haworth be kePt on a database. It is also hoPed that Steve HoPPs and Alan Whitaker will use this facility. The base will be used for labels,subscriPtion letters, user interests,their system info etc. It will save time and stoP duPlication of mailshots. The information will not be Passed onto any other body. IF YOU DO NOT WANT TO BE ON THE BASE - PLEASE WRITE.

Oric Data Transfer/Linking

Peter N. Bragg

This article was the result of a query about the possibility of transferring data and graphics between the Oric Atmos and the the Atari and Amiga. I have done that using the Atmos, Archimedes and the BBC/b Computers. The experience gained in that exercise might be useful to others, who use more than one machine and would like to pass data between them.

The obvious question is, why bother ? Well make a lot of use of computers and you soon find that there is no ideal machine and even the Oric can be more suited for some purposes than advanced machines such as, say the Archimedes or Amiga. A means of transferring data between the machines then becomes essential

Basically there are two main routes to successful data transfer to and from the Oric. It can be done entirely by software or by constructing some hardware as well. Obviously this is a rather generalised, not a detailed "solder this to that" description, but hopefully these notes will give a few guidelines about where to start. There is no way that I could test all the possibilities. Even if I had the machines, I simply would'nt have the time. Note too, that I am not an professional computer expert. However a lot can be achieved by careful experimentation and testing.

First thing I should point out is that you will need some knowledge of machine code programming. If you go the hardware route you will also need the ability to do some soldering on a fairly simple circuit board. All hardware I used, was powered by the 5 volt supply and must not be connected in any way to the mains. However I should also point out that even at such low voltages, you should be very careful when making any hardware connections to any computer system, a wrong connection, particularly one in reverse can blow up part, or all of the computer system. Mistakes can be very expensive and you are really on your own when building your own computer hardware. I have no way of knowing whether you are an expert or novice. So if you are not sure, dont take any risks.

The Hardware Solution

The Oric almost certainly can pass data to and from other computers, using the Oric printer port. However the 6522 chip that drives it, is an extremely busy item and programming it to do this as well, is not too easy. This was the reason that persuaded me to build the expansion port, detailed in the "Oric Advanced User Guide" by Leycester Whewell. Providing one can use a soldering iron, it is fairly easy to build and as a "stand alone item" it is much easier to program.

For construction, I used a small Tandy circuit board, which has a simple matrix of component pinholes each separately copper plated. Sockets were used for both chips, which makes soldering and checking for errors much easier. I built two samples and they both worked straight off. Point to note. There is a small mis-print in the book, (page 83, fig 5.8) D5, D6 and D7 are pins 28, 27 and 26 respectively. Dont bother to wire up the "real time clock" noted in the book (PB7 to CB1). When using the disk system I found that it uses the address #0310 to #031F, mentioned in the book and as a result, I had to raise the address to #03E0 to #03EF instead. I also found that it was essential to plug the expansion unit in between the computer and the disk interface and not into the disk interface expansion socket. Keep that ribbon lead short as possible, say 6" max. The lead linking Oric and BBC/b user ports was not so fussy, about three feet was OK. I wired the 6522 VIA outputs into sockets, as per BBC "B" Computer's User Socket and used buffer chips (7407), between the BBC/b and the Oric expansion port, rather than a direct connection, to give some protection, in case of accidents.

The programming for the data link was done in machine code. Fortunately the BBC/b computer, has the same microprocessor as the Oric, which made things easier, I used the same program for both machines, with just a small change to a couple of hardware addresses. It took 72 seconds for the BBC/b, to send a file of just over 6K to the Oric and about 7 seconds !! for the Oric to send the same file back. A very simple and basic machine code listing for the Oric Transmit and Recieve program listing is available, but it will only work on a 6502 based machine with a 6522 VIA chip. Other machines such as the Amiga or Atari have different microprocessor instructions and would need a program written for these. It is worth noting that this expansion "user port" can have other uses, for instance it will read a mouse, given the right software.

The system has proved very useful over the years not only for text files, but also for writing a very successful professional photographic colour (C41) processing simulation, which was shuttled between the Oric and BBC/b during the writing process, more times than I care to remember. Drawbacks ? Well two complete computer systems set up together with two monitors are a bit of a pain if you are short of space.

Other hardware solutions ? The RS 232 serial link or Midi interfaces, are possiblities. I havent tried these and have no information. Alan Whitaker is an authority on RS 232 hardware and I believe has used the Maplins kits for this. A raid on your local library is a good idea for gen on computer interfaces, also machine code programming etc, some books can be rubbish, it is one way of sorting out books worth buying.

The Software Solution
---------- There is an alternative software solution. That is to read directly from a disk. This has advantages, no hardware to make. Only one computer need be in operation at any one time and it is faster. I recently bought the Archimedes 310, which is a completely new "ball game". Like the Atari and Amiga, it uses a totally different microprocessor, in this case the 32 bit ARM Risc chip. It can use the VIA 6522 chip, but only in a limited way, so the software solution appeared a better alternative.

I now had three disk systems, all incompatable in disk size and operating system. So I bought a Cumana "BBC" 3.5 inch disk drive, which works on the Oric as well as the BBC/b. That solved the disk size problem because the Arc uses 3.5" disks. Now I could try reading data direct from the disk. The starting point for this exercise, is a disk editor and several disks with a known file set up. I wrote a simple easily recognised text pattern of numbered blocks into the Oric at #3000-#6200 and then copied this across to the BBC/b and Archimedes computers. I then made half a dozen disks, each with an identical file set, but saved using a different filing system each time. A disk editor was used to compare the different disk format/layouts from the Oric Cumana, BBC/b Kenda and Arc ADFS system and the information gained was used to write a simple program for the Archimedes to read the first file on an Oric disk. Keep it simple is the best advice. The clever stuff can be added later to the working system.

Getting disk filing command information for the Arc was the hardest part. I knew the Archimedes disk command I needed for the operation, but like some of the Oric commands it uses a parameter block, in this case, specification unknown. Simple, write to your friendly manafacturer, magazine, user group for the info. I did all of those. After a month or three, the answers amounted to "dunno". Eventualy I got the information required, but it was a long trek. It may be easier to get the info for other machines.

it appears that a decent disk editor can read disks produced on many different machines. Dont make the mistake I made and buy a rubbish disk editor that can't even read a disk from its own computer without errors. Serve me right for not getting the Oric one. It is essential to get a good disk editor. The main difference between many disk systems is a matter of format, in other words the way the data is arranged on the disk. The disk editor may be able to read the data, but might object its format. Some disk formats may well be impossible to read, but it is always worth a try. One thing, DO NOT try experimenting on a disk with valuable or irreplaceable data, it will end in tears, I tell you !

Using the data

---------- If all this has not put you off and you manage to transfer the data between the machines you will find that most machines use the "ASCII" code so pure text files should be usable, without modification. The Apple 2e used the high set of codes to produce black on white text, but that was no problem. The infamous ZX81 is the only one where I needed a conversion table for text data, most of those machines are now being used as doorstops. The only possible source of problems are print or format codes. Easiest way to deal with these I found was to convert them to spaces and then reformat the text.

Language programs can be sent as text files. Inevitably they will require some modification anyway.

Graphic images will need converting. More machine code involved here. The simplest method is to transfer the whole screen display and then convert the screen display map, to that of the recieving machine. If you try instead to use an image file, you may well have to cope with extra display instruction/data in the file relating to size, aspect ratio etc. Display it first, before transferring it to the other machine and all that will have been done for you and the conversion routine should be that much simpler.

So far my experiences have been converting BBC/B Graphic Mode 4 to Oric Hires. The Oric screen map is a fairly simple "bit map", it reads from left to right. The first six bits of each byte relate to a pixel, the "Advanced User Guide" is the book to refer to for this. The BBC/b has the more complicated "character mapped" display, but it was not too difficult to convert and it worked quite well. However pixel for pixel, the Oric was limited to showing about 2/3rds of the BBC/b Mode 4 Display. I haven't got that far with the Arc yet, but it looks easier than the BBC/b, being essentially a "bit map" type again.

Tailpiece

---------- The Oric is a far more versatile machine than many people realise. A lot is due to better than average manuals which makes the Oric facilities more accessible than some more advanced machines. For me, the next step is to make more use of the graphics capabilities using data transfer and a scanner. I realise that I have barely started to explore the possibilities and I am far from being an expert. For the near future, it is planned to add to the recent series on using machine code, started by Stan Ellison. Watch this space. Meanwhile I hope that these notes have been useful and that they might inspire others to try some experimentation too.

ORIC ENTHUSIASTS

Well, I'm trying to complete this article for Dave, in time for the deadline, in competition with school plays, carol services, shopping, work's Christmas functions, etc. So if it is a little incoherent you will have to excuse me.

Dave has asked me to cover printers this month since he's received a few letters about them. I have also received enquiries regarding SEDORIC DOS so I will provide some more information on that.

PRINTERS

Generally, a printer is the first serious peripheral that most computer users buy for their computer because of its valuable, or even essential, use when word-processing or writing and developing self-penned programs.

An excellent feature of the ORIC in its design was the inclusion of a parallel interface intended for connecting a printer. The ORIC was one of the first home computers to have this in-built port (a feature subsequently referred to in ads. for certain MSX computers).

So, having decided on the need for a printer what type do you need to look out for? There are a few types available on the market and the jargon that can accompany them is as follows :-

Interfaces -- parallel, serial, Centronics or proprietary.
Types -- Daisy Wheel, Dot-matrix (9 or 24-pin), Ink-Jet, Laser, Plotter, Thermal
Control Code Standards -- Epson, IBM, Postscript or proprietary.
Features -- Draft and Near Letter Quality (NLQ) print modes, print buffers, down-loadable characters.

So let's pick the bones out of these buzz-words, with regard to the ORIC.

Essentially, for the ORIC we are concerned with a printer having a parallel interface. Often this is referred to by the now de facto standard, which is that associated with Centronics printers, but now used by all the major printer manufacturers. Printers having the Centronic's interface are in the majority by far now so stay clear of any printer having a serial or proprietary interface. When you buy your printer you should be able to obtain a lead included in the price. These can be easily modified to suit the ORIC by fitting a 20-way IDC socket at the computer end so that pin 1 is connected to pin 1 of the printer connector.

The type of printer suited depends to some extent on your requirements in terms of print quality, versatility, print speed, noise level and price.

A Daisy Wheel printer can provide excellent print quality at fairly low noise levels but usually at slow speeds and with little versatility. Different fonts are achieved by physically changing a plastic wheel that fits into the printer and carries the characters on spokes. One drawback is the difficulty in printing pixel based graphic screens. However, I have seen evidence of enterprising programmers writing software, for other computers, whereby they use particular characters to represent pixels and dump a screen in that manner. I'm not aware of any such software existing for the ORIC.

The Dot-Matrix printer is, currently, the main contender for the home computer market. It so called because of its print mechanism which is a head comprising a number of pins arranged in a vertical line. Each of the pins can be fired, electrically, to produce a dot on the paper by way of an inked ribbon. By firing the pins while moving the head horizontally a pattern can be produced, a line at a time. The printer's internal processor determines the correct patterns to represent the

alphanumeric characters that we see printed.

Earlier dot-matrix printers have only 8 pins in the head and consequently cannot print proper descenders. That is the portion of certain characters such as 'g', 'j' and 'y' that normally appear below the imaginary print line. An example of this can be found in this very tome. Sorry Dave, but perhaps Santa Claus has brought you a faster, all singing and dancing, mega model this Christmas. For the last two years, 9-pin models have ruled the roost but now the move is towards 24-pin models. These offer higher quality print out and faster speeds while retaining the versatility.

The print modes offered by these printers are many and varied but the main ones are draft and NLQ. Near Letter Quality modes are obtained by printing the dots that make up the characters in a line in two passes of the print head. On the second pass, the printer's platten is rotated a very small increment so that the second set of dots overlap the first set, thereby greatly inproving the appearance of the printed characters. Obviously, the speed of operation is greatly reduced when printing in this mode but this is usually acceptable for home use. I've printed this article on my Panasonic KXP1080 9-pin printer using NLQ mode. I think that you will agree that the quality isn't bad!

Dot-matrix printers tend to be noisy but certain manufacturers are now bringing models onto the market that claim to have 'quiet' modes. They offer excellent graphic features and software to dump HIRES screens from the ORIC is available in the PD library. Another feature found on most modern printers is the ability to down-load your own defined character set from the computer to the printer. The current range of ORIC wordprocessors do not support this feature but I have used this feature to print Gothic characters on some inlays of THE LAST WARRIOR.

An Ink-jet printer offers excellent print quality, speed, versatility, almost noiseless operation and usually colour printing as well. However, the cost is high and the printers are not as easily obtainable. This type of printer is for the professional user.

Laser printers are also in voque with professional users. It is true that they offer top class print quality along with fast speed and versatility but their purchase and running costs are particularly expensive, with parts having to be replaced regularly when the printers are worked hard. They too require printer drivers so you're not likely to find one suitable for the ORIC.

Plotters (or like the ORIC's own model, sometimes referred to as printer/plotters) can be very useful for users wanting to produce graphical output. A4 plotters can be obtained for less than £250.00 but the drawbacks are that they tend to be slow and are not really suited for producing a lot of text-based output. The MCP40 was good value for money when it first appeared and at its price today it is still worth considering if budgets are very low. Unfortunately, they can only be obtained on the second-hand market now but I have located a company selling Sharp printer/plotters which look to be very similar. I have just ordered one today (18th Dec.) so I will see if I can get it to work with the ORIC and report my findings in a future article. The price would be less than £40.00

Thermal printers operate in a similar way to Ink-Jet printers except that their mechanisms are not so complicated and they use heat to transfer the ink to paper. They offer reasonable print quality, usually graphic abilities, low noise levels and medium print speeds. However, they are losing favour to the dot-matrix printer. They are capable of printing on normal sheet paper but the best print quality is obtained when using glossy paper which can increase the running costs when using this type of printer. A good example of this type of printer is the Brother HR5, although this is not easily found these days. One possible advantage it does have is the ability to run from batteries thereby introducing a degree of portability.

The standards regarding the control codes that need to be sent by the computer to the printer to control the modes of operation, etc. revolve around those produced by Epson (Japan) and IBM (USA). In fact, most up-todate dot-matrix printers offer compatibility to either standard, selectable on the printer. The Epson standard is the one chosen in most ORIC software, although there is usually a mode to deal with the ORIC printer/plotter. When it comes to the graphics or download capabilities you may find a little variations in control codes or data bytes between printers. This shouldn't be a problem in reality as any software can be adapted to suit. If these features are important to you then it is advisable to check out the details before you buy. The Postscript standard is associated with Laser printers so avoid this and any abscure proprietary standard.

Finally, the print buffer is memory internal to the printer which 'soaks' up characters that are transmitted by the computer. The larger the buffer, the greater is the number of characters that can be sent by the computer before it has to wait for the printer to complete its cycle in printing out a character. The advantage of a print buffer is that it can free the computer sooner to carry on with other activities. The occasional drawback is that if a mistake is made when printing from the computer it does not immediately stop the print out if the computer is interrupted. The size of the print buffer is normally reduced if a downloaded character set is used.

I hope that this article has been informative for most users. Clearly, the favoured printer for most ORIC owners would be the dot-matrix type. I have carried out a little market research and can recommend the following printers and suppliers.

9-pin Dot-Matrix			
Citizen 120D or 120D+	~£125	Panasonic KXP1081	~£145
Panasonic KXP1190	~£160	Star LC10 Mono	~£150
Star LC10 Mono MkII	~£200		
24-pin Dot-Matrix			
Citizen 124D	~£225	Panasonic KXP1124	~£245
Star LC24-10	~£230		

Try WeServe at 40/42 West Street, Porchester, Hants., PO16 9UW Tel : 0705-325354 or Evesham Micros, 63 Bridge Street, Evesham, Worcs., WR11 4SF Tel : 0386-765180 for Star printers.

SEDORIC DOS

As I stated last month, this is available in the Shareware scheme. The current version is V1.007 (as compared to V1.006 on CEO discs) which fixes the bug with the TAKE command. The bundled utilities have been translated into English by myself and updated. Furthermore, the manual has also been translated into English by Jon Haworth and myself and is now available.

The DOS itself is being distributed virtually free because we do not possess the rights to it. However, since it has been enhanced we are making it available separately for just the administration cost. So for the disc send a blank disc and 50p or £2.50 to cover the cost of a 3" disc and postage or £1.50 to cover a 3.5" disc.

If you wish to register your use of the DOS then send £7.50 to me which entitles you to a copy of the manual and options to take up future enhancements at nominal charges. Planned enhancements involve further updates to the utilities and associated files.

Written by : Allan Whitaker

THE BACK PAGE

New subscriber,Eddie Wisniewski from Huddersfield asked for the following to be printed: "Is there anyone who would like to exchange the PCB INTERFACE and SEDORIC DOS for the BYTE DRIVE 500 HYBRID (INTERFACE) with DOS6V4 including EPROM suitable for ORIC1/ATMOS,either on a temporary or even Permanent basis. Alternately,is there someone in the Manchester/Leeds area that would be willing to show me how it works; especially the transfer from tape to disc and vice versa.It would have to be a 3" disc drive"
EDDIE can be contacted on 0484 546850

MONOPOLI - from the PUBLIC DOMAIN has thrown up a query from the 'TERRY' family.Apparently,you are not allowed to sell your houses/Property if you run out of money. Any suggestions young Nicholas H.

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SPECIAL OFFER to ORIC 1 users:
CENTIPEDE,HARRIER ATTACK,ISLAND OF DEATH,LOKI and MULTIGAMES 1 -----all 5 original cassettes for 3.50 incl. postage or Pick any 3 for 2.50

SPECIAL OFFER to ATMOS USERS:
MULTIGAMES (with instructions for use with ATMOS), LOKI,ISLAND of DEATH,XENON 1 and ORIC FLIGHT (with ATMOS mod) - all 5 for 4 Pound or any 3 for 3 pounds.

The GEOFF PHILIPS interview will be concluded in the next issue.

Thanks to DAVID WILKIN for an enjoyable jaunt down to SUNBURY. The beer and food was great. A Pity that my mate's car was in an accident on the way back;luckily our ATMOS's were not damaged,even though the car was.
DAVID showed us a nice little BIORYTHMS Program that he has written.

YET ANOTHER

Another new subscriber is John HURLEY from YEOVIL.
John mentions that the cover of issue 38 showed a list of ORIC magazines,but did not show 'ORIC COMPUTING',a glossy magazine similar to 'ORIC OWNER'. Five issues were published.
John also states that he has been working on the Pools Program from 'ORIC OWNER' and says he can maintain a 50% correct weekly forecast.

Well that's it folks for another month. Next issue will include a questionnaire which I want EVERYONE to fill in or else I'll send the boys round.

LONG LIVE ROCK AND ROLL,THE ORIC,THE ATMOS AND O.U.M

Registered at the Post Office as to heavy for Heavy Metal fans