ØRIC USER MONTHLY

with Alternative Micros

Number 92/93

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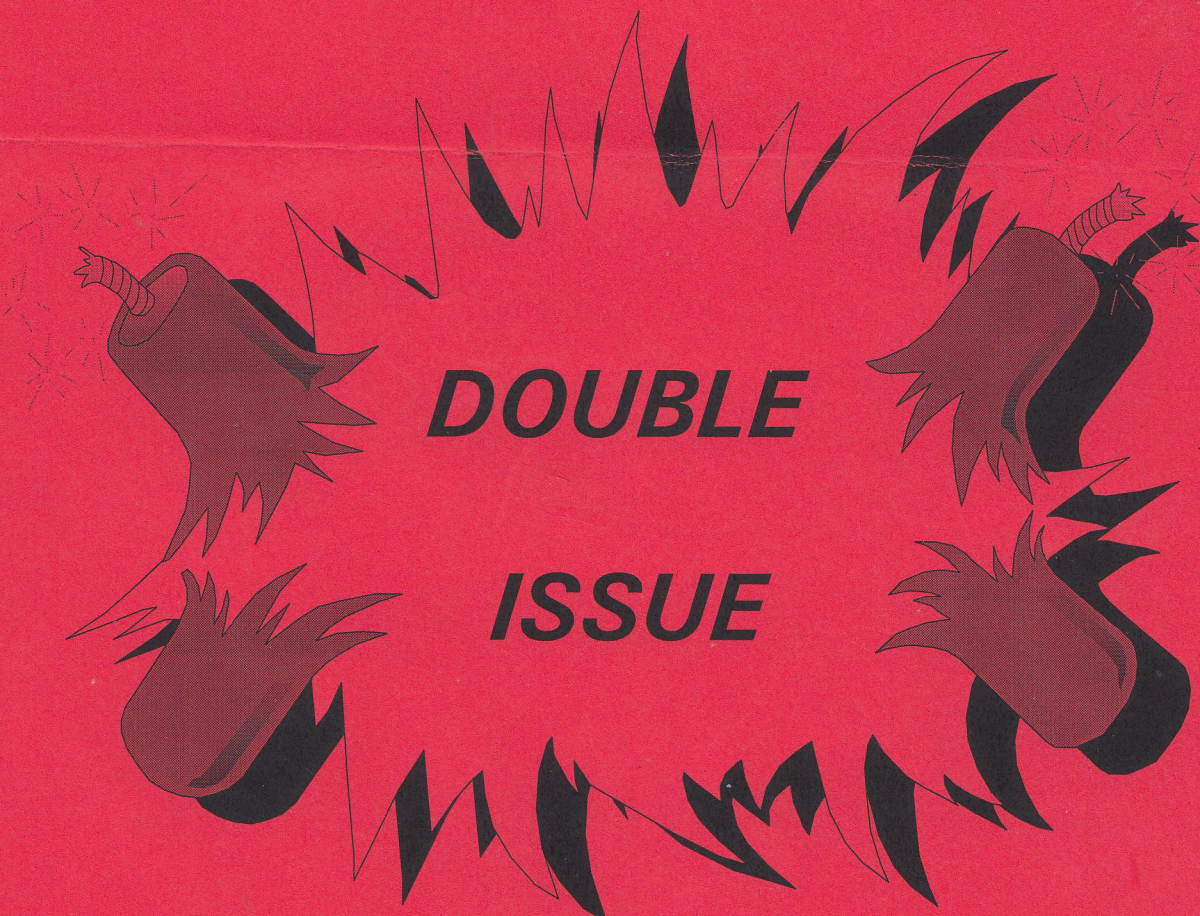
Keeping the Oric alive



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T H E E D I T O R I A L

HELLO AND WELCOME,
to this double issue of OUM.

It seems a long time since I last used the Atmos and WORD-SPEED. Too long in fact.

My Spring break in Minehead has left me refreshed,but alas all my time has been taken up since with various other matters.

Needless to say, I have a mountain of Oric related matters to deal with, but have now cleared the decks for action.

Armed with a couple of cans of Websters and a Shara Nelson C.D, I am merrily putting the final touches to this issue,prior to embarking on the task of clearing the backlog.

As we get into May,there appears to be a mini heatwave. Let's hope that it is the start of a good Summer.

Meanwhile, I hope you enjoy the contents of this issue,and happy reading.

THE INDEX

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AND ON WE GO!

Just off to get that second can of Websters, change the C.D. to one by LONDONBEAT, and then forever onward!

THE NEXT ISSUE

Articles for inclusion in the June issue should reach me by May 27th. at the latest - Please!

THE RAFFLE TICKET

AS IN PREVIOUS MONTHS, YOU WILL FIND A RAFFLE TICKET ATTACHED TO THIS ISSUE. THIS IS FOR BRIAN'S XMAS RAFFLE AND NOT FOR THE ORIC MEET. DO NOT LOSE YOUR TICKETS - NO TICKET - NO CLAIM

N E W S

THE IMPORTANT BIT!

THE SECOND AND FINAL CAN OF WEBSTERS IS EMPTY,BUT AT LEAST I CAN CONSOLE MYSELF WITH THE SOUNDS OF BARRY WHITE!

WHEN IS AN ORECK NOT AN ORIC?

We previously reported the existence of an ORIC vacum cleaner. In fact the correct spelling is - ORECK. This product is now being advertised nationally.
Our Gamester Henry Marke actually owns an ORECK as well as an ORIC, and says that the cleaner is top class.
We will report on any hi-scores that Henry gets with the ORECK - he will probably sweep the board!

MAGNETIX

It has been a year in the making, but MAGNETIX from Jonathan Bristow is still being worked on. As we go to print, he has working on the coding. No date is yet set for release, but it would be nice to see the finished version at the next Oric Meet,as we viewed the initial idea at the 1994 MEET. I know things take time Jonathan, but come on lad - have you got a woman or something?

THE 1995 AYLESBURY ORIC MEET

As fully reported in the March issue, the MEET will take place on Saturday July 29th.
NOW IS THE TIME TO SEND OFF YOUR MONIES FOR ENTRANCE.

A Grand Raffle is also planned - tickets are 1 pound each. Those not attending may buy raffle tickets in advance.

It is hoped that Club Europe Oric President - Jean Boileau (Mr.Atmos) will attend.

WAVE GOODBYE!

Latest news on the 3" disc(k) front from W.A.V.E in Cumbria is that they can no longer supply Amsoft or Maxell discs. They do have some ex-software 3" discs available. Thought to be Maxell - they retail at 10.99 per box of ten.

FOR CONSOLE FREAKS!

MATTHEW,my youngest,recently managed to break the power supply for his Amstrad GX4000 games console. It would cost at least ten pounds to replace it. However, on checking with Bull Electrical, I find that they can still supply the complete outfit (console/joypads/power supply) for the incredible price of Ten pounds (+ VAT + Post). If you have the old console,then it is worth considering a spare at this price.

R E A D E R S L E T T E R S

DEAR DAVE,

I have moved again. This time to beautiful Cheltenham,and have found a lovely cottage with exposed beams,wooden floors etc. I am working in the local Hospital, but will be going back to college in September to do a Teacher training course.

- Kieron Smith, 1 Coxmore Cottages, London Road, Charlton Kings, Cheltenham,Glos. GL52 6UY

DEAR KIERON,

nice to hear that you are keeping the Removal companies in work!

I hope that the beams are the only things being exposed at the cottage! I know what you youngsters are like.

Hope to catch up with you at the MEET - if not then all the best with the training, and even more luck in finding a job afterwards.

- DAVE

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DEAR DAVE,

ta for OUMDISC#6.

The sound samples were good, very impressive.

- PETER BRAGG (Sutton)

DEAR PETER,

the samples were definitely well recieved and I'm sure Denis Bonfield will be happy to hear that his work was appreciated.

- DAVE

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DEAR DAVE,

ta for OUMDISC - EXCELLENT.

Now for the bad news - my 5.25" drive has gone kaput. In the February issue of OUM there is a mention of a company called 'GREENWELD', who still have a few drives available. Could you please tell me their address?

- IAN HUTCHINS (Kidderminster)

DEAR IAN,

I'd love to tell you their address as I know that it has been mentioned in OUM. I've just spent half an hour going back through the last two years of OUM without success. I'm sure that they reside in Southampton, and I think that it was Alan Bowers who first put me onto them (see page 3 - issue 90 for his details), or ring John Hurley. Perhaps someone could tell me the address, and I will log it.

- DAVE

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DEAR DAVE,

as the owner of two ORIC-1 computers and a small amount of software, I was surprised upon recent acquirement of an ATMOS to find within the box - issue 75 of Oric User Monthly. I realise this magazine is now sixteen months old,but I hope you are still publishing.

From the magazine I gather you are no longer assembling disc systems,bit I would be grateful for any information as to where I could obtain one of these (I also own a BBC with four drives,so hopefully an interface/O.S would be all that is needed).

- PAUL HUNT-TERRY (Rainham)

SEE NEXT PAGE ----

LETTERS (Contd.)

DEAR PAUL,

as the back issues I have sent you prove - yes we are still going strong.

Steve Hopps can still supply disc interfaces at 50 pounds (incl. post), and I have sent you his details.

Initially John Hughes used a disc drive from his BBC with one of Steve's interfaces for the Oric, and I know he had no problems.

Hope you subscribe and benefit from our group.

- DAVE

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DEAR DAVE,

many a time had I wanted to write in to comment on something or other in the OUM magazine,which I enjoyed. I am the 'almost' computer-illiterate 'silent' other half of Jon Haworth, and I usually manage to have a look at the monthly OUM without either of the men in the hosehold snatching it from me.

What prompted me to write this time,was Frank's article on English grammar which I found fascinating and enlightening. I do know a little about such matters myself,as I am a teacher of German, and thus have to confront the grammatically illiterate majority of pupils daily. Hence the special interest in the topic.

However, I also enjoyed Steve Marshall's article on the Stradivarius which was most interesting. So, those of us who are not really enthusiastic about Oric programming gain much enjoyment from different types of articles.

Last but not least, the Editorial page is much read,giggled at and commented on. Well done, Dave.

- GITTE HAWORTH (Cambridge)

DEAR GITTE,

it is so nice to get a letter from a computer 'widow'.

I'm sure Frank and Steve will be pleased that their articles are appreciated by all.

We plan to cover other subjects in future issues. I feel that a computer magazine full of just computer orientated articles can tend to be boring, and it is nice to lighten the reading once in a while.

In closing, I would like to thank you for putting up the havoc that the Oric probably causes in your family,with so much involvement from Jon. Without enthusiasts like Jon and supportive wives like your good self, the Oric world would be a less tahn active affair.

- DAVE

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DEAR DAVE,

sorry to be delving into the past so much,but in issue 69 (May'93) you published a game called 'TEASER'. Now, I think this is an excellent game,but it is possible for it to be initially set up so that it is not possible to solve. In my opinion a 50/50 chance. I thought I had a check for this,but have discovered that it is not infallible. I wonder if any other reader/tapper has found a successful check.

In issue 91,the article by Frank Bolton is excellent. Steam has been coming out of my ears for years on this subject. What a pity the kids don't get this tuition until they join the Oric Club!

You're doing a fine job. Carry on the good work.

- STAN HOLDEN (Teignmouth).

DEAR STAN,

regarding TEASER - this was translated by Norma Wrangham, after being modified and tested by John Hurley. Perhaps John or others can answer this.

- DAVE

DEAR DAVE,

thanks for OUMDISK#6,which has took me ages to check through,due to the fact that there is so much on it!

There's something for everyone on the disk,even insomniacs are catered for with the program "Spherical Mirror"!. I enjoyed playing "Mastermind" once I realised that zero was used as one of the numbers; the only drawback being that every time the game is played the first number is the same.

"Dotman" is an excellent variant on the 'Pacman' theme,and is quite tricky because when ghosts are zapped,it's not obvious where they will re-appear. Unique to this version is the ability to stop 'pacman' in any position by pressing left or right when moving vertically. Normally the only way to stop 'pacman' is to run into a wall. Without doubt,this is my favourite program on the disk.

It was interesting to play "Mind Madnez II",as I haven't played the original for a while. Initially it appears to be a simplistic game,but it is deceptively tricky and the time limits don't allow much margin for error. I like the high score option tables as I don't necessarily want to save my high scores to disk every time. However, I wish there was a pause option in the game as I doubt if it could be completed without one! Hopefully this demo should help sell more copies of the game,and I would be interested to know how many additional copies of "Columns" were sold as a result of putting a demo on the last OUMDISK.

"National Hockey" is a good example of the managerial 'genre' and unlike "Mastermind", would appear to be a truly random game. i.e when I selected the same team and options,the results against corresponding teams were different each time. There were other interesting games on the disk,namely "Mortgage" and the amazing "Sampler" program. I couldn't believe how clear the samples were and look forward to more of the same on future OUM disks. I would have no hesitation in saying that this is the best disk yet and you deserve a lot of credit for your efforts.

Certainly with the amount of software still being written for the ORIC, I am surprised that some people are not renewing their subscriptions (OUM & CEO); the main reason seeming to be a switch to PC machines. As it happens,this letter was written using 'Wordperfect' on my PC,but regardless of what machines I own in the future, the ORIC will remain as part of my setup. I quite agree with Steve Marshall's comments in this month's OUM that just because you own a PC doesn't necessarily mean the ORIC has to be discarded.

Perhaps if an ORIC emulator could be written for the PC as good as the SPECTRUM emulator I use,then maybe we could attract PC users to the ORIC rather than the other way around!! The latest version of the SPECTRUM emulator now has support for the mouse and enables a joystick to be used on games which only have a keyboard option. Just imagine being able to play any ORIC game using a joystick on a VGA monitor in stereo sound!

- PAUL HUTTON (Worcester)

DEAR PAUL,

thanks for reviewing the OUM disc and thanks also for a very interesting letter.

Putting a preview of Columns on a previous disc, did in fact lead to a few sales.

I'll answer your letter more fully when I have had time to digest it all.

- DAVE

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AND YET MORE FROM THE POSTBAG - - -

DEAR DAVE,

Frank Bolton's article is an interesting diversion,but easy to follow. A bit like looking for something in an encyclopaedia,and two hours later finding that you have spent two hours reading about something totally different,but still worthwhile. I shall look forward to the next article.

I shall also look forward to the appearance of the EPROM based Sedoric from Dr.Ray in either a 'do it yourself' or just a 'plug in and play' format. If this includes sub-directories as is currently mentioned,then we may see the advent of small hard drives on the Oric at some time? Even 20 Meg would cover a lot of programs. That is something to anticipate.

Sorry no comments regarding OUMDISK 6,but the Oric is waiting for a new PC style keyboard to be fitted.

- JOHN FOGGIN (Ashington)

DEAR JOHN,

the three main talking points recently seem to be: - the OUMDISC, Dr.Ray's upgrades, and Frank's English lessons. All the time that people are responding it shows the worth of continuing.

- DAVE

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A few comments from Ally

It's really gratifying to know that I am not the only computer user who is concerned about the deterioration in the use of the English language.

I'm sure Frank Bolton must have had similar feelings to my own when ploughing through the pages of the glossy PC magazines on sale today. The use of English within those pages is horrific! Words are used inappropriately, grammar goes by the board, spelling errors go unnoticed and punctuation seems to be totally random. Often one has to read a paragraph several times in order to glean some meaning from it. What puzzles me is how people who can write computer software, where the syntax is so precise that a single semi-colon misplaced can cause the program to crash, cannot master the written basics of the language they speak every day.

Perhaps Frank could persuade one of the big computer magazines to run a series of articles on English usage

Regarding the disc/disk controversy: my own opinion is that it's useful to have two possible spellings. Disk with a *k* can always be associated with computers, while disc with a *c* concerns records and any other circular objects. The same goes for program/programme. In this we are more fortunate than the Americans, who have only one spelling to cover TV programs and computer programs. In Britain we can choose to use *programme* for TV etc, and *program* (the American spelling) when discussing computer software. It's just a pity there aren't two spellings for *video*, isn't it!

AND YET MORE POST NEAR THE BACK

A L T E R N A T E M I C R O S

FOR SALE

ATARI 2600 games machine, plus 1 joystick, 2 paddles and power supply. Games Cartridges - 'Mr.Do','Yars Revenge','Galaxian',Pole Position','Stargate','Solaris','Super Breakout','F-14 Tomcat','Battlezone','Outlaw' and 'Joust'.
Price is 30 pound the lot.
Vendor is Paul Hill. Telephone him after 5.p.m on 01438 813636. Alternately you can drop him a line to: 38 Balmoral Close, Stevenage,Herts. SG2 8UA

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3" DISKS

Some while back Norma Wrangham wrote for a quote for 3" disks on behalf of the Einstein User Group.
The disks were unlabelled,but formatted okay on the Einstein.
Norma checked out availability again recently - they can still supply and intend to keep stocking for the foreseeable future.
Prices were: singles - 1.75 ea.
100 - 1.65 ea.
200 - 1.55 ea.
Prices may have changed recently.

The company is: SYSTEMBRIDGE LTD. (John Hawkins,B.Sc, MIDPM,Director), 128 High St., Braintree,ESSEX CM7 7JZ.
TEL: 0376 551021

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WANTED

Paul Hutton has been trying to get hold of a CUMANA double sided disk drive (Model: csa354) for a while as it is also compatible with his ATARI STE.
He has not been successful to date, and wonders if any reader knows where he can get one. He would be most grateful.
If my memory serves me right, CUMANA have closed one of their manufacturing plants, but still have one operating at Guildford I think. Perhaps Steve Hopps could confirm and supply an address.
Meanwhile, any readers can contact Paul at : 20 Southfield Street, Worcester. WR1 1NH

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FOR SALE

9 HIGH DENSITY disks full of SPECTRUM games,which Paul Hutton will be advertising in PC mags. at 3 pound each.
Price to OUM readers is 2.75 each.
Minimum spec. required is 386/25 mhz.
S.A.E to Paul at the above address fo details.

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LOOKING AT CLASSIC GAMES

with Arnt Erik Isaksen

Part 6

Alistair Way

FOOTBALL. HGC Software 1989.
Football is, as the title suggests, an arcade soccer game. You have several options to choose between, i.e. one or two players, the computer's playing style, speed, and time. Then it is time to kick off. Become a new "Maradona" by dribling your opponent until he gets dizzy or kick and run. It is possible to shoot the ball with different power, either by keeping it low to the ground or chipping it into the air.
When I first saw Football, I was surprised of the terrible graphics and sounds. However, I did finally have an opportunity to play a soccer game on my Atmos. After playing it for a while, I found Football's playability very good. Especially is the computer's different playing styles a good idea, i.e. some teams play short passes while other teams kick the ball away with lots of power.
O:**+ G:*+ S:* A:****

ESCAPE. OUM Software 1990.
You are in control of an armed man, and you must shoot at everyone who is shooting at you. If you want to be a bad guy, you can shoot the sheepherd's sheep. This is not nice, is it? There are a total of four screens.
Alistair Way wanted to bring something original and new to the Oric screen, but he told me that even he wasn't satisfied with the end result. Escape has some similarities with Rambo and Commando for the Commodore 64, but is of course far from as good as those two.
O:*** G:*** S:** A:**

GALACTOSMASH. Mirage Software 1989.
Galactosmash is a different kind of shoot'em-up-game. You buy weapons, engines, and shields, and then you must select one sector that you want to travel to. If you clear a sector, you will be paid money (1000-4000). There are a total of 35 sectors.
This game was something new for the Oric when it was released, and it is also Alistair Way's turning point as an Oric programmer. The introduction, which is loaded seperately, is very professional. Graphics within the game are good, even though they are not impressive. There are a total of 50 big and colourful aliens. Sounds are no more than acceptable. If you want to play a different shoot'em-up-game, Galactosmash is certainly not the wrong choice.
O:****+ G:****+ S:*** A:****

GRAND PRIX. Mirage Software 1990.
This is Alistair's Way Oric version of Super Sprint, which has been a popular car racing game for the Commodore 64. You are given the bird's eye view of the eight tracks. Upto to four (!) humans can play at the same time, either by practising or competing at a selected track, or by commencing a Grand Prix Championship with races at all of the eight tracks. You can select one of the cars, each of them with different advantages, i.e. speed, accellearation, grip or brakes. If you would like to, you can even alter some of its advantages.
I believe that the Oric keyboard is too small for three or four players, but playing this with a friend is just fun. It is important that you choose to play with a friend who is not a poor loser, because some people can get too eager while playing this game. One of them is Ståle Eikebråten, who is capable of smashing my Atmos if I don't stop him in time. The computer's cars are dumb, and playing a friend is therefore much more fun than playing alone. Two and two tracks are loaded at the time, and Grand Prix is therefore more fun when playing the disc version. Graphics are smooth, but some of the backgrounds are not so well drawn. Anyway, Grand Prix is recommended.
O:*** G:****+ S:**** A:*****

GRENDEL. Mirage Software.
Wander around the dell, picking up weapons and collecting keys. Your mission is to unlock a door and kill Grendel. Slay anything that moves with one of your weapons. You can move freely from one area to another. This game is an arcade/adventure, which can keep you busy for hours. I have never completed it myself, and some people can find it a little bit too difficult.
What can be said about Grendel? The graphics are good and foreground graphics are big. Sprites are made in a way that they don't mess up the background graphics. Because of the amount of memory used by the graphics, some other areas, such as the sound effects, have been partly sacrified. I am in the opinion that sounds are too loud at times. Overall is Grendel an original Oric game that should be seen by everyone.
O:***** G:***** S:**+ A:****

Alistair Way is now about 23 years old. His hobbies are football, badminton, music, reading, politics and computing. Alistair has also completed a 3 years economics course at university. He started off computing in 1983, learning BASIC programming on the school BBC computer. By the end of 1983, Alistair bought an Oric-1, which was updated to an Atmos during 1984. Hundreds of games have been tapped into his Oric, and the best of them are reviewed on this page. Alistair enjoys original games, especially Don't Press the Letter Q by his favourite author, Andrew Moore. To keep the Oric alive : Stay in contact with each other, organize meetings, develop new software and experiment with hardware. That sounds right.

Machine Code for the Oric Atmos (Part 45)

Peter N. Bragg

The Story so far

Last time, we started to have a look at a special selection of machine code/assembly instructions, known as the Zero Page instructions. The Zero Page area is located in RAM, starting at the address #0000 and finishing at address #00FF. In other words, it covers the first 100 hex bytes of the computer's RAM memory area. Zero Page instructions apply to any computer, providing that computer uses the 6502 microprocessor. So this applies to all of the Oric machines.

The first advantage of Zero Page instructions that we noticed, is that they are shorter. The reason for this is quite simple. They have the top half of the address already built into them. If you recall the Absolute instructions that we have used in the past, you may remember that they require a two byte address in order to operate on the contents of a particular location. This is because an Absolute instruction operates absolutely anywhere in memory. The Zero Page instruction on the other hand only operates in the first 100 bytes of RAM, so it only requires two digits (a value between 00 and FF), or in other words a single byte, to set any location within that single Page of 100 bytes.

If you look at the standard Instruction Set for the 6502 Microprocessor, you will find that there are 21 instructions for operations on the contents of locations in the memory. That group of 21 instructions provide a large variety of arithmetic and logic operations and also allow you to copy data bytes to and from data memory. Each of them has an Absolute version and a Zero Page version. The fact that it has it's own specific set of instructions, is what makes the Zero Page area of memory so useful.

Basically the Zero Page instructions do same operation, as their Absolute counterparts. For example, if we wanted to add the contents of a location in Zero Page, say address #0040, to the Accumulator contents, we could use the Absolute instruction ADC 0040. The instruction hex code for that is three bytes, ie. 6D 40 00. However, as that example is located in Zero Page, we could instead use the Zero Page instruction, which will produce exactly the same result. That Zero Page instruction is ADC Z 0040 and it's hex code is just two bytes, ie. 65 40.

Of course, if you are using an assembler, this is not so obvious, in fact the label that you type in is slightly longer. However, the end effect is just the same and the assembler will translate the Zero Page instruction into those two hex codes, in the same way as it will translate the shorter Absolute instruction into the three hex code instruction.

Zero Page Index Instructions

Like the Absolute instructions, you will find that the Zero Page instructions can be used with Register X and Register Y, to provide indexed operations, in the same way we have already seen indexing used. However, I should point out that there are more instructions that can use Register X than use Register Y.

The subject of indexed instructions was covered in some detail in Part 21 of the series, however it would probably be a good idea at this point, to refresh our memory on the subject, particularly as indexed instructions are very useful for handling large amounts of data. In addition Zero Page also has a few special indexed operations of it's own.

Indexed Instructions

We have found that most instructions operate on a one single byte of data at a time. However, we also found that by using an indexed instruction, a set of single byte operations can be linked together in a very small routine that can handle up to a 100 bytes at a time, by using the Registers X or Y as an index. An indexed instruction works by automatically adding the contents of Register X (or Y) to any address contained in the instruction code or assembler label.

This enables us to use a single address and access up to 100 locations in a simple loop, by simply changing the contents of the Register (X or Y). Changing the value of Register X or Register Y for this purpose, is normally done by incrementing or decrementing instructions which are simple one byte instructions, that add or subtract 01 from the value held in Register X or Register Y, depending on which one you are using.

For example, if we preset Register X to 04 (LDX #04) and then use the instruction LDA X 3000, you will find that the result will be that the contents of location address #3004 will be loaded into the Accumulator. The reason for this is, that the instruction added Register X's contents (04) to the instruction address #3000, to make #3004, the actual address used.

It follows, that if you take the above example and put 00 into Register X, the indexed instruction LDA X 3000 will fetch the contents of address #3000. If Register X is incremented (using instruction INX) and LDA X 3000 is repeated it will fetch the contents of address #3001. If you continue to increment Register X and repeat the instruction LDA X 3000, you will eventually fetch in turn, the contents of every location between address #3000 and address #30FF.

We can use a couple (or more) indexed instructions together in this way to transfer data from one area of data memory to another area of memory. A routine of this type was shown in Part 40 of this series. That was just a very basic copy/transfer routine, that used LDA X and STA X instructions. You can also include more instructions in such a routine in order to make modifications to the data enroute, if you wish.

You may wonder why the particular interest in indexed instructions, with respect to Zero Page, particularly as the Zero Page area itself, is limited to an area of only 100 bytes, compared with the entire memory area which is available to the Absolute instructions.

There is a good reason for this. The Zero Page access to memory is not quite as limited as it appears at first sight. There are additional instructions to those that Zero Page already has in common with the Absolute set. These allow the Zero Page instructions to access the entire computer memory by using a technique called indirect addressing, together with the indexing operations that we have already met.

Indirect Addressing

Like most things connected with computer programming, it is best to deal with this in simple stages. As I said above, the indirect addressing operations are used together with indexing. The question now arises, what is Indirect addressing ? The easiest way to find out, is to look at an instruction, that actually uses it and that is what we are going to do next.

There is just one instruction that uses pure indirect addressing on it's own. Although that instruction is not connected with the Zero Page instruction set, it does provide a good illustration of how indirect addressing works and what it is.

The instruction we are going to look at is the Indirect Jump, so we will forget Zero Page for a moment and have a look at that version of the Jump instruction, in order to see what Indirect addressing is all about and how it works.

The Indirect Jump

We have looked at the jump instruction "JMP" and have made quite a lot of use of it already. It is the machine code version of the Basic GOTO command. For example, if we want to jump to the address #1050, we would use the instruction JMP 1050, the hex code for which, is 4C 50 10. Don't forget the address is put into the hex code in reverse order. Now there is another version of the JMP instruction, which we have not looked at before, in this series. This is the indirect jump, or JuMP via Indirect address. The instruction opcode in this case is 6C instead of the more familiar 4C opcode used in the plain JMP instruction.

Once again, the Indirect Jump instruction contains an address, however that address is used in a different way. The address is used as a pointer to the location where the actual jump address can be found. The final destination address of the indirect jump is actually stored in the address given in the Indirect Jump instruction. So the Indirect Jump reads the contents of the address given in it's instruction and then uses those contents as a final address, to which it then jumps.

So how does this work in practice ? Well, if you take our original example again, but use the Indirect version instead, the instruction now becomes JMP I 1050 and the hex code for that would be 6C 50 10. However, the routine would not jump to that address, what it would do instead is jump to an address, which is held in the location #1050. Of course location #1050 can only hold a single byte and Absolute addresses need two bytes for the whole address. However that's no problem. It's all taken care of by the instruction.

The Indirect instruction deals with it by simply "earmarking" two adjacent locations as the storage area for the final destination address. So in fact, the indirect jump above, which is JMP I 1050, will use both location #1050 and location #1051, as the storage location for the address of the jump's final destination.

This might seem unnecessarily complicated, compared with the the simple jump, which goes straight to the address given in the instruction. However, the Indirect Jump does have it's uses.

It allows the programmer to put jump destination addresses into Parameter blocks, where they can be easily changed, to control the final destination of a jump. It allows you to have two or more different endings to a routine, which can then be switched around according to requirements. This can be seen in computer operating systems where system programmers have set up a parameter block, which allows you, the end user, to divert the computer operating system to include extra routines of your own design as part of the computer (Oric's) operating system.

That's how the Indirect operation works.....Next time, where it fits in.


We now continue with Acorn with a quick look at the BBC Master computer. Many of the computer manufacturers released updated versions of their computers. Following the Oric-1 we got the Atmos. After Commodore 64s there came the 128K version, Amstrads CPCs were turned into CPC +'s, and so on. Although the original machines were often very good, the later versions were generally much better and so it is worthwhile looking out for the newer version machines. As with the Oric machines, an effort has been made to make software compatible between the old and newer machines so it's a good idea to look out for them. They are usually a bit harder to find though.

* ACORN. BBC MASTER. The basic Master computer was the 128K machine. This is pretty much the same as a BBC B but with the much larger RAM. It also uses a different disk controller and has faster graphics. The other main difference is that The Master has a port at the top right hand side of the machine. There was also a 512K version, which I think had a built in disk drive.

* APPLE II. Steve Wozniak was the man who built the Apple I and II singlehanded in his garage. He did more to simplify and popularise the microcomputer than anyone else. Wozniak taught himself electronics. It is said that he could read the timing and circuit diagrams of a chip as easily as some people read fortunes in tea leaves. Before Wozniak a computer had needed 30 chips for the disk drive, but he designed it to only use 5. It was not so much that Wozniak invented anything new, but he simplified all the parts and packaged them together so that anyone and everyone could use the computer at home.
The Apple I was a computer designed on a single cicuit board. Steve Jobs, a friend of Wozniak's, persuaded him to market the machine. With a case and a keyboard the Apple II was born and released upon the world way back in 1977, selling over a million by 1984.
SPEC. 6502 CPU. 16K RAM. 40x24 screen/mono or colour (optional). 15 colours. 280x192 graphics (or 280x160 with 4 lines of text - very like the Oric HIRES screen !) 52 WP keys loudspeaker and sound capability. All the ports you need. A damn fine machine, especially considering its release date - 6 years before Oric !
By 1983 the Apple II had been revised 13 times. It then received a more major revision and became the Apple IIe, (the 'e' standing for 'enhanced').

* Apple IIe. The new computer retained all the features of the earlier machines, but only used a quarter as many chips. The keyboard now came with four cursor keys, and you got 64K Ram as standard.

* Apple III. This computer was aimed mainly at the business market. The old Apple II software wasn't compatible, but you could get an emulator so that it was. It came out in 1982 - before the Apple IIe was released which says something about the Apple IIs success.
SPEC. 6502 CPU. Monitor and built in disk drive as standard. 128K RAM expandable to 256K. 40x24 or 80x24 screen. optional colour - 16 colours. 560x192 graphics screen (or same as Apple II under Apple emulation). 74 keys + 13 numeric keypad WP style. RS232 port and 4 expansion ports. Networking capability. SOUND - pitch/dur. only.

* ATARI 400/800. These are two more early machines, being released in 1980. They are basically the same machine except the 400 has a membrane 'keyboard' like the ZX 81, and the 800 has a decent keyboard. Atari's have long been known for their excellent graphics, and it is because of machines like these. Both have 16 colours, each of which has 8 intensities. That makes 128 colours !!! They also had 4 sound channels rather than the usual 3. (Most 8-bits have the same sound chip as the Oric.) An extra sound channel may not seem like much, but it can make a big difference. Try to put music for a string quartet on an Oric.
I'll give you the full spec. next time.

Thasyerlot !

STEVE MARSHALL

BENCH TESTS — STEVE MARSHALL

Matthew Coates article in OUM 90 was again very interesting and reminded me of the old 'benchmarks' or bench tests. Those of you who remember the old computer magazines may also recall seeing them in reviews of new computers. When I saw this list of eight numbers I was never quite sure what they were and assumed they had something to do with electronics - maybe some sort of wierd test using oscilloscopes and multimeters. The mystery was later revealed to me by a very patient friend. 'Oh, they're just short programs that they run to see how fast the computer is,' he said.

The programs get the computer to perform a repetitive task and uses the internal clock to see how long it took. The Oric doesn't use TI$ as a clock timer, so either use a stopwatch, or have another look at Matthews article for an alternative.

I've given a list of some figures I found. When I tried the programs below I got different results so give them a try.

```
10 REM - BM1
20 TI$="000000"
30 FOR K=1 TO 1000
40 NEXT K
50 D$=TI$
60 PRINT "BM1 - ";D$;" SECS"
70 END
```

```
10 REM - BM2
20 TI$="000000"
30 K=0
40 K=K+1
50 IF K<1000 THEN 40
60 D$=TI$
70 PRINT "BM2 - ";D$;" SECS"
80END
```

```
10 REM - BM3
20 TI$="000000"
30 K=0
40 K=K+1
50 A=K/K*K+K-1
60 IF K<1000 THEN 40
70 D$=TI$
80 PRINT "BM3 - ";D$;" SECS"
90 END
```

```
10 REM - BM4
20 TI$="000000"
30 K=0
40 K=K+1
50 A=K/2*3+4-5
60 IF K<1000 THEN 40
70 D$=TI$
80 PRINT "BM4 - ";D$;" SECS"
90 END
```

```
10 REM - BM5
20 TI$="000000"
30 K=0
40 K=K+1
50 A=K/2*3+4-5
55 GOSUB 100
60 IFK<1000 THEN 40
70 D$=TI$
80 PRINT "BM5 - ";D$;" SECS"
90 END
100 RETURN
```

```
10 REM - BM6
20 TI$="000000"
30 K=0
40 K=K+1
50 A=K/2*3+4-5
55 GOSUB 100
56 FOR L=1 TO 5
57 NEXT L
60 IF K<1000 THEN 40
70 D$=TI$
80 PRINT "BM6 - ";D$;" SECS"
90 END
100 RETURN
```

```
10 REM BM7
20 TI$="000000"
25 K=0
30 K=K+1
40 A=K/2*3+4-5
50 GOSUB 100
56 FOR L=1 TO 5
57 M(L)=A
58 NEXT L
60 IF K<1000 THEN 40
70 D$=TI$
80 PRINT "BM7 - ";D$;" SECS"
90 END
100 RETURN
```

```
10 REM BM8
20 TI$="000000"
30 K=0
40 K=K+1
50 A=K*2
60 B=LOG(K)
70 C=SIN(K)
80 IF K<1000 THEN 40
90 D$=TI$
100 PRINT "BM8 ";D$;" SECS"
110 END
```

COMPUTER	BM1	BM2	BM3	BM4	BM5	BM6	BM7	BM8
ATARI 400	1.9	5.9	15.5	17.9	20.8	31.6	47.8	33.4
ATMOS	1.6	15.5	26.0	27.8	35.0	47.9	68.8	14.0
BBC 'B'	0.5	2.8	7.9	8.3	8.9	12.8	20.0	4.6
COMMODORE 64	1.2	9.3	17.6	19.5	21.0	29.5	47.5	11.3
DRAGON 32	1.4	10.2	19.6	21.4	23.4	34.2	50.1	12.7
EINSTEIN	1.0	5.0	11.0	12.0	13.0	21.0	34.0	4.0
ELECTRON	0.9	3.8	10.8	11.5	12.1	18.5	28.5	7.1
ORIC-1	1.9	17.4	29.3	31.6	39.3	53.2	79.2	23.3
SHARP MZ80	1.4	9.4	16.3	22.2	25.4	36.2	52.8	9.8
SPECTRUM	4.3	8.1	20.0	19.2	23.1	53.2	77.5	23.9
TANDY COLOUR	2.3	12.3	22.9	24.8	27.9	43.5	63.4	13.5
VIC 20	1.4	8.0	15.2	16.6	18.1	26.8	42.3	9.8
ZX81 (FAST)	5.0	6.0	16.0	15.0	18.0	49.0	67.0	23.0

LOOKING AT CLASSIC GAMES

with Arnt Erik Isaksen

Part 7

Summary

15

In this month's part of Looking at Classic Games, I will set up a top 50 list of the about 60 games that have been reviewed in the six earlier parts of this series.

Calculating the total score

Originality	:15%	*	:0%
Graphics	:20%	**	:20%
Sounds	:15%	***	:40%
Addictiveness	:50%	****	:60%
		*****	:80%
		******	:100%
		+	:10%

Example

Rockrun. O:** G:*** S:**+ A:***+

-> 0.15 x 20% + 0.2 x 40% + 0.15 x 30 + 0.5 x 50% = 40.5%.

Looking at Classic Games Top 50

1.	**Insect Insanity**	Tansoft	80%
2.	**Zorgon's Revenge**	IJK Software	77%
3.	**Xenon III-Genesis Probe**	IJK Software	71%
=	**Rat Splat**	Tansoft	71%
=	**M.A.R.C.**	P.S.S.	71%
6.	**Tetris**	CEO Soft	70%
=	**Manic Miner**	Software Projects	70%
8.	**Doggy**	Loriciels	69%
=	**Xenon 1**	IJK Software	69%
=	**Grand Prix**	Mirage Software	69%
11.	Lode Runner	Oric International	64%
12.	Gravitor	Severn Software	64%
13.	Grendel	Mirage Software	63%
14.	Stanley	Loriciels	62%
15.	The Hellion	Orpheus Software	61%
16.	Galactosmash	Mirage Software	61%
17.	Hunchback	Ocean Software	59%
18.	Tetrix	Mirage Software	58%
=	Zebbie	IJK Software	58%
20.	Scuba Dive	Durell Software	57%
21.	Damsel in Distress	IJK Software	55%
=	Trickshot	IJK Software	55%
23.	The Ultra	P.S.S.	54%
24.	Lone Raider	Severn Software	54%
25.	Pasta Blasta	Arcadia	53%
26.	Harrier Attack	Durell Software	49%
=	Operation Gremlin	Wintersoft	49%
28.	Super Jeep	Loriciels	48%
=	Mr.Wimpy	Ocean Software	48%
30.	Jimmy Poubelle	Loriciels	47%
=	Rabbit	Norsoft	47%
32.	Ultima Zone	Tansoft	46%
33.	Video Flipper	Loriciels	44%
34.	Frelon	Loriciels	43%
35.	Road Frog	Ocean Software	43%

36.	Honey Kong	Sprites	42%
37.	Rockrun	O.N.Software	41%
38.	Don't Press the Letter Q	IJK Software	38%
=	Light-Cycle	P.S.S.	38%
40.	Hopper	P.S.S.	38%
41.	Centipede	P.S.S.	37%
=	Ice Giant	Softek	37%
43.	Football	HGC Software	37%
44.	Super Meteors	Softek	36%
45.	Defence Force	Tansoft	34%
=	Frog-Hop	Tansoft	34%
47.	Invaders	IJK Software	30%
=	Elektro Storm	P.S.S.	30%
49.	Attack of the Cybermen	IJK Software	27%
=	Escape	OUM Software	27%
	Sorvivor	Loriciels	27%
	Ghostman	Severn Software	26%
	Ghost Gobbler	IJK Software	26%
	Oric Munch	Tansoft	21%
	Skramble	Microdeal	20%
	Probe 3	IJK Software	19%
	Galaxians	Softek	17%
	Mushroom Mania	Arcadia	16%
	Gastronon	Loriciels	12%
	Green X Toad	IJK Software	12%
	Crocky	Loriciels	11%

Comments

The Xenon triology is in the top 10. Zorgon's Revenge scores high, 77% and the 2nd place. Xenon III-Genesis Probe is just behind Zorgon's Revenge, while Xenon 1 climbs all the way to 8th place. Zebbie is at 19th, and Damsel in Distress together with Stephen Haigh's Trickshot are at 21st place. Other good games from IJK Software, i.e. Gubbie and Playground 21, were not reviewed in Looking at Classic games.

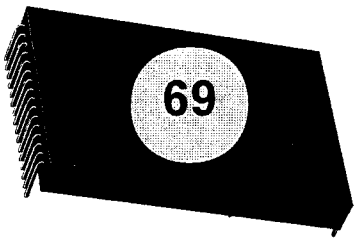
John Marshall, the best Oric programmer of all time, captures the 1st place with the fabulous Insect Insanity, and Rat Splat is in 3rd place. His earlier games, The Ultra and Centipede, is respectively in 23rd and 41st place. This is not too bad, considering that John Marshall only wrote these four games for the Oric.

Alistair Way, OUM's best ever programmer, received an respectable 8th place for Grand Prix, while Grendel (13th) and Galactosmash (16th) climbed high at the same time. Alistair's earlier games, Football and Escape, also got into the Looking at Classic Games Top 50. Congratulations to Alistair Way for programming all these great games.

Tetris, from CEO Soft, was the best of the French games with its 6th place. Doggy, from Loriciels, was a few steps behind in 8th place. Lode Runner, the rarity from Oric International, scores high for its addictiveness. Andre Widhani, the German OUM member and former Oric programmer, climbs to the 18th place with his Tetris clone, Tetrix. Ståle Eikebråten's good version of Boulderdash, called Rockrun, reaches a respectable 37th place.

I hope you have enjoyed reading my series "Looking at Classic Games".

ARNT ERIK ISAKSEN.



RAMBLING IN THE ROM

Rambling on...

```
DA44  STA A9          DACF  STA A9          high byte
DA46  PLA             DAD1  PLA
DA47  STA E9          DAD2  STA E9          TXTPTR low byte
DA49  PLA             DAD4  PLA             and high byte
DA4A  STA EA          DAD5  STA EA
DA4C  JMP $DA01       DAD7  JMP $DA8C       and put the lot back on the stack!!!
```

'KEY$' (COMMAND)

```
DA4F  JSR $E905       DADA  JSR $EB78       Take character in keyboard buffer
DA52  PHP             DADD  PHP             save if valid
DA53  PHA             DADE  PHA             and the character itself
DA54  BPL DA59        DADF  BPL DAE4        if no keypress, length=0
DA56  LDA #01         DAE1  LDA #01         if keypress, length=1
DA58  BYT #2C         DAE3  BYT #2C         jump next instruction
DA59  LDA #00         DAE4  LDA #00         length=0
DA5B  JSR $D4F0       DAE6  JSR $D5AB       reserve the string
DA5E  PLA             DAE9  PLA             recover the keypress
DA5F  PLP             DAEA  PLP
DA60  BPL DA66        DAEB  BPL DAF1        if no keypress, exit
DA62  LDY ##00        DAED  LDY #00
DA64  STA (D1), Y     DAEF  STA (D1), Y     otherwise, save the string
DA66  PLA             DAF1  PLA             remove return address from stack
DA67  PLA             DAF2  PLA             to avoid numeric test
DA68  JMP $D539       DAF3  JMP $D5F4       save pointer on the stack
```

PREVENT HIRES MODE

```
DA6B  LDA 02C0        DAF6  LDA 02C0        Take mode indicator
DA6E  AND #01         DAF9  AND #01         and isolate the HIRES/TEXT bit
DA70  BEQ DA77        DAFB  BEQ DB02        text mode, OK
DA72  LDX #A3         DAFD  LDX #A3         'DISP TYPE MISMATCH ERROR'
DA74  JMP $C485       DAFF  JMPP $C47E
DA77  RTS             DB02  RTS
DA78  RTS             DB03  RTS             as if one were not enough!
```

E) FLOATING POINT ARITHMETIC

ACC1+0.5 --> ACC1

```
DA79  LDA #01       DB04  LDA #05
DA7B  LDY #E2       DB06  LDY #E2       index the value 0.5
DA7D  JMP $DA97     DB08  JMP $DB22     (AY)+ACC1-->ACC1
```

(AY)-ACC1 --> ACC1

```
DA80  JSR $DD4D     DB0B  JSSR $DD51    (AY)-->ACC2
```

'-' (OPERATOR) ACC2-ACC1 --> ACC1

Principal:

We are reduced to adding the opposite...

```
DA83  LDA D5        DB0E  LDA D5        Take ACC1 sign
DA85  EOR #FF       D810  EOR #FF       and invert it
DA87  STA D5        DB12  STA D5        save the new sign
DA89  EOR DD        DB14  EOR DD        and adjust product of signs
DA8B  STA DE        DB16  STA DE
DA8D  LDA D0        DB18  LDA D0        position N, Z and A according to exponent
DA8F  JMP $DA9A     DB1A  JMP $DB25     and do '+'

DA92  JSR $DBFB     DB1D  JSR $DC54     justify the mantissa according to A
DA95  BCC DAD3      DB20  BCC DB5E      unconditional
```

(AY)+ACC1 --> ACC1

```
DA97  JSR $DD4D     DB22  JSR $DD51     (AY) -->ACC2
```

'+' (OPERATOR) ACC2+ACC1 --> ACC1

Entry: Z must be set according to the exponent of ACC1 (if not, there is a risk of doing the addition for nothing if ACC1=0, although that's not particularly serious).

Exit: result in ACC1, or by... OVERFLOW ERROR

Principle:

The first job is to adjust the mantissas so that the numbers have the same exponent and then shift the smaller number to the right as often as is necessary. This serves to 'write down' the addition. Then, if the two numbers have the same sign, thee mantissas are simply added together. If their signs are opposite, the subtraction of mantissas is performed in the correct direction. In this case it is necessary to shift the mantissa to the left, to avoid a loss of precision.

```
DA9A  BNE DA9F      DB25  BNE DB2A
DA9C  JMP $DECD     DB27  JMP $DED5     if ACC1=0, ACC2-->ACC1 and that's all
DA9F  LDX DF        DB2A  LDX DF
DAA1  STX C5        DB2C  STX C5        save extension bit
DAA3  LDX #D8       DB2E  LDX #D8       index ACC2
DAA5  LDA D8        DB30  LDA D8        take exponent of ACC2
DAA7  TAY           DB32  TAY           in Y
```

```
DAA8  BEQ DA78      DB33  BEQ DB03     if nul, the result is already in ACC1
DAAA  SEC           DB35  SEC          calculate the difference of the exponents
DAAB  SBC D0        DB36  SBC D0
DAAD  BEQ DAD3      DB38  DB5E         if equal, jump
DAAF  BCC DAC3      DB3A  BCC DB4E     if ACC2<ACC1, jump
DAB1  STY D0        DB3C  STY D0       save exponent of ACC2, the reference
DAB3  LDY DD        DB3E  LDY DD       take sign of ACC2
DAB5  STY D5        DB40  STY D5       as sign of the greater
DAB7  EOR #FF       DB42  EOR #FF      recover the difference of the exponents
DAB9  ADC #00       DB44  ADC #00      (C=0), that is, complement
DABB  LDY #00       DB46  LDY #00
DABD  STY C5        DB48  STY C5       extension=0 because ACC2 has no extension
DABF  LDX #D0       DB4A  LDX #D0      index ACC1
DAC1  BNE DAC7      DB4C  BNE DB52     unconditional: justify ACC1 according to A

DAC3  LDY #00       DB4E  LDY #00      ACC2<ACC1: ACC1 is the reference
DAC5  STY DF        DB50  STY DF       no extension, then justify ACC2
```

Justify Accu indexd by X, as long as the exponent <> #D0 (reference)

```
DAC7  CMP #F9       DB52  CMP #F9      are there more than 8 shifts?
DAC9  BMI DA92      DB54  BMI DB1D     yes, then shift byte by byte
DACB  TAY           DB56  TAY          store shift index
DACC  LDA DF        DB57  LDA DF       take the extension
DACE  LSR 01, X     DB59  LSR 01, X    enter a 0 in the mantissa
DAD0  JSR $DC14     DB5B  JSR $DC6B    and do the necessary shifts
DAD3  BIT DE        DB5E  BIT DE       test product of signs
DAD5  BPL DB2E      DB60  BPL DBB9     operands of each sign, addition
```

Subtract mantissas

```
DAD7  LDY #D0       DB62  LDY #D0      index ACC1, larger for the moment
DAD9  CPX #D8       DB64  CPX #D8      ACC2 justified?
DADB  BEQ DADF      DB66  BEQ DB6A     yes, ACC2 was indeed the lesser
DADD  LDY #D8       DB68  LDY #D8      no, then ACC2 is the greater
DADF  SEC           DB6A  SEC          prepare for complementing
DAE0  EOR #FF       DB6B  EOR #FF      of the extension
DAE2  ADC C5        DB6D  ADC C5       and start by subtracting the extensions
DAE4  STA DF        DB6F  STA DF

DAE6  LDA 0004, Y   DB71  LDA 0004, Y
DAE9  SBC 04, X     DB74  SBC 04, X
DAEB  STA D4        DB76  STA D4       subtract Byte 4
DAED  LDA 0003, Y   DB78  LDA 0003, Y
DAF0  SBC 03, X     DB7B  SBC 03, X
DAF2  STA D3        DB7D  STA D3       subtract Byte 3
DAF4  LDA 0002, Y   DB7F  LDA 0002, Y
DAF7  SBC 02, X     DB82  SBC 02, X
DAF9  STA D2        DB84  STA D2       subtract Byte 2
DAFB  LDA 0001, Y   DB86  LDA 0001, Y
DAFE  SBC 01, X     DB89  SBC 01, X
DB00  STA D1        DB8B  STA D1       subtract Byte 1
```

JUSTIFY THE MANTISSA ACCORDING TO ITS SIGN

Entry: C=1 if signed positive, C=0 if not. #D0 contains the starting exponent.

Exit: ACC1 contains the number in floating point

```
DB02  BCS DB07      DB8D  BCS DB92      if positive required, jump
DB04  JSR $DBA9     DB8F  JSR $DC02     if not, it must be complemented
```

JUSTIFY THE MANTISSA

Principle:

To have a constant precision it is necessary that the mantissa be justified, that is that its highest byte is indeed a 1.
Such justification must be done after a subtraction, for example, which will probably have reduced the mantissa.

```
DB07  LDY #00       DB92  LDY #00       extension=0 if necessary
DB09  TYA           DB94  TYA           number of shifts=0
DB0A  CLC           DB95  CLC           preparee C for future additions
DB0B  LDX D1        DB96  LDX D1        if high byte of mantissa is not nul
DB0D  BNE DB59      DB98  BNE DBE4     shift bit by bit
```

Shift byte by byte

```
DB0F  LDX D2        DB9A  LDX D2        byte 2
DB11  STX D1        DB9C  STX D1        in byte 1
DB13  LDX D3        DB9E  LDX D3        byte 3
DB15  STX D2        DBA0  STX D2        in byte 2
DB17  LDX D4        DBA2  LDX D4        byte 4
DB19  STX D3        DBA4  STX D3        in byte 3
DB1B  LDX DF        DBA6  LDX DF        extension byte
DB1D  STX D4        DBA8  STX D4        in byte 4
DB1F  STY DF        DBAA  STY DF        new extension
DB21  ADC #08       DBAC  ADC #08       exponent+8
DB23  CMP #28       DBAE  CMP #28       have we shifted 5 times?
DB25  BNE DB0B      DBB0  BNE DB96      no, continue
```

ACC1=0

```
DB27  LDA #00       DBB2  LDA #00       yes, the mantissa was empty, and the result nul
DB29  STA D0        DBB4  STA D0        indicate result nul
DB2B  STA D5        DBB6  STA D5        and positive sign
DB2D  RTS           DBB8  RTS
```

Addition (cont.): add the mantissas

```
DB2E  ADC C5        DBB9  ADC C5
DB30  STA DF        DBBB  STA DF        addition of extension first
DB32  LDA D4        DBBD  LDA D4
DB34  ADC DC        DBBF  ADC DC
DB36  STA D4        DBC1  STA D4        byte 4
DB38  LDA D3        DBC3  LDA D3
DB3A  ADC DB        DBC5  ADC DB
DB3C  STA D3        DBC7  STA D3        byte 3
```

```
DB3E  LDA D2        DBC9  LDA D2
DB40  ADC DA        DBCB  ADC DA
DB42  STA D2        DBCD  STA D2      byte 2
DB44  LDA D1        DBCF  LDA D1
DB46  ADC D9        DBD1  ADC D9
DB48  STA D1        DBD3  STA D1      byte 1
DB4A  JMP $DB66     DBD5  JMP $DBF1   and adjust exponeent
```

Justification bit by bit

```
DB4D  ADC #01       DBD8  ADC #01     increment shift counter
DB4F  ASL DF        DBDA  ASL DF      rotate extension
DB51  ROL D4        DBDC  ROL D4      byte 4
DB53  ROL D3        DBDE  ROL D3      byte 3
DB55  ROL D2        DBE0  ROL D2      byte 2
DB57  ROL D1        DBE2  ROL D1      byte 1
DB59  BPL DB4D      DBE4  BPL DBD8    if still not justified, continue
DB5B  SEC           DBE6  SEC         otherwise adjust the exponent
DB5C  SBC D0        DBE7  SBC D0      if more shifting has been done than
DB5E  BCS DB27      DBE9  BCS DBB2    the exponent permits, ACC1=0
DB60  EOR #FF       DBEB  EOR #FF     complement to recover exponent
DB62  ADC #01       DBED  ADC #01
DB64  STA D0        DBEF  STA D0      and save new exponent
DB66  BCC DBA8      DBF1  BCC DC01
DB68  INC D0        DBF3  INC D0      increment exponent
DB6A  BEQ DBE0      DBF5  BEQ DC39    'OVERFLOW ERROR' if reached 0
```

Shift mantissa one bit to the right

Programming:

In V1.0 the instruction ROR was obviously unknown, or at least not used for some obscure reason. The speed difference between the two ROMs is explained by this routine (a procedure also used at #DC08).

```
DB6C  LDA #00       ..... .....
DB6E  BCC DB72      ..... .....   The ROR instruction having disappeared a
DB70  LDA #80       ..... .....   dozen bytes ago, we have to make do without it!
DB72  LSR D1        ..... .....
DB74  ORA D1        ..... .....
DB76  STA D1        ..... .....   Result: the routine needs between
DB78  LDA #00       ..... .....   70 and 75 microseconds (depending
DB7A  BCC DB7E      ..... .....   on value) to execute, without counting
DB7C  LDA #80       ..... .....   the wasted 50 bytes!
DB7E  LSR D2        ..... .....
DB80  ORA D2        ..... .....
DB82  STA D2        ..... .....
DB84  LDA #00       ..... .....
DB86  BCC DB8A      ..... .....
DB88  LDA #80       ..... .....
DB8A  LSR D3        ..... .....
DB8C  ORA D3        ..... .....
DB8E  STA D3        ..... .....
DB90  LDA #00       ..... .....
DB92  BCC DB96      ..... .....
DB94  LDA #80       ..... .....
DB96  LSR D4        ..... .....
DB98  ORA D4        ..... .....
DB9A  STA D4        ..... .....
```

```
DB9C  LDA #00       ..... .....
DB9E  BCC DBA2      ..... .....
DBA0  LDA #80       ..... .....
DBA2  LSR DF        ..... .....
DBA4  ORA DF        ..... .....
DBA6  STA DF        ..... .....
..... .....         DBF7  ROR D1
..... .....         DBF9  ROR D2      Execution time: 20 microseconds.
..... .....         DBFB  ROR D3
..... .....         DBFD  ROR D4
DBA8  RTS           DC01  RTS
```

COMPLEMENT THE MANTISSA

Principle:

Classic: invert each bit and add 1.

Remark:

There is no effect on the exponent since this routine is only called when needed.

```
DBA9  LDA D5        DC02  LDA D5
DBAB  EOR #FF       DC04  EOR #FF
DBAD  STA D5        DC06  STA D5      change the sign
DBAF  LDA D1        DC08  LDA D1
DBB1  EOR #FF       DC0A  EOR #FF
DBB3  STA D1        DC0C  STA D1      complement byte 1
DBB5  LDA D2        DC0E  LDA D2
DBB7  EOR #FF       DC10  EOR #FF
DBB9  STA D2        DC12  STA D2      complement byte 2
DBBB  LDA D3        DC14  LDA D3
DBBD  EOR #FF       DC16  EOR #FF
DBBF  STA D3        DC18  STA D3      complement byte 3
DBC1  LDA D4        DC1A  LDA D4
DBC3  EOR #FF       DC1C  EOR #FF
DBC5  STA D4        DC1E  STA D4      complement byte 4
DBC7  LDA DF        DC20  LDA DF
DBC9  EOR #FF       DC22  EOR #FF
DBCB  STA DF        DC24  STA DF      complement extension
DBCD  INC DF        DC26  INC DF      increment extension
DBCF  BNE DBDF      DC28  BNE DC38
DBD1  INC D4        DC2A  INC D4      if necessary, byte 4
DBD3  BNE DBDF      DC2C  BNE DC38
DBD5  INC D3        DC2E  INC D3      if necessary, byte 3
DBD7  BNE DBDF      DC30  BNE DC38
DBD9  INC D2        DC32  INC D2      if necessary, byte 2
DBDB  BNE DBDF      DC34  BNE DC38
DBDD  INC D1        DC36  INC D1      if necessary, byte 1
DBDF  RTS           DC38  RTS

DBE0  LDX #45       DC39  LDX #45
DBE2  JMP $C485     DC3B  JMP$ C47E   'OVERFLOW ERROR'
```

I know this was meant to be a double issue, but I thought one and a half was probably enough to plough through..... see you next month,

Jon Haworth

SPEAKING FRANKLY.

Brief though I wish to be, the subject this month, (what I call 'Computerspeak'), is complicated. How far ought we to let it distort our language?

Let's go in at the deep end by studying what happens to vowels in English. Compare the sound of the letter I in the alphabet with the same letter when used in the word 'IN'. They are two different sounds.
Compare the sound of ME with the same letter in MET.
Compare A with AS: compare NO with NOT: U with UP.

There is a basic rule in English which I teach to all foreigners and young English children learning to read. It states that vowels can be affected, protected, or modified. They are affected by the open air BEHIND them. Slap a consonant on the bare backside of that vowel and you give it a new protected sound. (This only refers to stressed vowels, so don't go looking for exceptions just yet. Trust me.)
A and AN: E and EGG: I and IS: O and OF: U and UP.

Now one step further. Look at these sets of three:-

Alphabet sound.	Protected SOUND.	Re-affected sound.
A (as in ABC)	GLAD	GLADE
BE	BED	BEDE
BI	BIT	BITE
MO	MOD	MODE
U	UP	CUPID

What is happening? I have stuck a second vowel (often, but not always, a mute E) after a consonant which is protecting a vowel from the air. And the FIRST vowel has gone back to its original, unprotected sound. Read them again and you will see the truth of this. It has become so self-evident that we don't even teach it in schools, but look what it means:-
Take a verb like STOP. We wish to add -ING or -ED. So, to protect the O from being affected by the new vowel, (as it would be in STOPING or STOPED), we have to build a thicker wall. We do this by doubling the consonant. STOP must become STOPP before we can add -ING or -ED. If it didn't, the vowel sound would change. We would get STOPING sounding like SLOPING and STOPED sounding like SLOPED. I haven't space here to go into greater technical detail about all the effects of vowels and consonants on each other because it is a long and complicated subject that I developed into a thesis many moons ago. It is seldom, if ever, commented on in schools, though in my opinion a sound knowledge of the principle eliminates many problems in spelling and pronunciation. Suffice it to say that there is a rule that says; "If a word ends in a single vowel + a consonant, and that vowel is stressed, then we cannot add another vowel without either doubling the consonant or changing the sound. If the vowel is not stressed then no doubling is necessary." In other words:-
STOP needs another P before adding -ING
WAIT doesn't double because ONE vowel can't affect the sound of TWO.
WALK doesn't because it already has a thick wall of TWO consonants to protect the A from the -ING.
PIN doubles to make PINNING, but OPEN doesn't double the N because the E isn't stressed. In OPENING the E attacks the O but the I doesn't affect the E because the stress doesn't fall on the E.
English has one basic exception to this rule. America hasn't.

CONTINUED OVERLEAF

So reGRET makes reGRETTING (protecting the second E by doubling the T).

But RIvet (where the accent does NOT fall on the E) makes RIveting.
reFER makes reFERRING but COver makes COvering
beGIN makes beGINNING but Open makes Opening.

So then why, in the name of all that's wonderful, have we INVENTED a structure that gives us:-

PROgram (NO accent on gram) making PROgramming and PROgrammed?

In other words, why invent a form that breaks an excellent rule? Why double the consonant when the vowel needs no protection?

In English we stubbornly insist on duplicating an 'L' whether the stress is on the preceding consonant or not. It is a grave and unwise exception that linguists have urged schools to change for years. America doesn't do it and neither should we. It is logical to duplicate comPEL to make comPELLING, but we ought to follow the Americans and refuse to duplicate the L in words like GROvel, SHOvel and MODel.
We write GROvelling AND SHOvelling and MOdelling. The Americans write (according to the rule) GROVELING, SHOVELING and MODELING.

But with the advent of COMPUTERSPEAK even the Yanks have thrown out the baby with the bath water. They accept PROgram (accent on PRO) but write PROGRAMMING and PROGRAMMED.

How has it come about? Well, you see, the original word, from the French, is PROGRAMME, and we have a rule in English.

IF A WORD ENDS IN A MUTE E, THEN THE E IS DROPPED BEFORE ADDING A SUFFIX (an extension) BEGINNING WITH ANOTHER VOWEL.

Look at HATE and HATING. The mute E disappears. Take DRIBBLE and DRIBBLING, BLAME and BLAMING. You will see that PROGRAMME will then give us PROGRAMMING and PROGRAMMED. In other words, it obeys RULE: it represents LAW and ORDER.

So, if you want to keep to logical rule, you can have

	PROgram	PROgraming	PROgramed
or	PROGRAMME	PROGRAMMING	PROGRAMMED

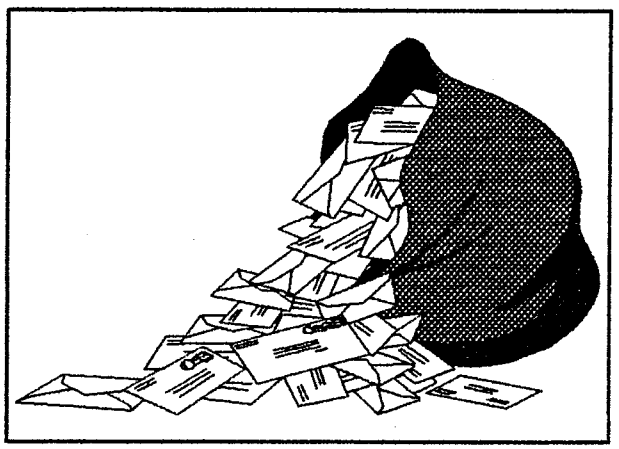
But for the love of God and the protection of our language from idiocy, DON'T MIX THE BLASTED RULES!
Blossom makes blossoming (not blossomming)
Thicken makes thickening (not thickenning).
Program should never be allowed to make programming.
Next month I'll go into some more horrors created by computerspeak. I'll also explain why "I before E except after C" is a false friend that you can't rely on. But let me go back nearly sixty years to recall my woodwork teacher. A pupil (not myself, thank God) had written "Take a peice of wood....." He was grabbed by the scruff of the neck. Then, punctuating each syllable by beating it out on the boy's head, the master shrieked; "P.I.E. spells PIE you IDIOT! A PIEce of PIE! A PIEce of WOOD!! A PIEce of PIE!!! A PIEce of WOOD!!!!"
I've never had any doubts about PIECE/PEICE since that day.
I used to have trouble with SEPERATE/SEPARATE, but I quickly learned that memory tricks are an aid to spelling. To sePARaTe is to PART. so it is PAR and not PER.
Back to speaking frankly. Dave wants articles, but not if they aren't popular. Thank you to the people who have written in to say how pleased they were with my March article. But if you consisider this to be a waste of OUM space, then let's have some feed-back. Or if you have any queries about English usage and structure, I'll be happy to answer them privately or through the mag.

- FRANK BOLTON

A Letter from Simon.

Simon Ullyatt
6 School Lane
Butterwick
Boston
Lincolnshire
PE22 0HU

31 March 1995

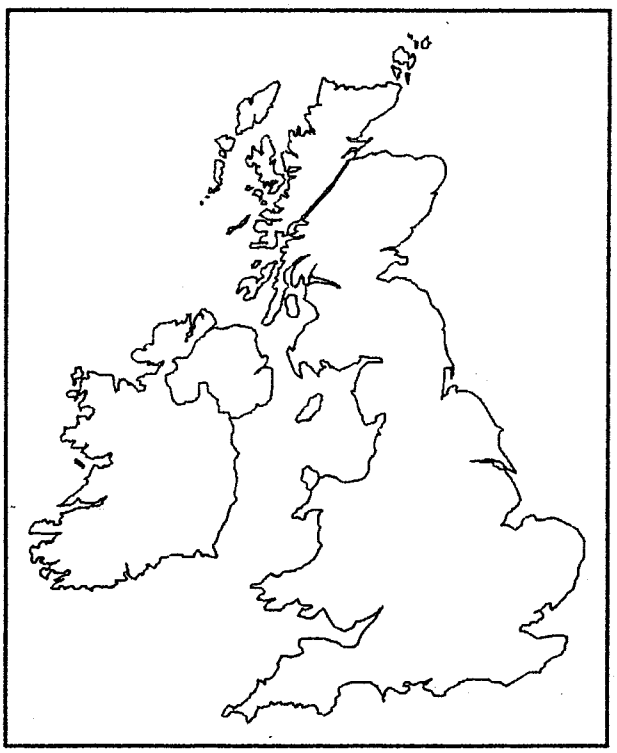


Dear Dave,

It's been quite a while since I last wrote - hope you are well. Please find enclosed £7.00 to cover the next 5 months subscription to OUM.

Although I read that OUM membership has 'dwindled' over the past year or so, I feel that OUM is getting better all of the time. I believe that there will always be a main 'core' of true Oric enthusiasts. Because the group is now smaller, I feel that I actually KNOW the members of the group, and the contributors to the magazine. Many Mega Drive and SNES owners may have written to Games Master magazine, but how many Games Master readers can honestly say that they have been written to, by the contributors of the magazine itself?

The last issue was one of the best I have read, with the inclusion of the 8-bit A to Z. Though, I don't know what 'The Muso' will do when he reaches the letter 'Q', as the only machine I can think of that begins with 'Q' is the Sinclair QL, and that's a 16 Bit!



While I'm in full flow, and scattering this document with tacky pieces of clip-art that I found lurking in my WordPerfect directory, could I please make a request to writer's of new software for the Oric? Would it be possible to make all software Oric-1 compatible, as well as Atmos compatible, and also (where sensible) provide a cassette version, in addition to the usual disk version. I make this request partly for selfish reasons, in that I have a cassette based Oric-1 (and cannot afford to upgrade), but mainly because many of your members are in the same situation. Surely it is in the best interests of the software writers, and the Oric in general, if their work is accessible to the largest possible user base.

Finally, I have a large amount of computer software and hardware which I am wanting to get rid of, to clear some space, and hopefully make some money. Would it be possible to send my list for inclusion in the magazine. I could photocopy the list myself, so an extra page could be tagged on to an issue of OUM, or included as a separate sheet. It would not take up valuable OUM space, or burden you with any cost whatsoever. If, by this time, I haven't offended you with my profit hungry scam(!), and the idea is a reasonable one, would you please let me know, when you send the next OUM issue (giving details of how many copies etc.).

Keep up the good work.

Yours,

Simon Ullyatt

A Letter from Steve

I have just received the March OUM and read Frank Bolton's comments with mixed feelings.

It is wonderful that I have caused another member to contribute such a lengthy article to OUM, and I only wish my series of fifteen articles, and other contributions had produced just a fraction of this response.

It saddens me though, that such a learned gentleman should take offence at such a non-serious comment. You can be certain that if I had wished to cause offence or be patronising, I would have made a much better job of it than some idle comment, and I would not have done it through the pages of OUM.

I generally write a letter to Dave every time I send in an article. These letters are full of different comments and remarks - which parts of OUM I enjoyed, my views on current issues, hints and tips when I come up with them, projects I am working on and questions/queries I may have.

I can not remember whether the remark that said that Frank Bolton had been questioning the use of disc/disk and program/programme was in OUM or a letter from Dave, but do remember thinking it strange that a language teacher wasn't sure of the usage. (Obviously I misunderstood what was being questioned.)

I therefore stuck the light-hearted comment in one of my letters, which Dave saw fit to print - just like my comment that I liked the colour page in OUM or that I was interested in Dr Ray's project. Certainly not a comment intending to be patronising.

The four page article does, however, agree with my ill-phrased three lines that DISK is preferable to DISC. Consulting a dictionary from around the time Frank was studying I find that DISK is indeed the favoured spelling. Consulting a modern dictionary I find that DISC is favoured and computer references given are DISC FILE and DISKETTE. The older dictionary gives 'slipped DISK' and the newer one 'slipped DISC'. Consulting my old computer manuals and magazines I find that DISK is used most often. (For those that do not know, the word comes from the Greek DISKOS which was a metal quoit thrown by athletes. It later came to mean any plate shaped object.) The modern dictionary confirms PROGRAM as the correct spelling with relation to computers. Presumably this spelling comes from the American version of the word. Rightly or wrongly it is now accepted, though all other English versions of the word have the extra 'ME'.

Languages change over the years and this IS determined by people's usage of it as much as by rules. An example is the word TERRIFIC which has had its meaning virtually reversed by misuse so that dictionaries now give both meanings of the word. Words from other countries are used so often that they become part of our language. Is accepting an American word less acceptable than accepting words that are a mixture of Latin and Greek, (like TELEVISION)?

I usually rely on my dictionary to determine correct spellings. That may not be the best way to determine the spelling of a word, but is the most reliable that I know of.

Steve Marshall

BRIAN'S PAGE - OUM MAY 1995 - READ-ENJOY-COMPETE - OK !

STRAIGHT ONTO BUSINESS , AND FIRST THE POSER FOR THIS MONTH :

TAKE THE NUMBER 6 , FIND IT'S FACTORS , AND THEN ADD THEM UP. THE RESULT IS 6 (THE FACTORS OF 6 BEING 1,2 & 3).
THIS MAKES THE NUMNER 6 A PERFECT NUMBER.
CAN YOU NOW WORK OUT THE NEXT THREE (3) PERFECT NUMBERS.

SOLUTIONS CAN BE SENT TO ME - CORRECT ONES WILL ENTITLE THE SENDER TO AN EXTRA TICKET FOR THE DRAW THAT I AM HOLDING.

TALKING OF WHICH - WHAT CAN YOU WIN - WELL SOME OF THE PRIZES WILL BE :

TRAVEL ALARM CLOCKS / A CALCULATOR / TOCH / STATIONARY SET / UNUSUAL 'BOXY' PENCIL CASE WITH VARIOUS DIFFERENT PENS ...

DON'T FORGET THIS IS A FREE COMPETITION - YOUR ONLY OBLIGATIONS ARE TO BUY OUM (TO GET MORE TICKETS) - SEND ME YOUR TICKET/S SHOULD YOU WIN - CORRESPOND WITH ME FOR MORE CHANCES OF WINNING (BECAUSE WRITING RESULTS IN EXTRA TICKETS.). THE DRAW WILL TAKE PLACE IN TIME FOR THE NOVEMBER ISSUE , WHEN A LIST OF PRIZES AND THE WINNING NUMBERS WILL BE PUBLISHED.

I CAN NOW BE CONTACTED VIA PHONE , MY NUMBER BEING 01633 290407 (X/D)

ONTO OTHER MATTERS - I AM NOW THE PROUD OWNER OF A MACINTOSH IICi COMPUTER C/W 12" COLOUR MONITOR , 8 MEG RAM AND 80 MEG HD. THIS HAS LATELY TAKEN UP MOST OF MY TIME AND FOR A WHILE I HAVE NEGLECTED THE OLD ORIC - BUT FEAR NOT - I AM NOW RETURNING BACK TO NORMAL (OH - GOD HELP ME !!!). NOW IF ANYONE ELSE HAS A MAC AND WOULD LIKE TO SWAP SHAREWARE THEN PLEASE CONTACT ME - ALSO I HAVE A GRAPHICS CONVERTER THAT WILL MAKE MOST MODERN GRAPHIC'S TYPES (PICT,TIFF etc) APPLE COMPLIANT.THE MAC ALLOWS THESE IMAGES TO BE CONVERTED FROM 256+ COLOURS TO 256 GREYSCALE (B+W).NOW I WOULD LOVE TO THEN BE ABLE TO CONVERT TO ORIC MODE - SO DOE'S ANY ONE KNOW IF IT IS POSSIBLE - I KNOW CEO ALREADY DO IT FOR PC IMAGES , SO WHY NOT THE APPLE MAC ?

IT'S NOW TIME TO GO , AND FOR THIS MONTH MY END PIECE WILL BE THE SOLUTION TO LAST ISSUES POSER (NO- I HDN'T FORGOTTEN IT) - SO HERE GOES.....

```
100 REM MARCH POSER SOLUTION
105 PAPER 0:INK 7:LAST=0
110 CLS:?:?:?:?:?
115 PLOT 24,1,"BRIAN'S POSER"
120 PLOT 24,3," MARCH ISSUE"
125 PLOT 24,5,"  SOLUTION."
130 PLOT 24,7,"_____________"
135 PLOT 24,8,"PROGRAMMED BY"
140 PLOT 24,9,"   MIMSELF"
145 PLOT 24,10,"_____________"
150 PLOT 2,1,"ANSWERS FOUND :"
155 PLOT 2,3,"A  *  B =  6"
160 PLOT 24,14,"WORKING OM :"
165 PLOT 24,17,"A *  B =  6"
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CONTINUED ON NEXT PAGE

BRIAN'S PAGE — CONTINUED

```
170 FOR F=0 TO 25:PLOT 1,F,37:PLOT 19,F,21:NEXT F
175 FOR F=12 TO 25:PLOT 19,F,20:NEXT F
180 PLOT 0,1,2
185 FOR F=1 TO 10:PLOT 20,F,0
190 IF F>5 THEN 200
195 PLOT 21,F,42
200 NEXT F
205 FOR A=1 TO 9
210 FOR B=0 TO 9
215 IF B=2 THEN 335
220 FOR C=1 TO 9
225 IF C=2 OR C=6 THEN 330
230 FOR D=0 TO 9
235 IF D=5 OR D=0 OR D=8 THEN 325
240 E=(10*A)+B:E=INT(E+.5)
245 F=(10*C)+D:F=INT(F+.5)
250 G=E*F:G=INT(G+.5)
255 PLOT 23,20,STR$(E):PLOT 28,20,STR$(F):PLOT 33,20,STR$(G)
260 Z$=STR$(G):G$=MID$(Z$,2,LEN(Z$)-1)
265 IF LEN(G$)>4 THEN 325
270 Z$=STR$(E*100+F):A$=MID$(Z$,2,LEN(Z$)-1)
275 FOR M=1 TO 4
280 T=0
285 FOR N=1 TO 4
290 IF MID$(A$,M,1)=MID$(G$,N,1) THEN T=T+1
295 NEXT N
300 IF T<.1 THEN 325
305 NEXT M
310 IF G=LAST THEN 350
315 LAST =G
320 ? MID$(A$,1,2);" * ";MID$(A$,3,2);" = ";G$:?
325 NEXT D
330 NEXT C
335 NEXT B
340 NEXT A
345 :
350 REM DUPLICATE OF LAST ANSWER
355 REM THEREFORE REMAINING NINE ALL
360 REM BE REVERSE PERMUTATIONS OF THOSE
365 REM ALREADY FOUND - SO :
370 ?:?"THAT'S ALL FOLKS!":?:STOP
```

— THE WELSH WIZZARD!!

T H E B A C K P A G E

Twenty nine pages, and it could of been more. Time has beaten me. If I don't stop now it will be June!
We finish off with some late news items.

INTERNET MAILING LIST

Jon Haworth proposes to start an ORIC MAILING LIST on the Internet. As the Internet is Worldwide,it is hoped that our French readers will get involved. Calls are charged at the local rate,and therefore works out a lot cheaper than the Modem system that we used with Oricall etc. Of course,you will need a machine that is a little more sophisticated than the Oric.
The address to subscribe to the list is:
oric-request@cam.dungeon.com

Contributions should be addressed to:
oric@cam.dungeon.com

Don't forget that any messages sent to the list are distributed to all members. This is a public,rather than a private mailbox. You can of course send direct to a specific member only.

Jon Haworth's EMAIL address is:
jon@cam.dungeon.com

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CONGRATULATIONS

To Anne and Laurent in Paris on the birth of Caroline.

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PARIS ORIC MEET

For a grand day out - why not try the Paris Oric Meet.
I attended a couple of years ago and enjoyed it enormously. Jon Haworth,David Wilkin and Jonathan Bristow have also made visits.
This year's meet is planned for Saturday June 24th. The venue is close to the Gare Du Nord railway station,which is the setting down point in Paris of the Eurostar.
Enjoy a pleasant train trip via the Channel Tunnel, and through the French countryside at top speed. Jon Haworth will be pleased to chaperone him, so give him a ring if you are interested.

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A WARM WELCOME

A very warm welcome to a couple of new readers - Mac McPherson from the Isle of Wight, and Colin Bradford from Keighley.
You may remember Colin as the author of the Football simulation - LEAGUE CHAMPIONS, which was released by F.G.C.
Colin has since updated this and written some other software,which I hope to tell you about shortly.

FINALE

It is nice to finish on a pleasing note - still plenty happening on the Oric front. Keep writing,keep tapping, and keep in touch.