

**ORIC**  
**USER**  
**MONTHLY**

with Alternative Micros

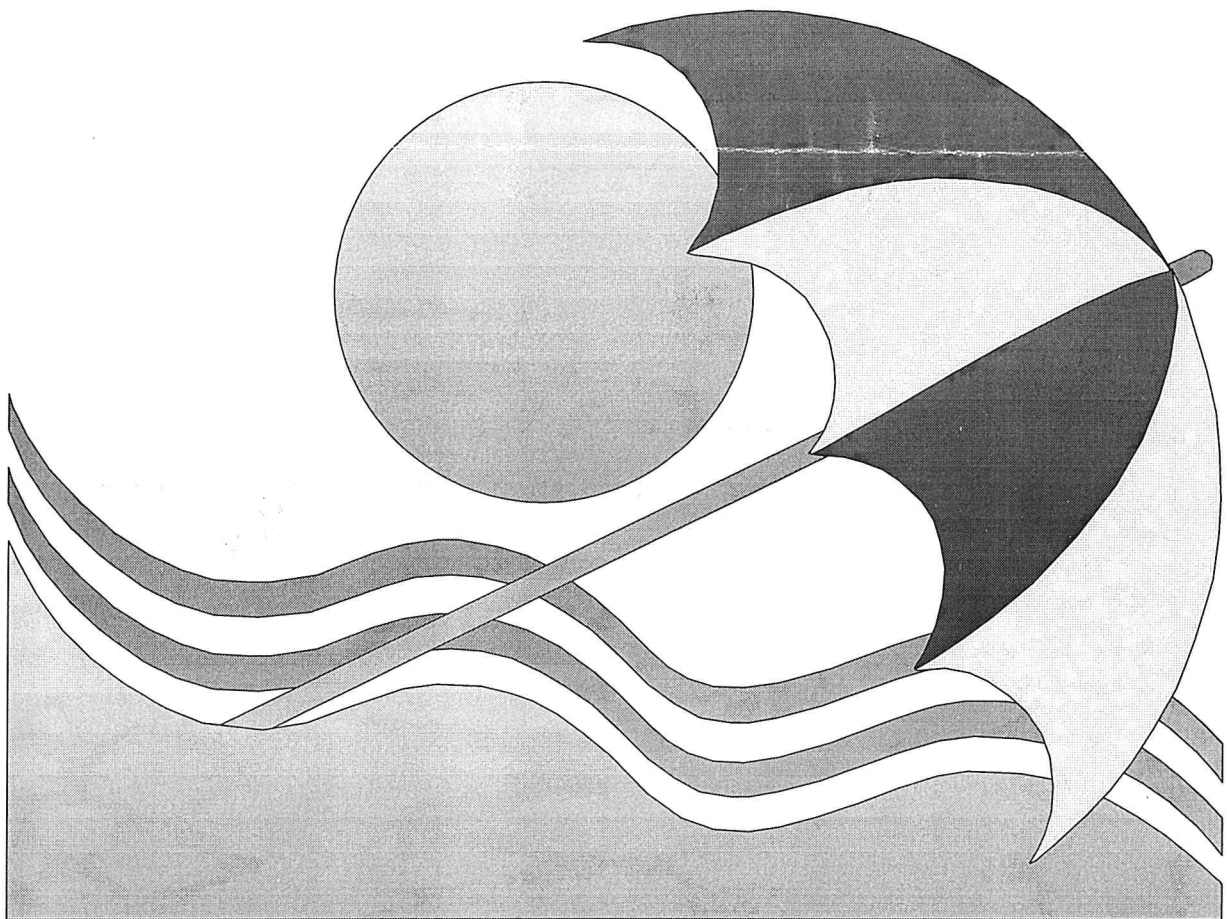
Number **96**

August 1995

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*Keeping the  
Oric alive*

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THE EDITORIAL

HELLO AND WELCOME,

to the very late August issue.

The lateness is due to the enormous postbag, which contained many orders and queries from new contacts.

The ORIC MEET week-end was its usual roaring success - a full report in the next issue.

An enormous thank you to one and all for making it a great day on the Saturday. I think I finally crawled into bed at 3 a.m. on the Sunday morning.

Not much of a contribution from me this time in the way of articles and typing up your letters, but still a 14 page issue.

Watch out for a huge double issue in October - no magazine in September, as I will be relaxing in Alicante for a couple of weeks. You can send me post, but please no telephone calls between September 3rd. and September 19th.

As we go to press (August 14th.) the heatwave continues un-abated. I sincerely hope you all had good holidays.

Where we are staying in Spain we will have the use of an Atmos! We are sharing an apartment with Frank Bolton, and so you can expect some Oric articles whilst written under the influence of the local Brandy!

And so to the index.....

THE INDEX

PAGE 1 ..... THE COVER - Jon Haworth in a Summer mood.

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PAGE 13 ..... MY TURN TO BE FRANK - Frank Bolton continues the exploration into English Grammar.

PAGE 14 ..... BRIAN'S PAGE - The Welsh Wizzard sets some more posers.

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ON HIS HOLS!

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Jon Haworth is on holiday for the whole of August. If you have any urgent queries you can telephone me.

At the MEET some of you bought the Oric Emulator (V6e being the latest). Unfortunately Jon did not have any instruction sheets. If you have had trouble in getting it to run ( I know a couple did), then I can supply the instruction sheet I recieved with Version 6c, which will get you going.

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WELCOME TO THE WORLD OF DISCS.

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At the MEET 4 more converted to drive. Garry Egerton, Paul Schofield, Robert Crisp and a friend of David Goodrum (his name escapes me) are all now in the modern world.

N E W S . . . N E W S . . . N E W S

MAGNETIX

By the time you read this, the final couple of bugs in Jonathan Bristows MAGNETIX should of been ironed out. Matthew Coates kindly sorted out the manual.

I can now take orders for this stupendous game, but cannot guarantee delivery before I go away.

Prices are as published in the last OUM.

EMULATOR

Hot news on the Emulator front is that there is now a working version of the Telestrat for the P.C.

WHY I SPENT HOURS AND HOURS ON A TRAIN FROM NEWPORT TO AYLESBURY VIA LONDON, WITH 3 CHILDREN IN TOW, AND ENDED UP AT A FETE INSTEAD OF THE ORIC MEET!

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No - it's not one of those weird stories from the Readers Digest. It actually happened to the Welsh Wizzard. I felt absolutely gutted when I heard, but obviously not as sad as Brian. More details next time around.

CLUB EUROPE ORIC PRESIDENT IN TERRORIST COCK-UP!

The message I recieved when I got home at 1.30 a.m. on the morning of the MEET stated - Jean Boileau stopped by French Customs. Will now be arriving lunch time Saturday, and not late Friday night as planned.

At lunch time Mr. Atmos entered the building to much cheering and general mickey taking. The full story unfolded.

Jean had been stopped by his own customs on suspicions of being a Muslim Terrorist. This led to him missing his flight.

I and every single member of OUM and CEO applaud Jean for his decision to continue his journey. Many would of turned back. Jean is a true character, and a measure of what the Oric fraternity should be about. We salute you.

Is there any truth in the rumour that the Customs man was one Francois Bolton!

IN THE NEXT ISSUE

As well as all the usual articles - watch out for a great article from Fabrice Frances (Mr.Emulator).

LORIGRAPH

I noticed that LORIGRAPH was one of the software titles on the Emulator package. The Emulator boots in Sedoric V2.1. As far as I know, LORIGRAPH will only work when loaded from SEDORIC V1.007 or less, though it will load screens from V.2.1.

The Story so far

----- Last time, we finished our look at the Indirect Jump instruction and returned to the subject of Zero Page instructions. The reason for the slight diversion, was that Zero Page instructions use a combination of indirect and indexed addressing and it was essential to explain how indirect addressing works, before covering it's use in Zero Page. This was then followed by a brief overview of the two main types of Zero Page instructions that use a combination of indirect and indexed addressing.

Now all that may have sounded a bit overwhelming. Perhaps this would be a good time to remember two things.

Do we need Zero Page ?

----- First of all, any series that looks at 6502 machine code programming, would be incomplete, if it did not cover Zero Page and the instructions that apply to it. However, that doesn't mean to say that you have got to use Zero Page instructions. There are plenty of alternatives and we have seen quite a few of them in this series.

It is possible to write assembly/machine code programs that are perfectly sound without ever needing to use Zero Page instructions. In fact, if you are making use of other 6502 computers, you may well find that most of Zero Page has already been taken over by their operating systems, so you may have little option in that respect, if you intend to transfer your efforts to another machine.

Slow down and Back up ?

----- Hopefully, breaking up the whole subject of the Zero Page into small sections and dealing with each separately, as I have tried to do in this series, will eventually make the whole lot, easier to understand, in the long run.

When I start to deal with something totally new, I find it easier if there is time to deal with it in easy stages, a bit at a time. I often come back to something that I have already read and go over it again perhaps several times. I may also try a few simple experiments to see if I have really got the hang of it.

This is one advantage of doing computing as a hobby, you can take your time over it, the whole thing is supposed to be fun anyway and if you are not enjoying it you are going about it in the wrong way.

Two Options

----- Last time, we saw that there are two sets of special Zero Page instructions. Each of the two sets can provide a choice of eight familiar operations, such as load the Accumulator (LDA) or write the Accumulator's contents into memory (STA). The operation and end result is exactly the same as those instructions, of the same name that we have already covered. The only new thing about the instructions, are the two methods of addressing, which take advantage of the special facilities offered by Zero Page.

We started to look at these addressing modes last time. Let's continue to expand on that to see how they are used. The two types of instruction are - "Pre-Indexed" which uses Register X and "Post-Indexed" which uses Register Y. They both use addresses stored in Zero Page data memory (#0000 - #00FF).

A "Pre-Indexed" instruction allows you to select and use an address from a range of two byte addresses, previously set up and stored in Zero Page.

The specific address required is selected from the range of addresses, by using Register X and the base location in Zero Page. Remember, a Zero Page instruction is just two bytes and only one of those bytes is needed to specify the base location in Zero Page. The contents of Register X is added to that base location to find the specific storage location in Zero Page. The instruction then reads contents of both that storage location and the next location up, which it then uses as a two byte Absolute address. That final Absolute address is where the instruction operation is carried out.

A "Post-Indexed" instruction is slightly different, in that it uses a Zero Page location to locate a single Absolute address. This time the Zero Page instruction just reads the contents of that location and the next location up and uses the result as a two byte Absolute address. Now it is that address, which is indexed by adding the contents of Register Y to produce final address where the instruction operation is carried out.

In both cases, the final address is the so-called "indirect" address. The label "Pre-Indexed" indicates that the indexing is done before the final indirect address is accessed. The label "Post-Indexed" indicates that the indexing is done after the indirect address has been found. Some books can be a little confusing on this subject. Now let's have a look at how these instructions can be put to use.

Pre-Indexed Addressed Instruction

----- The example below loads the Accumulator with an item from data memory, using a "Pre-Indexed LDA" instruction. Initially, we need to set it up by putting a data item into the data memory and an address into Zero Page as per the example below.

[-----[ Any old routine/anywhere ]-----]

```

                                ---Fetch Data item into Accumulator---
nnn0:A2 06      : LDX #06      : Set Index/Register X to 06 and
nnn1:A1 80      : LDA (80,X)  : then fetch data item from indirect address.
```

[-----[ Address and Data Storage ]-----]

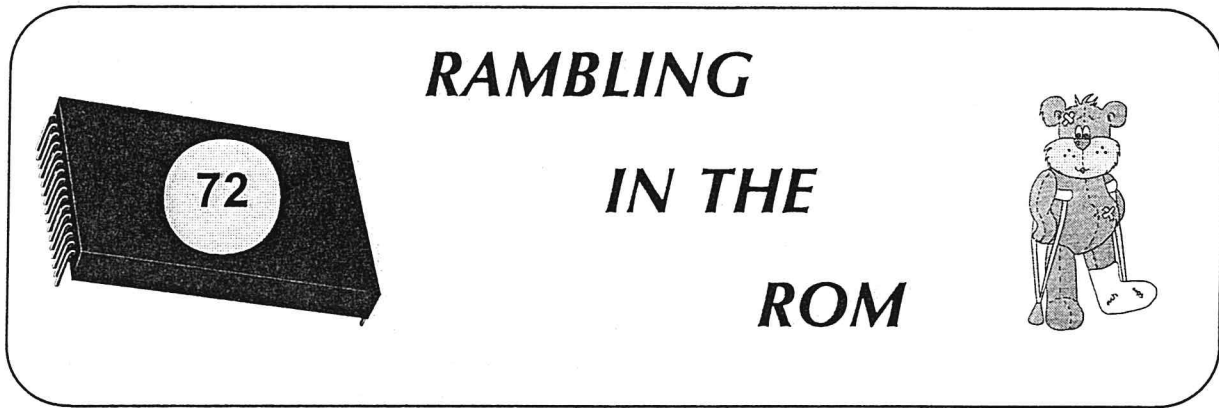
```

                                ---Parameter Block in Zero Page---
0086: 02      :                : Two byte storage for the
0087: 10      : "1002"        : Indirect Address.
    ---end---

                                ---Parameter Block 1002---
1002: 58      : "X"          : Item of data (ie. ASCII code for letter "X")
    ---end---
```

-----
The instruction at nnn0 sets Register X to 06. The instruction nnn1 adds that 06 in X, to it's own operand 80 to produce a location 86 in Zero Page. It uses that location to access the contents of locations 0086 and 0087, which contain the indirect address 1002. That indirect address is then used to fetch the data item held in 1002. The end result is that instruction nnn1 loads the Accumulator with a copy of the data item ("X"/code 58h).

That's the "Pre-Indexed LDA" instruction. The other eight "Pre-Indexed" instructions are set up and addressed in exactly the same way. Next time we will look at the "Post-Indexed" type, which for my money, is more useful.



### Holiday Survey...

It has become something of a tradition that in this issue I take a look at books and magazines. I thought I'd covered all there was to cover, but a month or so ago I received a parcel from Germany which turned out to contain a large number of Oric magazines. It came from someone who had visited us two years ago, had seen my kit, and reminisced about his own start in computing with an Oric. He said he'd look out some old magazines for me, but two years...?

It was well worth the wait, however. I don't think the collection is complete, but it clearly covers the bulk of German mags - all in the style of OUM and CEO. First in time is "Der Oric-Brief" ('The Oric Letter'), edited by one J. Mülller of Mainz. The first issue is dated October, 1983, and runs to 16 typed pages. This, remember, was the year in which the Oric-1 was selling well, especially in France. It contains articles on BASIC, the printer and cassette output. There is a BASIC renumber program, some quickies, and a review of Hell's Temple. Not a bad first effort! Further issues followed in January 1984 (23 pages), April 1984 (25 pages, including a review of the Atmos and disc systems), July 1984 (19 pages), December 1984 and March 1985 (still 21 pages). The sixth issue was the last, as the editorial made clear - no news, no contributions, a lack of new programs and no technical support any more...

Second off the blocks was 'BIT', another very well produced magazine. The first issue I have is dated January 1987, but it is clear from the index in that issue that BIT had started publication in March 1986, and issues had followed in May, July, September and November of that year (can anyone provide me with copies of those 1986 issues?). The editor was Andreas Triffterer of the Oric Club Velbert, and a list of subscribers in the January 1987 issue (24 pages) was 75 strong. Again the quality and quantity of articles is very good. Subsequent issues are dated March 1987, May 1987 (100 subscribers), July 1987, September 1987, November 1987 (a guest editor, Andreas Adamy and 22 pages), January 1988 (with an editorial suggesting an Oric Meet!), and the last issue I have, March 1988. Judging by the editorial, perhaps it was the last issue - it bemoaned the fact that only one letter had been received since the last issue, and only one reader wanted to come to the Meet! Again, can anyone help as to whether further issues were published? That 'last' issue was still 26 pages crammed with excellent stuff, and BIT had published every two months for two years since March 1986.

It wasn't too long after that the next mag appeared - "Atmosphäre" ('Atmosphere') - in July 1986. It was published by 'KDB Computer Versand', apparently a group of Oric enthusiasts in Hagen who were also involved in Oric mail order sales. The first edition ran to 22 pages, and included type-ins, tips, Forth, hardware projects, and reviews of the software they distributed (remember O.G.D.S. and Orictalk?). Further issues followed in September, 1986 (now adding readers' letters, including one from a certain Hans Kraus), November 1986, January 1987. This latter had an interesting snippet - the editor had met someone from 'Oric Users Holland', and wondered whether this could be the start of an 'Oric Club Europa'! The issue ran to 30 pages, packed with articles of all kinds. Issue no. 5 appeared in March 1987, with an article on reading the keyboard from Andre Widhani and an appeal to readers to re-subscribe. The final issue I have is no. 6, in May 1987, still 24 pages. It was an excellent, if short-lived, magazine.

So Germany was provided with at least one Oric magazine from October 1983 to March 1988, apart from the year's gap from March 1985 to March 1986. Unless, of course, you know better...

### Euphoric

Things have been a little quieter over the last month - leaving aside demos at Oric Meets, of course. Fabrice France has now produced Version 0.6e, which adds a -m monochrome option, and Version 0.7alpha, which provides for 386ers amongst us. Also fresh on the server is CAP 1.0, a utility which reads a program from an Oric disc into the PC, adding a cassette header as it goes - in short it Converts from Atmos to PC - geddit? The archive is gradually expanding, with all Tansoft software being confirmed as freeware. I also heard from Anthony Clarke on the Internet - he's now in Australia, but was a programmer with PSS. Rights to his titles - Hopper, Light Cycle and Oric Mon have reverted to him, and he has donated them as freeware as well. I'm hoping over the coming weeks to sort out more copyright issues with Dave - it would be nice to have the situation clear on all the major commercial Oric titles from the old days.

### Morgul's Font Editor v2.0a

This is a new program on the server, written in Assembler and C by Alexios Chouchoulas. It is a souped-up character editor, certainly the best I've seen, and blindingly fast. I'm hoping to include it on the Autumn CEO disc. Like all the new software being written and posted to the Internet, it is freeware. Here is a summary of the software:

You get three panels on the screen. One is the grid panel, where the current character appears magnified and can be edited. The other two panels (character set panels) contain the standard (ASCII) and alternate (Prestel graphics) character sets.

I: Inverts the current character.

C: Clears the grid of the current character.

R: Reverts to the copy of the character in ROM. Useful if you can't see anything because you've cleared every character. :-)

X: Flips the character around the X axis (i.e. top to bottom)

Y: Flips the character around the Y axis (i.e. left to right)

H: Rolls the character one pixel to the left. Pixels disappearing off the left edge wrap around to the right.

Y: Likewise, rolls the character upwards.



- <: (Shift not required) Select previous character. This is used so you don't have to move to the character set panel to change the current character (of course, in the character set panels you get random access to the ASCII set).
- >: (Shift not required) Select next character.
- U: Copy the current shape of the character to the paste buffer. From there you may paste it onto any other character you like.
- P: Copies the contents of the paste buffer to the current character. For example, to copy A to B: select A, press 'U', select B, and press 'P'.
- W: Swaps the contents of the paste buffer and the current character.
- S: Saves the standard, alternate or both sets to disk.
- L: Load a character set off the disk.
- A: Information about the program.

Pretty impressive, isn't it? And the author adds:

"By the way, I made this thingy using the DOS version of Euphoric 0.6c, and the cc65 package. Many thanks to Fabrice Frances (frances@ensica.fr) for writing the emulator and bringing it all back!

"The program is freeware; use it or patch it as you like, just leave my name somewhere in the credits.

"Check out the ORIC page, at  
[http://arlesienne.ensica.fr/LOCAL/ORIC/euphoric\\_english.html](http://arlesienne.ensica.fr/LOCAL/ORIC/euphoric_english.html)  
 for the latest news about your favourite ORIC machines!

Alexios"

It certainly seems that Euphoric has stimulated new interest in our favourite machine.

### Sedoric Manual

The last update to the Sedoric Manual was in 1992, so over the last couple of months I've been working on it again. The v2.1 Manual (Second Edition) is now available for £5.00 including post and packing. It comes spiral bound in board covers, and has increased to 57 A4 pages. There are many additions and improvements, including examples for nearly every command, a detailed section on KEYDEF and KEYUSE, and for many commands advanced user notes and bug details. Profits from sales all go to OUM, so no reductions for registered users - just buy it, learn a lot about Sedoric, and support OUM!

On the same theme, Dr. Ray has very kindly agreed that Sedoric v2.1 should be freeware; if you are converting to disc and need a master disc as well as the manual, there is a flat charge of a further £1.00 for 3½" disc, £2.00 for 3" disc. These prices are all cheaper than the old system of registration that Allan ran, and there is now no excuse for you not knowing how to make the most of Sedoric!

As ever, if you find something that is not covered in the manual. do let me know so that it can be included in the next edition.

Which leads us finally into our summer jaunt amongst the maths...

Rambling on...

JUSTIFY ACC3 TO THE RIGHT

DBE5 LDX #94          DC3E LDX #94          index ACC3

JUSTIFY TO THE RIGHT ACCORDING TO X AND A

Entry: X contains the index to the accumulator concerned  
A contains the starting 'exponent'. Shifts to the right as long as A is not nul.

Remark:  
Several points of entry...

Shift byte by byte

|                |                |  |
|----------------|----------------|--|
| DBE7 LDY 04, X | DC40 LDY 04, X | byte 4                                 |
| DBE9 STY DF    | DC42 STY DF    | into extension                         |
| DBEB LDY 03, X | DC44 LDY 03, X | byte 3                                 |
| DBED STY 04, X | DC46 STY 04, X | into byte 4                            |
| DBEF LDY 02, X | DC48 LDY 02, X | byte 2                                 |
| DBF1 STY 03, X | DC4A STY 03, X | into byte 3                            |
| DBF3 LDY 01, X | DC4C LDY 01, X | byte 1                                 |
| DBF5 STY 02, X | DC4E STY 02, X | into byte 2                            |
| DBF7 LDY D7    | DC50 LDY D7    | padding code                           |
| DBF9 STY 01, X | DC52 STY 01, X | into byte 1                            |
| DBFB ADC #08   | DC54 ADC #08   | add 8 to the 'exponent'                |
| DBFD BMI DBE7  | DC56 BMI DC40  | still not positive: shift byte by byte |
| DBFF BEQ DBE7  | DC58 BEQ DC40  | if nul, equal                          |
| DC01 SBC #08   | DC5A SBC #08   | if passed, recover the value           |
| DC03 TAY       | DC5C TAY       | as index                               |
| DC04 LDA DF    | DC5D LDA DF    | extension in A                         |
| DC06 BCS DC44  | DC5F BCS DC75  | if no shift (A=0), exit                |
| DC08 PHA       | .....          |  |
| DC09 LDA 01, X | .....          |  |
| DC0B AND #80   | .....          |  |
| DC0D LSR 01, X | .....          | still the same complicated and         |
| DC0F ORA 01, X | .....          | slow instructions...                   |
| DC11 STA 01, X | .....          |  |
| DC13 BIT 48    | .....          |  |
| DC15 LDA #00   | .....          |  |
| DC17 BCC DC1B  | .....          |  |
| DC19 LDA #80   | .....          |  |
| DC1B LSR 02, X | .....          |  |
| DC1D ORA 02, X | .....          |  |
| DC1F STA 02, X | .....          |  |
| DC21 LDA #00   | .....          |  |
| DC23 BCC DC27  | .....          |  |
| DC25 LDA #80   | .....          |  |
| DC27 LSR 03, X | .....          |  |
| DC29 ORA 03, X | .....          |  |
| DC2B STA 03, X | .....          |  |
| DC2D LDA #00   | .....          |  |
| DC2F BCC DC33  | .....          |  |
| DC31 LDA #80   | .....          |  |
| DC33 LSR 04, X | .....          |  |
| DC35 ORA 04, X | .....          |  |

|       |           |       |           |
|-------|-----------|-------|-----------|
| DC37  | STA 04, X | ..... |           |
| DC39  | PLA       | ..... |           |
| DC3A  | PHP       | ..... |           |
| DC3B  | LSR A     | ..... |           |
| DC3C  | PLP       | ..... |           |
| DC3D  | BCC DC41  | ..... |           |
| DC3F  | ORA #80   | ..... |           |
| ..... | .....     | DC61  | ASL 01, X |
| ..... | .....     | DC63  | BCC DC67  |
| ..... | .....     | DC65  | INC 01, X |
| ..... | .....     | DC67  | ROR 01, X |
| ..... | .....     | DC69  | ROR 01, X |
| ..... | .....     | DC6B  | ROR 02, X |
| ..... | .....     | DC6D  | ROR 03, X |
| ..... | .....     | DC6F  | ROR 04, X |
| ..... | .....     | DC71  | ROR A     |
| DC41  | INY       | DC72  | INY       |
| DC42  | BNE DC08  | DC73  | BNE DC61  |
| DC44  | CLC       | DC75  | CLC       |
| DC45  | RTS       | DC76  | RTS       |

## VARIOUS CONSTANTS

|       |      |                              |                         |
|-------|------|------------------------------|-------------------------|
| DC46  | DC77 | BYT #82, #13, #5D, #8D, #DE  | is 2.30258509 or LN(10) |
| ..... | DC7C | BYT #82, #49, #0FF, #DA, #9E | is 3.14159265 or PI     |
| DC4B  | DC81 | BYT #81, #00, #00, #00, #00  | is 1                    |

## VALUE FOR CALCULATING LN

|      |      |                             |                            |
|------|------|-----------------------------|----------------------------|
| DC50 | DC86 | BYT #03                     |                            |
| DC51 | DC87 | BYT #7F, #7E, #56, #CB, #79 | is 0.434255942             |
| DC56 | DC8C | BYT #89, #13, #9B, #0B, #64 | is 0.576584541             |
| DC5B | DC91 | BYT #80, #76, #38, #93, #16 | is 0.961800759             |
| DC60 | DC96 | BYT #82, #38, #AA, #3B, #20 | is 2.88539007              |
| DC65 | DC9B | BYT #80, #35, #04, #F3, #34 | is 0.707106781 or SQR(2)/2 |
| DC6A | DCA0 | BYT #81, #35, #04, #F3, #34 | is 1.41421356 or SQR(2)    |
| DC6F | DCA5 | BYT #80, #80, #00, #00, #00 | is -0.5                    |
| DC74 | DCAA | BYT #80, #31, #72, #17, #F8 | is 0.693147181 or LN(2)    |

## 'LN' (FUNCTION)

|      |            |      |            |   |
|------|------------|------|------------|---|
| DC79 | JSR \$DF04 | DCAF | JSR \$DF13 | A = SGN(ACC1)                               |
| DC7C | BEQ DC80   | DCB2 | BEQ DCB6   | if 0, error                                 |
| DC7E | BPL DC83   | DCB4 | BPL DCB9   |   |
| DC80 | JMP \$D2A0 | DCB6 | JMP \$D336 | if negative, also: 'ILLEGAL QUANTITY ERROR' |
| DC83 | LDA D0     | DCB9 | LDA D0     | take exponent                               |
| DC85 | SBC #7F    | DCBB | SBC #7F    | return to 0-127                             |
| DC87 | PHA        | DCBD | PHA        | and save                                    |
| DC88 | LDA #80    | DCBE | LDA #80    | exponent = +0                               |
| DC8A | STA D0     | DCC0 | STA D0     | and save it                                 |
| DC8C | LDA #65    | DCC2 | LDA #9B    |   |
| DC8E | LDY #DC    | DCC4 | LDY #DC    | index SQR(2)/2                              |
| DC90 | JSR \$DA97 | DCC6 | JSR \$DB22 | (AY) + ACC1 --> ACC1                        |
| DC93 | LDA #6A    | DCC9 | LDA #A0    |   |
| DC95 | LDY #DC    | DCCB | LDY #DC    | index SQR(2)                                |
| DC97 | JSR \$DDE0 | DCCD | JSR \$DDE4 | (AY) / ACC1 --> ACC1                        |
| DC9A | LDA #4B    | DCD0 | LDA #81    |   |
| DC9C | LDY #DC    | DCD2 | LDY #DC    | index 1                                     |

|                 |                 |                                   |
|-----------------|-----------------|-----------------------------------|
| DC9E JSR \$DA80 | DCD4 JSR \$DB0B | (AY)-ACC1--> ACC1                 |
| DCA1 LDA #50    | DCD7 LDA #86    |                                   |
| DCA3 LDY #DC    | DCD9 LDY #DC    | take address of polynomial        |
| DCA5 JSR \$E2F9 | DCDB JSR \$E2FD | abd calculate                     |
| DCA8 LDA #6F    | DCDE LDA #A5    |                                   |
| DCAA LDY #DC    | DCE0 LDY #DC    | index -0.5                        |
| DCAC JSR \$DA97 | DCE2 JSR \$DB22 | (AY)+ACC1--> ACC1                 |
| DCAF PLA        | DCE5 PLA        | recover exponent                  |
| DCB0 JSR \$E072 | DCE6 JSR \$E076 | A+ACC1--> ACC1                    |
| DCB3 LDA #74    | DCE9 LDA #AA    |                                   |
| DCB5 LDY #DC    | DCEB LDY #DC    | index LN(2) and do multiplication |

(AY)\*ACC1 --> ACC1

|                 |                 |              |
|-----------------|-----------------|--------------|
| DCB7 JSR \$DD4D | DCED JSR \$DD51 | (AY)--> ACC2 |
|-----------------|-----------------|--------------|

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

Principle:

Given the way the numbers are represented, it is enough to add the exponents and obtain the product of the mantissas.

|                 |                 |                                    |
|-----------------|-----------------|------------------------------------|
| DCBA BNE DCBF   | DCF0 BNE DCF5   |                                    |
| DCBC JMP \$DD4C | DCF2 JMP \$DD50 | if ACC1=0, that's the result, exit |
| DCBF JSR \$DD78 | DCF5 JSR \$DD7C | calculate the sum of the exponents |

Obtain the product of the mantissas

|                 |                 |                          |
|-----------------|-----------------|--------------------------|
| DCC2 LDA #00    | DCF8 LDA #00    |                          |
| DCC4 STA 95     | DCFA STA 95     |                          |
| DCC6 STA 96     | DCFC STA 96     | empty result area        |
| DCC8 STA 97     | DCFE STA 97     | (called ACC3)            |
| DCCA STA 98     | DD00 STA 98     |                          |
| DCCC LDA DF     | DD02 LDA DF     | take extension           |
| DCCE JSR \$DCE8 | DD04 JSR \$DD1E | and multiply by ACC2     |
| DCD1 LDA D4     | DD07 LDA D4     | byte 4                   |
| DCD3 JSR \$DCE8 | DD09 JSR \$DD1E | multiply as well         |
| DCD6 LDA D3     | DD0C LDA D3     | byte 3                   |
| DCD8 JSR \$DCE8 | DD0E JSR \$DD1E | multiply                 |
| DCDB LDA D2     | DD11 LDA D2     | byte 2                   |
| DCDD JSR \$DCE8 | DD13 JSR \$DD1E | multiply                 |
| DCE0 LDA D1     | DD16 LDA D1     | byte 1                   |
| DCE2 JSR \$DCED | DD18 JSR \$DD23 | multiply                 |
| DCE5 JMP \$DE60 | DD1B JMP \$DE64 | ACC3--> ACC1 and justify |

Tailender

Once again, a great day at the Meet - thanks for all the hard work, Dave. I'm off on my hols now, should be an improvement on my 'back rest' last year. So as they say, 'See you in September...'

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A lot of you, like me, may have started computing on a ZX 81. (Well, they were cheap). You will probably have found that it didn't do what you wanted it to do, and started looking at all those *colour* computers out there, with 'massive' 48K memories. I soon decided that the Oric-1 was the best for the price. Another machine that I was sorely tempted to buy was from a company managed by my next door neighbours daughters husband. (Gosh).

\* **CAMPUTERS LYNX** The Lynx was a well thought out machine. It was well built and had a good WP type keyboard. It provided good graphics and sound, and a comprehensive BASIC which featured procedures, WHILE/WEND loops as well as the more usual keywords. A major selling point was it's expanability - it could be expanded upto 192K, which was very big for it's time. (1982). Three basic models were offered; the '48K microcomputer', the '96K advanced microcomputer' and the '128K professional micro'.

*spec.* Z80A CPU 48K RAM 16K ROM. SCREENS 40 x 24, 256 x 248. 8 colours. INTERFACES. RGB, composite video, RS232, cassette, expansion port. 57 WP keys & space bar.

A Centronics printer interface was available for the 48K models. The Lynxs with larger memories had printer drivers for parallel and serial printers and a range of 'pre-formatted sound effects'. The 96K Lynx has 37.5K available to the BASIC programmer, which is about the same as available on the Atmos ! The machines also had a built-in machine code monitor and the larger memory models ran CP/M adn the 128K version had a more powerful screen driver, doubling the resolution to 248 x 512, 80 column screen.

The Lynx was aimed at serious users rather than game players, so it never really sold in the numbers that it should have. It should have made my neighbours daughters husband very rich - but it didn't.

\* **COLOUR GENIE** This one was made by Lowe Computers of Derbyshire and release in 1981, originally as a 16K model, and later as a 32K machine. A reasonable machine that never really got much support. It was at one time the cheapest colour computer with a full WP keyboard. The graphics screen was limited to 4 colours, (red, blue, green and black), which may have put some people off, but it did have sprites. One curious feature was a cassette volume meter in the top of the case which was supposed to help setting levels when loading/saving. Very little software available. Said to be a slow machine. Very funny joysticks which are unreliable. Not a very good machine really !

*spec.* originally 16K RAM upgradable to 32K. Later models 32K RAM standard. 16K ROM. SCREENS. 40 x 24 text 320 x 194 graphics (separate screen). 8 colours in text mode. 4 in graphics. INTERFACES. Joysticks (2), light pen, RS232, optional Centronics available. Slightly odd Microsoft BASIC. 3 sound channels. 63 WP keys with 4 function keys.

\* **COMMODORE PET** Chuck Peddle got involved with microprocessors when he joined Motorola in 1973 to work on the 6800 processor. He left to join a company called MOS Technology to work on another microprocessor project that was to become the 6502 CPU. The cheif customer of MOS was Commodore, manufacturers of calculators at this time. They thought the 6502 was so good that they bought the company, acquiring the services of Charles Peddle. Peddle realised that his 6502 could be the power behind a new breakthrough - the home computer, which Apple were also working on. He got together with Bill Gates of Microsoft, and tried to buy Apple. But they couldn't raise enough money, so Peddle stayed with Commodore and took on the task of designing the Commodore PET (Personal Electronic Transactor).

The Pet was launched at about the same time as the Apple, but it was quite a different machine having a built-in cassette deck and monitor and the keyboard was more like a calculator keyboard. The Pet was soon selling well and there were several versions released over it's lifetime. The odd Microsoft BASIC was to find its way onto Commodores other home computers, (VIC 20 , CBM 64), with new commands added. This was great if you were familiar with the old Pet, but really frustrating if you were new to computing. The Commodore 64 really should have had a completely new BASIC.

We'll have a look at the spec. of one of the Pets next time, 'cause I've just about run out of space waffling on about Chuck Peddle - daft name eh ! By the way you are reading this aren't you ? Send any comments into the office.



My turn to be Frank.

Recent feed back on my articles claims; "Your theory is that spelling should be dictated by morphological rules such as 'all words ending in a consonant + the K sound should be written with the letter K at the end'. But what about etymology?"

I reject the argument that etymology is as important as morphemics. Clarity and rule is all. It matters little how we got here. How we conduct ourselves here is what bothers me. After 50 years of teaching I am convinced that what matters is that teachers should teach clear and simple rule whenever possible and children should know what it's all about. In the space of one (short) page I often have to summarize theories and opinions that would take a chapter to explain. But let me try to justify what for years I have taught English children and foreigners about the 'K' sound.

It is divided into two rules; rule one for words which end in CONSONANT + K sound, as in TASK and RISK and DISK, and rule two for words which end in one or two vowels + a K sound.

Rule 2 is basic, clear and with very few exceptions. Words derived from the Latin will almost always end in -IC, such as Atlantic, comic, epic, realistic, specific, etc. That's where etymology leads to clear morphological rule. Words not derived from Latin but containing two vowels, will end in K, as in LOOK and SPEAK but words of one vowel will make the K sound with CK, Compare PEEK, PECK; LOOK, LOCK; SPEAK, SPECK. Children learning to write who put BOOCK and SIK can be easily shown why this cannot be.

Here's a little taught fact:- If before a K sound we find a single vowel pronounced as it is in the alphabet, then the word will end in KE (mute E) as in TAKE, PEKE, MIKE, JOKE, and PUKE. (A, E, I, O, and U sounds).

My point is that we have clear rules. I do not need to defend them as morphologically justifiable, or as etymologically acceptable. I teach them because for 20 years as Head of Mathematics I suffered as I watched grammar so neglected in schools that it has left many of us semi-illiterate. I changed from Maths to Language. I want to give children clear guidance and to hell with morphology and etymology. 99% of today's readers don't know what those terms mean, couldn't care less, and I don't blame them in the slightest.

My article on DISK was about the 'CONSONANT + K' sound which has an even clearer rule:- Any English word that ends in a consonant + a K sound will not make the K sound with a C or a CK. It will be consonant + K. Anything that contradicts this must be taken as an exception to a very strong rule. BALK, PORK, HAWK, TANK, ASK, obey the rule. DISC and MOLLUSC are lamentable exceptions. I applaud American MOLLUSK, and eschew DISC. And I do it for the good of our children.

To Colin I would say that if the apostrophe were obligatory when something is left out, we would never have ACRONYMS. PC would be written P'C' and NATO would be N'A'T'O'. I don't deny that PC's is a valid spelling. I constantly state that anything which is in vogue becomes valid. That is the cross that teachers bear. My argument is that the continued use of the apostrophe in PC's does not help teachers to teach or children to learn. And that is all that matters to me. Readers and OUM policy permitting, I shall one day try to explain the Saxon Genitive (Martin's house) and the inherent dangers of taking it too far.

If OUM readers tire of these articles, then they could be printed apart and sent only to those who express an interest, or perhaps confined to a OUM disk. Feed-back would help.

— FRANK BOLTON





BRIAN'S PAGE

14.

...BRIAN KIDD, 32 KIER HARDIE CRESENT, NEWPORT, GWENT NP9 9DQ

WELCOME AGAIN TO ONE AND ALL - THERE WERE NO REPLIES TO LAST MONTHS POSER - WERE THEY TOO HARD ? ANYWAY THE ANSWERS WERE ARE FOLLOWS :

- 1) A-Z : AMBIDEXTROUSLY
- 2) ACE..Y : SQUEAKY/SEQUOIA
- 3) A-M : HIJACKED
- 4) N-Z : UPTOWN/STUPOR/SPROUT/SPORTY

NOW FOR THIS MONTHS SELECTION OF POSERS:

1) AT A RECENT MATHEMATICS CONVENTION, IT WAS NOTICED THAT ATTENDANCES WERE UP ON THE PREVIOUS ONE. ONE PROFESSOR COMMENTED 'I WORKED THAT IF EVERY DELEGATE SHOOK HANDS WITH EVERY OTHER DELEGATE, THERE WOULD BE TWICE AS MANY HANDSHAKES AS THERE WOULD HAVE BEEN IF THEY DID THE SAME THING LAST YEAR.'

GIVEN THAT THERE MORE THAN 100 AND LESS THAN 500 DELEGATE ATTENDING , CAN YOU WORK OUT HOW MANY ATTENDED FOR THE TWO YEARS ?

(IF IT SOUNDS CONFUSING TRY THIS - ONE YEAR ONLY 3 PEOPLE ATTENDED (A, B & C) - NOW A SHOOK HANDS WITH B & C , AND B SHOOK WITH C - THEREFORE ALL HAD SHAKEN HANDS WITH EACH OTHER - A TOTAL OF THREE HANDSHAKES. THE FOLLOWING YEAR 4 PEOPLE ATTENDED (A, B, C & D) - THIS RESULTED IN 6 HANDSHAKES , A WITH B, C & D , B WITH C & D , AND C WITH D - SO NOW YOU KNOW HOW TO DO IT , GIVE ME THE ANSWER I REQUIRE.)

2) OLD TOM , OUR LOCAL BOOKIES FAVOURITE PERSON WAS LOOKING A LITTLE DOWN IN THE MOUTH, AFTER HAVING HAD A LOSING STREAK ON THE HORSES.

IT APPEARED HE LOST AS MANY PENNIES AS HE ORIGINALLY HAD POUNDS, AND AS MANY POUNDS AS HE HAD PENNIES, AND TO CAP IT ALL HE HAD MANAGED TO DROP A 50 PENCE PIECE DOWN A GRAIN AS WELL!

COINCIDENTALLY-OF COURSE!-THIS LEFT HIM WITH JUST HALF THE AMOUNT HE STARTED OFF WITH - HOW MUCH WAS THIS ?

3) THINK OF A SIX DIGIT NUMBER. DIVIDE IT BY 7 TO GET YOUR FIRST NUMBER. NOW MULTIPLY THIS ANSWER BY 6 TO GET YOUR SECOND.

NOW IF BOTH ANSWERS CONTAIN THE SAME 6 NUMBERS ARRANGED DIFFERENTLY, AND GIVEN THAT THE FIRST 3 NUMBERS AND THE LAST 3 NUMBERS OF THE FIRST ANSWER HAVE TO BE TRANSPOSED TO FORM THE SECOND ANSWER, CAN YOU WORK OUT WHAT WAS THE ORIGINAL 6 DIGIT NUMBER?

I HOPE TO HEAR FROM SOME OF YOU REGARDING THE ABOVE - GIVE THEM A TRY.

ONTO OTHER MATTERS - EVERYONE MUST REMEMBER 'WAR OF THE WORLDS' - BOOK , FILM AND THE ALBUM. WELL DID YOU KNOW THAT IT WAS REPORTED IN POPULAR COMPUTING WEEKLY 5/1/'84 THAT A GAME BASED ON THE BOOK WAS TO BE RELEASED WITHIN A FEW MONTHS , ON NO LESS THAN 6 MICRO'S. SALES WERE EXPECTED TO TOP 70,000 IN THE FIRST 12 MONTHS. SO WHAT YOU MAY ASK - WELL DID ANYONE EVER MANAGE TO SEE A COPY - IT WAS TO BE RELEASED ON THE FOLLOWING MACHINES , BBC, ELECTRON, DRAGON, COMMODORE, SPECTRUM AND ORIC COMPUTERS , WITH A DEFINATE RELEASE DATE OF MARCH 1 1984 FOR BOTH ORIC AND SPECTRUM GAMES.

THE REVUE ALSO WENT ON TO GIVE PUBLISHERS, DISTRIBUTORS AND EVEN THE PROGRAMMERS NAME. FURTHER MORE IT ALSO REPORTED THE FOLLOWING "A DEVELOPEMANT VERSION HAS ALREADY BEEN WRITTEN WHICH RUNS ON THE ORIC. THE PROGRAM WILL BE STRUCTURED AS A TEN PART ARCADE GAME.....EACH OF THE PARTS WILL BE DIFFERENT, YET THE WHOLE PROGRAM WILL FIT INTO 48K." I HAVE NEVER COME ACROSS THIS GAME - BUT WOULD LOVE A COPY - CAN ANYONE HELP?

PS - HAVING ONLY 32K FREE , WOULD SURELY HAVE COMPRIMISED THE BBC/ELECTRON VERSIONS ?

FPS ALMOST READY IS A LITTLE PROGRAMME I HAVE WRITTEN , LOOSELY BASED ON HANGMAN , BUT ONLY USING 5 LETTER WORDS. IT CURRENTLY HAS A DICTIONARY OF OVER 2,500 OF THEM , WILL BE ATMOS + DISC ONLY AND WILL PROBABLY GO OUT ON THE PD CIRCUIT IF IT IS STILL GOING (IS IT JON?)

THATS ALL FOR THIS MONTH - ENJOY YOURSELVES - BYE BYE !!!

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