ØRIC

USER MONTHLY

with Oric Enthusiasts

Europe's longest running Oric Magazine

Number 47
July 1991

GRUMBLE !
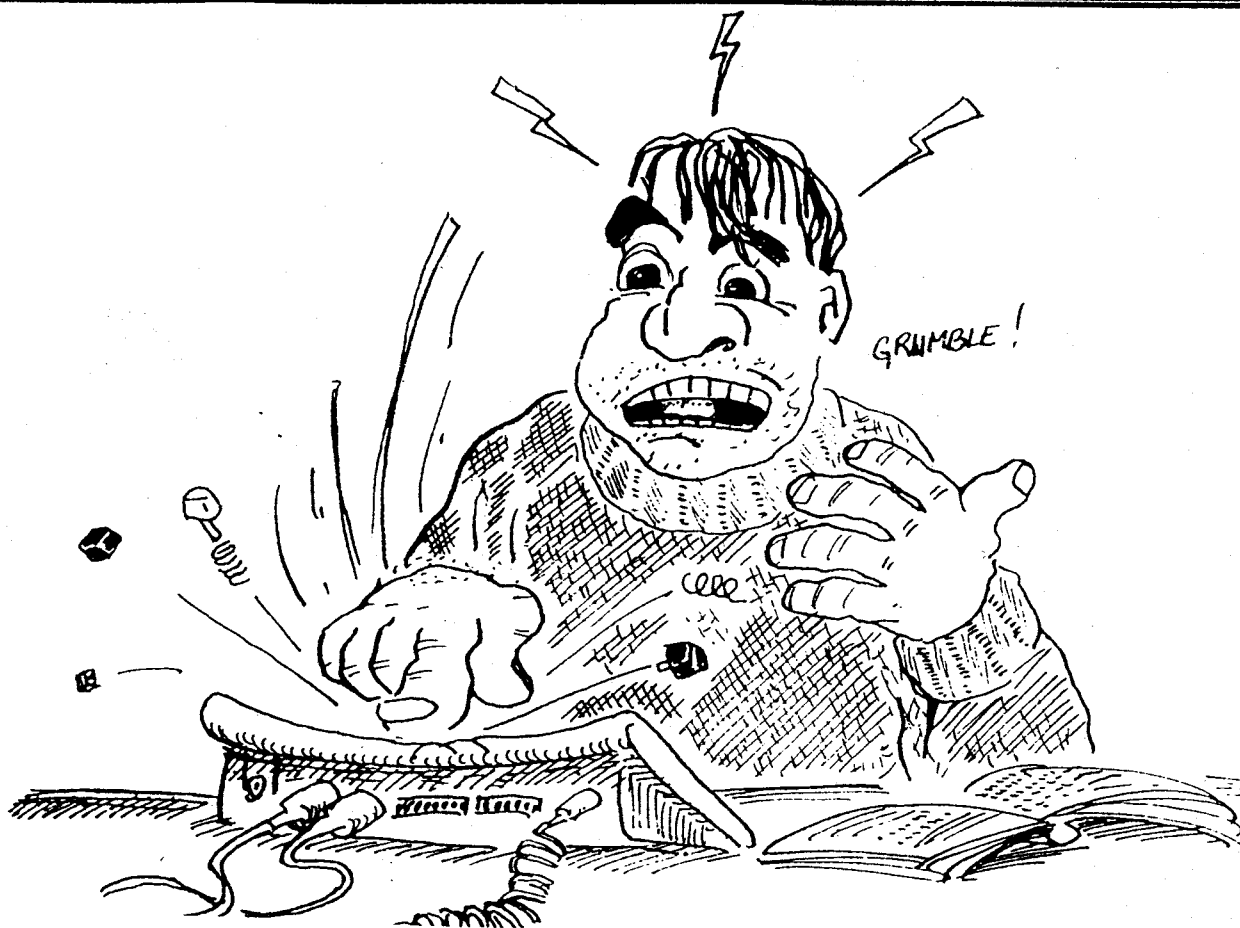
Wilkie's Wonderful Wepairs

- see them at the July meet !!

BONJOUR!! WELL I MUST WELCOME THE NEW MEMBERS FROM FRANCE AND A BIG HELLO TO ALL OTHERS. NORMALL ABOUT THIS TIME OF YEAR,WE GET WHAT IS LAUGHINGLY TERMED AS SUMMER. I THINK THAT THIS YEAR IT CAME AND WENT IN THE MIDDLE OF MAY. HOT WEATHER MEANS PACKING THE OLD ORIC AWAY UNTIL AUTUMN AND ENJOYING THE GREAT OUTDOORS. NOT THIS YEAR. MANY ARE BEAVERING AWAY AT PROGRAMS AND DUSTED DOWN ORIC OWNERS ARE IN CONTACT WITH ME FROM NEAR AND FAR. MEMBERSHIP CONTINUES TO GROW AND THE EASING OF THE POSTBAG TO ME IS NOT HAPPENING. PLEASE BE PATIENT IF IT TAKES ME A COUPLE OF WEEKS TO SORT OUT YOUR QUERIES.

CHEQUES

ALL CHEQUES / POSTAL ORDERS FOR SUBSCRIPTIONS OR ORDERS SHOULD BE MADE PAYABLE TO D.DICK or D.DICK (O.U.M).
EUROCHEQUES,HOWEVER,SHOULD JUST BE MADE PAYABLE TO D.DICK AS THE BUILDING SOCIETY WHICH HOLDS THE O.U.M ACCOUNT WILL NO LONGER ACCEPT EUROCHEQUES. I NOW HAVE TO PUT THESE THROUGH MY OWN PERSONAL BANK ACCOUNT AND EVEN THEY CHARGE 50 pence FOR THE SERVICE.

==

AUGUST O.U.M

ARTICLES FOR INCLUSION IN THE AUGUST ISSUE SHOULD REACH ME BY JULY 24th

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THE SWEEPSTAKE

THANKS TO THE 14 MEMBERS WHO TOOK PART IN THE RECENT SWEEPSTAKE WITH 50% GOING TO THE WINNER AND 50% TO THE FUNDS.
THE 7 POUNDS HAS PAID FOR EXTRA PAGES IN THIS AND THE LAST EDITION. THE WINNER OF THE SWEEP,WHOSE NAME WAS PULLED OUT OF THE HAT BY MY WIFE, IS.........BOB TERRY ......THE SEVEN QUID IS ON IT'S WAY TO BOB AND I MAY EVEN GET A PINT OUT OF HIM AS HE ONLY LIVES A COUPLE OF MILES AWAY.
==

WANTED
------- THE BOOK ON MACHINE CODE,GRAPHICS & TECHNIQUES BY GEOFF PHILIPS AND CURRENTLY BEING SERIALISED BY ALAN WHITAKER ; IS WANTED BY EDDIE WISNIEWSKI OF 6 STUTELY GROVE ,BRADLEY,HUDDERSFIELD,W.YORKS HD2 1SA......
TEL: 0484 546850

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THIS ISSUE

THIRD ORIC MEET
————— ————— —————
YOUR LAST CHANCE TO GET YOUR TICKETS FOR THE THIRD ORIC MEET,WHICH TAKES
PLACE ON SATURDAY JULY 13th FROM 10 a.m.   IT IS AT THE USUAL VENUE -
RIVETS SPORTS AND SOCIAL CLUB,MANDEVILLE ROAD,AYLESBURY.
TICKETS ARE 2 POUND EACH.
THOSE WHO HAVE ALREADY PURCHASED TICKETS WILL RECEIVE THEM WITH THIS
ISSUE. FOR THOSE STILL WISHING TO ATTEND AND THOSE WHO REQUIRE FURTHER
DIRECTIONS;PLEASE GET IN TOUCH A.S.A.P.
I CAN BE CONTACTED ON 0296 26050 FROM ABOUT MID-DAY ON MOST DAYS.
PLEASE DO NOT LEAVE IT UNTIL THE EVE OF THE MEET TO CONTACT ME AS I WILL
HAVE ENOUGH TO DO ON THAT NIGHT AND WILL PROBABLY TELL YOU TO PUSH OFF -
OR SOME OTHER STRONGER EXPLETIVE.

THOSE STILL WISHING TO ENTER THE RAFFLE BY POST SHOULD GET THEIR TICKET
MONEY (1 POUND EACH) TO ROB KIMBERLEY OR MYSELF BY JULY 10th.
FIRST PRIZE IS A BARE 3" DRIVE.
A SECOND PRIZE HAS KINDLY BEEN DONATED BY ALAN WHITAKER. IT IS SEDORIC
DOS VERSION V1.007 AND THE SUPER TRANSLATED 46 PAGE MANUAL.
SINCERE THANKS TO ALAN AND ROB.

==

ALTERNATE MICRO SHOW
————— ————— —————
AMS 5 - THE ALL MICRO SHOW AND RADIO RALLY WILL BE HELD AT BINGLEY HALL
ON NOVEMBER 9th. IT IS NOT KNOWN AT PRESENT WHETHER THERE WILL BE AN
ORIC STAND AT THE VENUE.

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MICROPRIDE
————— ————— —————
AS MENTIONED IN A PREVIOUS ISSUE, STUART WRIGHT HAD POPPED INT TO
'MICROPRIDE' WHO ONCE MANUFACTURED PERIPHERALS FOR THE ORIC AND WAS TOLD
THAT THEY WOULD DO A STOCK CHECK. THE BAD NEWS IS THAT THEY HAVE ONLY A
FEW EMPTY PLASTIC CASES AS THE MANAGING DIRECTOR (PROBABLY A SPECTRUM
OWNER) HAS BINNED ALL ORIC RELATED ITEMS.

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THE ARAB CONNECTION
————— ————— —————
I HAVE JUST PACKED SOME SPARE PARTS FOR AN ATMOS OWNER IN SYRIA. IF HE
SUBSCRIBES TO O.U.M WE MAY HAVE TO ALL LEARN ARABIC.

++++++======+++++++======+++++++======+++++++======+++++++=====

THE BAD NEWS.
————— ————— —————
ON MY RETURN FROM FRANCE WE FOUND WE HAD BEEN BURGLED. USUAL ITEMS -
SATTELLITE RECEIVER, VIDEO,CD PLAYER AND TO TOP IT ALL MY COLOUR MONITOR
AND PRINTER.
THIS HAS MEANT THAT CERTAIN ITEMS MAYBE A LITTLE LATE IN BEING SENT OUT.
IT ALSO MEANS THAT I HAVE HAD TO CALL UPON THE SERVICES OF PETE WEISNER
TO HELP OUT WITH PRINTING - A BIG THANK YOU TO PETE.
SOME OF THE REGULAR ITEMS HAVE HAD TO BE MISSED FROM THIS ISSUE SUCH AS
REVIEWS AND THE GAMES PAGES. NEXT ISSUE WE HOPE TO BE BACK TO NORMAL WITH
LISTINGS GALORE etc.

OUM READERS
——— —————
THE JUNE ISSUE OF 'OUM' WENT OUT TO 87 READERS.
THE JULY ISSUE WILL GO OUT, TO WELL OVER 90........NEXT STEP - 100

DAVE,
        HAS   ANYONE   THE POKES   OR DOKES   TO ALLOW ME TO START ON ANY SCREEN
ON 'PLAYGROUND 21' FROM I.J.K ?
                                        - HENRY (PORTSMOUTH)

THE EDITOR REPLIES
--- ------ -------
    HENRY   IS NOT   A   SUBSCRIBER TO 'OUM' BUT IS A GREAT OLD FRIEND OF MINE.
HE   AND   HIS   WIFE   ARE   BOTH   RETIRED AND ENJOY PLAYING ON THEIR ATMOS.
IF ANYONE KNOWS THE ANSWER TO THE ABOVE OR CAN FIGURE IT OUT,PLEASE
CONTACT ME.
WE HAVE NOT HAD MANY NEW POKES AND DOKES FOR SOFTWARE LATELY FOR GAMES
AND IT IS ABOUT TIME WE DID. GET YOUR BRAINS IN GEAR!

+++

DAVE,
        I WOULD LIKE SOME INFO ON DISC DRIVES. NAMELY, a) WHAT DISC SYSTEMS
WOULD I GET AND FOR HOW MUCH? b) WHAT TYPE OF DISCS WOULD IT/THEY TAKE?
AND c) WHAT OPERATING SYSTEMS THEY WOULD TAKE AND BE ABLE TO TAKE (AND
THAT I COULD GET) AND THAT YOU WOULD ADVISE ME TO USE?

                        GRAEME BURTON (ORPINGTON)

THE ED. REPLIES
--- --- -------
I HAVE HAD A LOT OF SUCH ENQUIRIES OVER RECENT MONTH'S AND DID PLAN TO
DO A "CASSETTE Vs DRIVE" ARTICLE FOR THIS ISSUE. HOWEVER, ALAN IS GOING TO
COVER THE SUBJECT IN DEPTH OVER THE NEXT FEW ISSUES. I DO,HOWEVER, FEEL
THAT A QUICK ANSWER IS NEEDED.
ON THE SUBJECT OF NEW SYSTEMS AS OPPOSED TO SECOND HAND MICRODISCS ETC; THE
SOLE SUPPLIER OF COMPLETE SYSTEMS OR SEPARATE INTERFACES IS STEVE HOPPS.
FOR 129 POUND YOU WILL GET A COMPLETELY CASED 3" DRIVE c/w BUILT-IN
INTERFACE,A PSU,LEADS,A DOS AND A MANUAL. THE CASE HAS ROOM ENOUGH TO
HOUSE A SECOND 3" DRIVE SHOULD YOU SO REQUIRE. THE CHEAPEST OPTION IS AN
UNCASED CUMANA INTERFACE. TO THIS YOU WOULD NEED TO ADD YOUR OWN 3",3.5"
OR 5.25" DRIVE,PSU ETC. AND OF COURSE YOU WOULD PAY EXTRA FOR A MANUAL
AND THE DOS.IN BETWEEN THESE TWO OPTIONS ARE A RANGE OF SET-UPS.
OBVIOUSLY 5.25" DISCS ARE CHEAPER THAN 3.5",WHICH ARE CHEAPER AGAIN THAN
3". OUR SURVEY SHOWS THAT THE MAJORITY OF USERS ARE 3",BUT THERE IS A
QUITE CONSIDERABLE PROPORTION ON THE OTHER OPTIONS OR INDEED HAVE TWO OR
MORE.
THE 3" DRIVES ARE BECOMING HARDER TO OBTAIN LATELY AND THE TENDENCY FOR
NEW USERS IS FOR 3.5". BETWEEN ALAN,JON AND MYSELF WE CAN CATER FOR
SOFTWARE ON ALL 3 SIZES. THOUGH I HAVE RECENTLY PURCHASED A 5.25" DRIVE;
I WILL CONTINUE TO STORE THE BULK OF MY PROGRAMS ON 3" AS A) I HAVEN'T THE
TIME TO BACK THEM ALL UP TO 5.25" and B) I STILL THINK THAT TO BE ABLE TO
GET ABOUT 5 COMMERCIAL TITLES ON EACH SIDE OF A DISC FOR LESS THAN 3 POUND
IS STILL EXCELLENT VALUE.
REGARDING THE DOS;ALAN WILL DEAL WITH THIS ;BUT I WOULD JUST LIKE TO
SAY THAT SEDORIC IS THE BEST AND THE WAY FORWARD.
IN SUMMING UP; IF YOU HAVE THE MONEY,BUY THE COMPLETE OPELCO SYSTEM FROM
STEVE HOPPS AND SEDORIC FROM ALAN WHITAKER.
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WANTED.......WANTED........WANTED........WANTED........WANTED.......
------   ------   ------   ------   ------
DAVID HALL IS ONCE AGAIN MAKING THE LONG HAUL FROM BLACKPOOL FOR THE
AYLESBURY MEET. LAST YEAR HIS COACH DROPPED HIM AT OXFORD COACH STATION
AT 4.a.m. IT WAS NOT UNTIL 3 HOURS LATER THAT HE GOT A BUS FOR THE FINAL
25 MILE LEG TO AYLESBURY. DAVID IS LOOKING TO SHARE TRANSPORT. OPTIONS ARE:
a) ANYONE NEAR HIM WILING TO SHARE COSTS/DRIVING, b) ANYONE ON THE ROUTE
SO THAT HE CAN DRIVE PART OF THE WAY, c) ANYONE ON THE COACH ROUTE - MAYBE
SOMEONE CAN PICK DAVID UP AT HEATHROW AT ABOUT 7.a.m -------PLEASE RING

AND THERE's MORE....THREE MORE AREAS....DON'T FORGET THAT EVEN IF
THEY ARE NOT IN YOUR AREA THEY MAY HAVE SIMILAR INTERESTS TO YOURSELF.
NEXT ISSUE WILL COMPLETE THE LIST WITH THE REST OF THE U.K , PLUS THE
OVERSEAS LADS WHO ARE FAST GROWING IN NUMBERS. THIS ISSUE WELCOMES 2 MORE
FROM GERMANY AND 3 MORE FROM FRANCE.

AREA 9
----- - - SUSSEX
TIM COLGATE ,24 LUCASTES RD,HAYWARDS HEATH,W.SUSSEX,RH16 1JW (ATMOS/OPELCO
3.5" DRIVE).......R.H.TOWNSEND, 10 BROADMARK AVE, RUSTINGTON,W.SUSSEX,
BN16 2HQ - TEL:0903 784008 (ATMOS/CUMANA 3",KXP 1081 PRINTER...UTILITIES/
STRATEGY GAMES)......L.P.VAN EWIJK,3 FORD RD,ARUNDEL,W.SUSSEX,BN18 9DX (
ATMOS/DRIVE...CONVERTED 'MAXIT').....ADRIAN WESTLEY,165 WORTHING RD,
RUSTINGTON,W.SUSSEX,BN16 3PR.- TEL: 0903 773270 (ATMOS/ORIC 1/CASSETTE,
M/LINE 80 & MT81 PRINTERS.....GAMES AND BASIC PROGRAMMING)

AREA 10
----- -- - MIDDLESEX/SURREY/GREATER LONDON
PETER BRAGG,17 GLENA MOUNT,BENHILL WOOD ROAD,SUTTON,SURREY,SM1 4HW
- TEL: 081 642 7534 (ATMOS/ORIC 1,CUMANA DRIVE,MP165 PRINTER.... 6522 VIA
NTERFACING,MACHINE CODE).......DENNIS HINE,66 STOUGHTON AVE,CHEAM,SURREY,
SM3 8PQ (ATMOS/OPELCO 3"/MCP40 & LC10 & REALISTIC CTR-80 PRINTERS....CAD
AND CALC).....DAVID WILKIN,22 SAXONBURY AVE,SUNBURY-ON-THAMES,MIDDX,
TW16 5HD - TEL: 0932 782448 (ATMOS/MICRODISC 3"/SHINWA CP PRINTER...REPAIRS,
WORD PROCESSING AND AUTHOR OF '1001 USES FOR WD40)........X H WU.,
18 CLEVELAND RD,UXBRIDGE,MIDDX,UB8 2DP (ATMOS/CASS).......ROY ROSE,
2A LADBROKE RD,BUSH HILL PARK,ENFIELD,MIDDX,EN1 1HY (ATMOS c/w V1.0 ROM/
CASS & ATARI ST - EEK!!).........D W CHAPMAN,33 ALBERT RD,LEYTON,LONDON,
E10 6NU (ATMOS/CASS....WORD PROCESSING).......RON EVANS, 157 LYMINGTON AVE,
WOOD GREEN,LONDON,N22 6JJ - TEL:081 889 0065 (ATMOS/CASS/MCP40 & CITOH
PRINTERS....CONVERTS LISTINGS FROM BBC & ENJOYS TYPING IN PROGRAMS).......
RICHARD KING, 14 WELLESLEY COURT,MAIDA VALE,LONDON,W9 1RG (ATMOS/3"MICRODISC
......Dr.A FRANCISC, 9 ALEXANDER ST,LONDON W2 5NT (ATMOS/CASS...ELECTRONICS
D.I.Y).....DENIS BONFIELD, 52 OLIVE RD,CRICKLEWOOD,LONDON NW2 6UD (ATMOS/
MICRODISC 3" & 3.5".....ARCADE GAMES,ADVENTURES,MACHINE CODE AND ELECTRONIC
CONSTRUCTION)......

AREA 11
----- -- - SCOTLAND
W FALCONER, 51 TEMPLEHALL AVE,KIRCALDY,FIFE KY2 6DA - TEL: 0592 203309
(ORIC1/ATMOS/CUMANA 3"/TANDY CGP PRINTER).......MICHAEL GALLAGHER,12 MAIN
ST,CAMBUSBARROW,STIRLING,FK7 9NU (ATMOS / 3" MICRODISC).......M G GOODRICK,
93 RANACHAN GARDENS,MACHRIHANISH,CAMPELTOWN,ARGYLL PA28 6PA (ORIC1/CASS)..
DAVID McKENZIE,71 BRANXHOLME RD,HAWICK,ROXBURGHSHIRE TD9 7BX - TEL: 0450
75640 (ORIC 1).....THOMAS OSWALD, WESTGATE HALL,DENHOLM,ROXBURGHSHIRE,
TD9 8LT - TEL: 045087 301 (ORIC1/ATMOS/CASS/MCP40 & SEIKOSHA GP100A
PRINTERS.....ELECTRONOCS DESIGN)......JIM PATERSON, 29 NEWFIELD CR,
HAMILTON,LANARKSHIRE ML3 9DS (ORIC1/CASS....6522 VIA PROJECT)............
IAN ROBERTSON, BLACKHILL FARM,BLACKHILLS,PETERHEAD AB4 7LP - TEL: 0779
73330 (ORIC1/CASS.....WORD PROCESSING).....................................

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TELESTRAT

THE FRENCH ARE BRINGING A TELESTRAT OVER FOR US TO VIEW AT THE NEXT ORIC
MEET ----- WOULD ANYONE ATTENDING WHO HAS A MONITOR OR ONE OF THE NEWER
MODELS OF TELEVISION WITH A SCART SOCKET; PLEASE CONTACT THE EDITOR A.S.A.P
IT WOULD BE AWFUL TO NOT BE ABLE TO SEE THE BEAST IN ACTION. ANDRE WIDHANI
HAS JUST BOUGHT ONE AND I HOPE THAT WILL KEEP HIM INTERESTED IN ORIC.

RAMBLING IN THE ROM - 28

The Headbangers Ball

A few issues ago Patrick Van Ewyk asked for information on altering the step speed of a disc drive head. Triumphantly to the rescue comes Andre Widhani of Hamburg.

The head step rate is set whenever a command is issued to the FDC's command register (#310). FDC, of course, stands for Floppy Disc Controller. The two least significant bits in each type 1 command indicate the step speed. A type 1 command is one that moves the head in order to locate a track. The following table elucidates:

X X X X X X hsr1 hsr2	hsr1	hsr2	Head step rate
	0	0	6 ms (default)
	0	1	12 ms
	1	0	20 ms
	1	1	30 ms

So, if for example 08 is issued to the command register (08 means go to track 0), the head step rate will be 6 ms (08=00001000). If 09 (00001001) is issued, the head step rate will be 12 ms, and so on.

To take advantage of this, you need to change the appropriate memory locations in DOS. If you !LOAD"SYSTEM.DOS",D,N and then do the following:

```
POKE #7693,#10   (was #1C)
POKE #7782,#09   (was #08)
POKE #86C4,#09   (was #08)
POKE #A022,#60
```

and then save SYSTEM.DOS back to disc with:

!SAVE"SYSTEM.DOS",A#7400,E#A030,T#A000

you will have a 12 ms step rate. BUT NOTE that the new slower drive cannot be used as a master drive, because the head step rate is changed only after the altered DOS has been booted. The disc drive EPROM program uses a head step rate of 6 ms, which is too fast for a 'slow drive'. As a result the DOS on the master disc will not be loaded. A solution to this is to fit a new EPROM to the drive interface with the head step rate re-programmed to your chosen speed; the changes to the EPROM program (which older readers will remember from RAMROM starts at #E000) are:

```
#E2D3  :  #1D
#E3B6  :  #09
#ECD9  :  #08
```

Thanks to Andre, who is even now ferreting for the equivalent POKEs in SEDORIC.

Last time we had reached CPD-72 in the P.D. Library, and I thought that was it for the moment. However......

Poking in the Library

Another FIVE new programs this month - many thanks to those involved....

CPD-73 - MCP40 DEMO   6k   30p
The lengthy demo program from the MCP40 printer manual.

CPD-74 - MODEM   7k   35p
The Oric Prestel software on tape or disc.

CPD-75 - TAPECAT   3k   15p
Catalogue a tape to your printer, with full file information - from Allan Whitaker.

CPD-76 - GUITAR   17k   50p
An excellent guitar chord tutor from Roy Burton. Come on, all you budding musicians!

CPD-77 - CASSTOP   8k   40p
Allan Whitaker's own autorun inhibitor, essential for entering those POKEs that Dave is now publishing.

That's over 30 new programs this year so far, a big thankyou to all who have contributed. If you have yet to reach the hall of fame, get those programs submitted!

The current Top Twenty programs are:

1.	SCRIVENER		11.	MAXIT	
2.	DISK SPY	(Andre Widhani)	12.	CLIPPER	
3.	C.A.D.	(Brian Kidd)	13.	TAROT	(Judy Simms)
4.	BARGRAPH	(Brian Kidd)	14.	ASTRONOMER	(Kimbo)
5.	EVE	(Robert Crisp)	15.	CONVERTER	(Dave Goodrum)
6.	DATAMAKER		16.	SCREENDUMP	
7.	PATIENCE	(Judy Simms)	17.	HIND	
8.	MASTERMIND		18=	SOFTINDEX	(Dave Goodrum)
9.	NET 80			3D GRAPH	
10.	SCRABBLE		20.	HYPERBALL	

Club Europe Oric

Enlosed with this month's O.U.M. is a P.D. price list and order form, with the Club order form on the reverse. Just to remind you, CEOsoft 1 is the superb platform game 'Willy', CEOsoft 2 is Mluch, Yahtzee and Risiko, CEOsoft 3 is the excellent Tetris, Mizar and Othello, and CEOsoft 4 is Flight Simulator, Mr. President and Robinson Crusoe.

Tail-ender

So it's on with the Saga (if I'm forgiven), and the further mysteries of the interpreter section of the ROM........

See you at the Meet

Jon Haworth

```
C448   CPY A3        C444   CPY A3         Compare high byte
C44A   BCC C474      C446   BCC C470       if lower, is space, exit
C44C   BNE C452      C448   BNE C44E       if too high, reorganise
C44E   CMP A2        C44A   CMP A2         Compare low byte
C450   BCC C474      C44C   BCC C470       and exit if lower
C452   PHA           C44E   PHA            Reorganise: save A
C453   LDX #09       C44F   LDX #09        save zone #C7-#CF
C455   TYA           C451   TYA            and Y on the stack
C456   PHA           C452   PHA
C457   LDA C6,X      C453   LDA C6,X
C459   DEX           C455   DEX
C45A   BPL C456      C456   BPL C452
C45C   JSR $D595     C458   JSR $D650      Reorganise strings
C45F   LDX #F7       C45B   LDX #F7        and recover zone #C7-#CF
C461   PLA           C45D   PLA            N.B. #D0+#F7=#C7, not #1C7
C462   STA D0,X      C45E   STA D0,X       according to the writers
C464   INX           C460   INX            of the 6502 - this modulo
C465   BMI C461      C461   BMI C45D       effect only works in the
C467   PLA           C463   PLA            case of Page 1
C468   TAY           C464   TAY            Recover Y
C469   PLA           C465   PLA            and A then
C46A   CPY A3        C466   CPY A3         do the comparison again
C46C   BCC C474      C468   BCC C470
C46E   BNE C483      C46A   BNE C47C       OUT OF MEMORY if too high
C470   CMP A2        C46C   CMP A2
C472   BCS C483      C46E   BCS C47C       Repeat for low byte
C474   RTS           C470   RTS
```

INTERPRETER ENTRY POINT (WARM START)

```
C475   LDA 02C0      C471   LDA 02C0       Indicate text mode
C478   AND #FE       C474   AND #FE        (LSR 02C0/ASL 02C0 would
C47A   STA 02C0      C476   STA 02C0        have been better!)
C47D   LSR 02F1      ..............        Printer off (pointless!)
C480   JMP $C4B5     C479   JMP $C4A8      and jump to interpreter

C483   LDX #4D       C47C   LDX #4D        OUT OF MEMORY ERROR
```

DISPLAY AN ERROR MESSAGE

Entry: X holds the displacement of the first character of the
       message in the table

Exit: the message is displayed and control is returned to the
       interpreter
       This is the only entry point which re-initialises the
       stack.

```
..............        C47E   JSR $CB2F      Printer off
C485   LSR 2E        C481   LSR 2E         inhibit Ctrl O
C487   LSR 02F1      ..............        Printer off
C48A   LSR 02F2      ..............
C48D   LSR 02F4      ..............        set TROFF
C490   JSR $CB9F     C483   JSR $CBF0      Go to next line
C493   JSR $CC10     C486   JSR $CCD7      display a '?'
C496   LDA C2AC,X    C489   LDA C2A8,X     take message character
```

C499	PHA	C48C	PHA		save b7 especially
C49A	AND #7F	C48D	AND #7F		eliminate b7
C49C	JSR $CC12	C48F	JSR $CCD9		and display
C49F	INX	C492	INX		Prepare for next character
C4A0	PLA	C493	PLA		recover the sign
C4A1	BPL C496	C494	BPL C489		+ continue if not the last
C4A3	JSR $C751	C496	JSR $C726		Initialise stack + pointer
C4A6	LDA #AA	C499	LDA #A6		
C4A8	LDY #C3	C49B	LDY #C3		AY points to 'ERROR'
C4AA	JSR $CBED	C49D	JSR $CCB0		and display the message
C4AD	LDY A9	C4A0	LDY A9		Take direct mode indicator
C4AF	INY	C4A2	INY		
C4B0	BEQ C4B5	C4A3	BEQ C4A8		and jump if direct mode
C4B2	JSR $E0B6	C4A5	JSR $E0BA		display 'IN xxxxx' if not

Bug: on V1.1, the 'Ready' message is displayed before turning the printer off, which means that you never exit from a faulty LPRINT instruction.

C4B5	JSR $CC8F	....			Set TROFF
....		C4A8	LSR 0252		indicate no IF
C4B8	LSR 2E	C4AB	LSR 2E		inhibit Ctrl 0
C4BA	LSR 02F1	....			printer off
C4BD	LSR 02F2	C4AD	LSR 02F2		indicate return to
C4C0	LDA #B6	C4B0	LDA #B2		interpreter
C4C2	LDY #C3	C4B2	LDY #C3		AY points to 'Ready'
C4C4	JSR $001A	C4B4	JSR $001A		+ display message
C4C7	LSR 02F1	C4B7	JSR $C82F		printer off
C4CA	JSR $C5A2	C4BA	JSR $C592		Take from keyboard buffer
C4CD	STX E9	C4BD	STX E9		and adjust TXTPTR
C4CF	STY EA	C4BF	STY EA		at 0034
C4D1	JSR $00E2	C4C1	JSR $00E2		take first character
C4D4	TAX	C4C4	TAX		is it 00? (buffer empty)
C4D5	BEQ C4C7	C4C5	BEQ C4B7		yes, get another line
C4D7	LDX #FF	C4C7	LDX #FF		If buffer is not empty
C4D9	STX A9	C4C9	STX A9		indicate direct mode
C4DB	BCC C4E3	C4CB	BCC C4D3		If number, insert line
C4DD	JSR $C60A	C4CD	JSR $C5FA		tokenise the line
C4E0	JMP $C8DD	C4D0	JMP $C90C		and jump to execute

TREATMENT OF A LINE

C4E3	JSR $CA98	C4D3	JSR $CAE2		Evaluate line no. in #33-4
C4E6	JSR $C60A	C4D6	JSR $C5FA		encode the buffer contents
C4E9	STY 26	C4D9	STY 26		and save the line length
C4EB	JSR $C6DE	C4DB	JSR $C6B3		find the line
C4EE	BCC C534	C4DE	BCC C524		if not there, insert it

Deletion of a line

Principal:

The routine is highly optimised and difficult to follow. Most of the work consists in correctly adjusting the pointers for the start of block (#91-2), the target address (#93-4), and the

length of the block to move: number of pages in X, fraction of page (in two's complement) in Y.

The source and target pointers are adjusted to end with a whole number of pages, as in the routine at #C3F8/C3F4.

The block is moved down starting from its lower end so as to avoid writing on the block that is being moved.

Remarks:

Unfortunately this routine is not capable of use by the programmer, because it returns directly to the interpreter without passing via, for instance, the 'Ready' routine, which would allow interception.

```
C4F0   LDY  #01        C4E0   LDY  #01        Take high byte of address
C4F2   LDA  (CE),Y      C4E2   LDA  (CE),Y      of next line (bottom of
C4F4   STA  92          C4E4   STA  92          block to move) in #92
C4F6   LDA  9C          C4E6   LDA  9C          + low byte of end of prog
C4F8   STA  91          C4E8   STA  91          in #91 (top of same block)
C4FA   LDA  CF          C4EA   LDA  CF          + hi byte of line address
C4FC   STA  94          C4EC   STA  94          ('target' address in #94)
C4FE   LDA  CE          C4EE   LDA  CE          + low byte of line address
C500   DEY              C4F0   DEY              Y=0,C=0,inverse subtract'n
C501   SBC  (CE),Y      C4F1   SBC  (CE),Y      -next address=size of gap
C503   CLC              C4F3   CLC              Adjust to end of Basic
C504   ADC  9C          C4F4   ADC  9C          (=subtract then 2's compl)
C506   STA  9C          C4F6   STA  9C          and adjust end of Basic
C508   STA  93          C4F8   STA  93          and save low byte
C50A   LDA  9D          C4FA   LDA  9D          Cont addition by 2's compl
C50C   ADC  #FF         C4FC   ADC  #FF         then subtraction
C50E   STA  9D          C4FE   STA  9D          for hi byte of endof Basic
C510   SBC  CF          C500   SBC  CF          Calc no. of pages of block
C512   TAX              C502   TAX              to move in X, page counter
C513   SEC              C503   SEC              and same for low byte of
C514   LDA  CE          C504   LDA  CE          length of block to move
C516   SBC  9C          C506   SBC  9C
C518   TAY              C508   TAY              in Y
C519   BCS  C51E        C509   BCS  C50E        and echo in due course
C51B   INX              C50B   INX              on the high byte
C51C   DEC  94          C50C   DEC  94
C51E   CLC              C50E   CLC
C51F   ADC  91          C51F   ADC  91
C521   BCC  C526        C511   BCC  C516
C523   DEC  92          C513   DEC  92          + same for source pointer
C525   CLC              C515   CLC
C526   LDA  (91),Y      C516   LDA  (91),Y      Take byte
C528   STA  (93),Y      C518   STA  (93),Y      + move to its new address
C52A   INY              C51A   INY
C52B   BNE  C526        C51B   BNE  C516        + continue to end of page
C52D   INC  92          C51D   INC  92          Prepare for next page
C52F   INC  94          C51F   INC  94
C531   DEX              C521   DEX              + test if all pages moved
C532   BNE  C526        C522   BNE  C516
```

After a one hour flight we (the wife,young Louise,Matthew and myself) touched down at Charles De Gaulle airport to be met by Vincent Talvas and his mother. We sped by car to Stains village to their home for a treat of Champagne,pancakes and my first look at a Telestrat and the Minitel system. Then a late night tour of Paris and our first look at the Eiffel Tower glistening like an enormous tree. Our thanks to Vincent and his mother for their hospitality. It is a pity that the pigeons were not so hospitable to Vincent on on of our excursions.

On the thursday Vincent and I took the Metro to 'Pigalle', which brings you to the Moulin Rouge. This was to be a visit to Microbroc - the last bastion of Oric goodies. The area we were in was an area of Paris where a 'Poke' had nothing to do with computers and in the doorways you had more than a 'Peek' as half bared bosoms heaved.

We met up with Laurent Chiacchierini who works very hard doing the English translations for the CEO-MAG.

There are 2 shops. The first was a waste of time. Just a boxful of tapes not worth bothering with. At the other shop,which is just a few minutes away we met with the proprietor who also runs Micropuces in Clignancourt. I purchased some Atmos's,U L A's and 6502's. From under the counter came a box of discs from which i bought the Oric Int. master of STANLEY. Stocks of most items are now low or non-existant as enthusiasts have stocked up. The shops themselves were basically second-hand outlets dealing in various machines. I left;rather disappointed at what the ORIC had become - something to be stashed in boxes,tucked in corners and of no relevance.

Saturday June 15th was the day of the meet. I caught the metro to Poisonerrie, a few hundred metres north of Pigalle. After an hour's wait I finally met up with Vincent and we headed for the meeting place. The meet opened at 2 P.M. Introductions were made and we unpacked a car,which was full of equipment. The room itself was a longish one. Four systems were set up around it's perimeter and tables in the middle of the room acted as selling points, discussion areas and baggage area.

About 15 members attended from all over France,with about 5 of them quite fluent in English. I will have to improve my French so that next time I can understand more of the Demos. I tried to teach a guy with limited English vocabulary how to play Cribbage - not an easy task.

I chatted with Daniel Duffau (author of WILLY and TETRIS). He showed me his cocktail program - a database with menu options to help you make the cocktail of your choice.

I was given an introduction to the TELESTRAT - the 164k machine with many extra commands and it's hyperbasic. There is a disc interface built -in with a stand-alone slave drive. Cartridge ports adorn the rear of the machine. Nearly always in place is the 'Stratoric' cartridge as the Telestrat was marketed without the ability to handle Sedoric. The cartridge rectifies this problem. There are also cartridges to run Oric 1 and Atmos software as not much was written for the Telestrat.

Monsieur FORTH (Thiery Bestel) showed me colour photos of his Telestrat-IS. Amongst the photos I spotted a black and red MOUSE, which as far as I can determine was never adapted for the Atmos - a pity.

Jean Boileau got hooked on Andre's 'Tetrix' and bought a copy. Alain Weber's son zipped through Jonathan Bristow's 'SQWEEK'.

Broken Atmos boards were repaired and some info for David Wilkin is that WD40 was not used once.

Jon Haworth's publication 'Oric - the story so far' was eagerly read as it has now been translated into french. How about Part 2 then Jon. Old user mags. such as I.O.U.G that I had took over were perused as were Public Domain lists. The bond between the CEO and OUM was further strengthened when 4 of their members subscribed to O.U.M and Vincent,Jean & Laurent promised to attend the Aylesbury meet on July 13th.

I was shown a letter in English to ORIC FRANCE concerning the third and never released screen of Domark's 'A VIEW TO A KILL'. It related to the 'EIFFEL TOWER' launch. Apparently only 2 copies ever got out and the proud owner of these showed me Part III - The Eiffel Tower. Your task is to get out of a maze - impossible and not worth the effort.

Photos were taken and we parted at about 7 p.m. I was laden with a bag of French cassettes.
A wonderful experience ,but all too short.
Next year we are going for two weeks for Paris is truly a lovely city and not as expensive as one is led to believe. It is a case of shopping around. Witness my snazzy Bermuda shorts at the Aylesbury meet for under 4 pound. Transport is efficient and comfortable. Food is good. Do yourselves a favour and book for next year.

Au revoir PARIS........ Dave Dick

>>................>>>>>>........>>>........>>>........>>>........>>

SNIPPETS

ISSUE 13 OF THE CEO-MAG DULY ARRIVED IN MID-JUNE AND INCLUDED AN INTERVIEW WITH BIG JON H.
ALSO INCLUDED WERE OVER A DOZEN EXAMPLES OF THE 'SEEK' AND 'CHANGE' COMMANDS FOR SEDORIC USERS TO PROVE THAT THE POSSIBILITIES ARE FAR MORE NUMEROUS THAN THE MANUAL SUGGESTS.

```
SEEK CHR$(191) - will find all CALL statements.
SEEK CHR$(192) - will find all ! statements.
SEEK "1230" - will find GOTO 1230,GOSUB 1230,and so on.
```

ALSO INCLUDED WAS THIS LITTLE 2 LINER FOR ALL ORIC USERS WHO WANT TO WRITE BACKWARDS:

```
1 DOKE#A2,48080
2 GETR$:GOTO2
```

DUE TO HOLIDAYS THE JULY ISSUE OF CEO-MAG WILL NOT APPEAR. HOWEVER, A DOUBLE ISSUE WILL BE SENT OUT IN AUGUST.

++++++++++++++++++++++==============++++++++++===============

THE CONDOM SONG

BRUNO AND SOPHIE WHO HAVE A BAR IN PARIS SHOWED US THE VIDEO OF A HIT RECORD CLIMBING THE FRENCH CHARTS. "LE PLASTIQUE C'EST FANTASTIQUE" BY ELMER FOODBEAT IS A CATCHY TUNE ON THE POLYDOR LABEL AND IS NOW AMONGST MY RECORD COLLECTION.

+++++++++++++++++++==========++++++++==============

65SC802

IN THE LAST ISSUE OF 'O.U.M', HANS KRAUS ASKED IF THIS CHIP HAD EVER BEEN USED IN AN ORIC INSTEAD OF THE 6502.
MY CONVERSATION WITH DANIEL DUFFAU HAS INTIMATED TO ME THAT THIS HAS IN FACT BEEN DONE.

MINITEL

RECENT ARTICLES IN THE CEO-MAG HAVE COVERED THE FRENCH MINITEL SYSTEM. LAURENT CHIACCHIERINI RUNS THE ORIC ORIENTATED BULLETIN BOARD VIA THIS IN FRANCE AND THIS IS NOW AVAILABLE TO UNITED KINGDOM USERS VIA PACKET SWITCH STREAM (PSS) NODES.THIS MEANS THAT THE COST OF CONNECTING TO A SERVICE ABROAD HAS BEEN BROUGHT TUMBLING DOWN. FOR MORE INFORMATION ABOUT MINITEL'S CURRENT SERVICES,PLEASE TELEPHONE 'ALDODA INT.' ON 071 586 5686
ISSUE 144 OF 'MICRO MART' SEES THE START OF AN ARTICLE ON MINITEL.

INTRODUCTION

This month sees a page each on the sections on file handling via BASIC and the serialisation of Geoff Phillips' book and a little more analysis of the questionnaire results.

DISC ACCESS   See page OE/3.

PROGRAMMING TECHNIQUES   See sheet OE/4.

QUESTIONNAIRE RESULTS

Last month I calculated that I had received information from 189 users in reply to my questionnaire. However, I had made one mistake in that I had forgotten myself (who's that you all shout) so I shall be using 190 users as the total of active ORIC users. Dealing with questions 2 and 5 together this shows the distribution of ORIC computers among the active users.

Q2   Which model (of ORIC)?
Q5   If you own an ORIC-1 computer would you like to buy the BASIC V1.1 ROM or EPROM to upgrade to the ATMOS standard?

Of the 190 users there are 30 who own an ORIC-1 only, 67 who own both a V1.0 and V1.1 machine (i.e. ORIC-1 and ATMOS ROMs) and 93 who own an ATMOS only. This is represented in the upper pie chart opposite. As you can see only 16% of users use the V1.0 ROM. Of the 30 ORIC-1 owners 19 are prepared to upgrade to the V1.1 standard. 10 owners who have both machines would like to upgrade their ORIC-1. If all the ORIC-1 owners willing to upgrade did so the remaining percentage of ORIC-1 users would decrease to 6%, see the lower pie chart. This convinces me that it is no longer worthwhile supporting the V1.0 ROM when writing high quality new software.
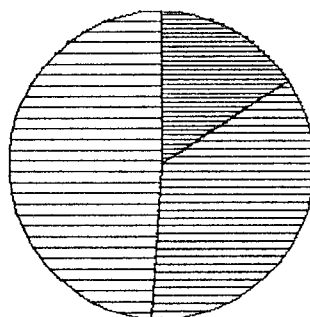
ORIC-1	15.78%
O1/ATM	35.26%
ATMOS	48.94%
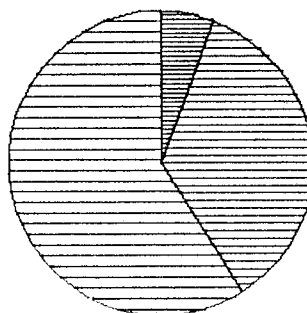
ORIC-1	5.78%
O1/ATM	35.26%
ATMOS	58.94%

The record for the most ORIC computers owned by one person would seem to go to Mr R A L Knight (unless you know different). He has 4 ORIC-1s and 2 ATMOSs.

Questions asked by users, with regard to Q2 & 5 were as follows :-

1   What is an EPROM?
2   How do I convert the ORIC-1 16k to an ORIC-1 48k with V1.1 ROM?
3   How easy is to convert to V1.1?

My answers are :-

1   An EPROM is a memory device that stores bytes of program or data
so that a microprocessor can read its contents and act upon it. The
initials stand for Erasable Programmable Read-Only Memory. It is
basically the same as a ROM (Read-Only Memory) only the method of
entering the data is different and the EPROM can have its contents
erased (hence the name) and re-programmed. ROMs cannot be erased and
they are programmed when manufactured. I understand that most of the
ORIC ROMs were programmed in Japan.
2   It is not possible to simply upgrade the ORIC-1 16k to 48k as
the computers have different circuit boards. It would be best to buy
a second-hand ORIC-1 48k or ATMOS PCB (they are virtually the same
beast) and fit that into your case.3   It is very easy to upgrade to
the V1.1 ROM so next month I will look at what is involved in doing
this.

*************** Ian James has a MCP40 (in ATMOS colours) for sale.
***   MCP40   *** It is in excellent condition and the cost is £35
*** FOR SALE *** ono. If you are interested then contact Ian at 30A
*************** Albermarle Road, Beckenham, Kent, BR3 2HJ. Tel :
081-658-8267.

SHAREWARE

ACCOUNT BOOK/ORIC CALC

I am preparing the manual for duplication. It needs tidying up a
little to improve its quality. I promise the details for next month.

E-FILE
E-FILE is available for CUMANA DOS.

SEDORIC DOS
The number of registered users now stands at 23. Are you registered?

WORD-SPEED

Dr Ray McLaughlin has agreed to distribute his wordprocessing
program WORD-SPEED via my shareware scheme. This program has the
hallmarks of quality programming and promises to be the best
wordprocessor for the ORIC yet. The first version, along with its
manual, is being prepared for release in time for the meeting in
July.

This page has been written using the demonstration program that Jon
Haworth sent me. I find the program easy to use and flexible. Ray
has already improved upon the demo program and there a number of
enhancements already in the pipeline making the program ideal for
the Shareware scheme. More news in the next issue.

Written by and copyright of : Allan Whitaker, 1991 using WORD-SPEED.

DISC FILE HANDLING TECHNIQUES USING BASIC

INTRODUCTION

This series of articles is intended to be directed at ORIC owners who have a disc drive or those who are thinking of obtaining one soon. I will assume that everyone is familiar with BASIC and the fundamentals of owning and operating a disc drive. This isn't too bold an assumption since a manual exists for each of the ORIC disc drive systems in existance. I shall assume that the computer is an ORIC ATMOS but where it is necessary to provide a distinction with the ORIC-1, I will do so.

The articles will concentrate on BASIC access to the disc drive but on completion it may be appropriate to deal with machine code access. The different Disc Operating Systems (DOSs) associated with the ORIC are, in chronological order, the BYTE DRIVE 500 DOS, ORIC DOS, CUMANA DOS, JASMIN DOS, ROMDOS, RANDOS, SUPER 2 DOS and SEDORIC DOS.

Of these ORIC DOS, CUMANA DOS, ROMDOS and SUPER 2 DOS are so similar they can be considered to have the same capabilities. Unfortunately, these DOSs are rudimentary and offer very limited facilities in terms of data file handling. Similarly, the Byte Drive 500 and Jasmin systems are no longer available and the number of current owners is very low. In view of this I do not think that it is worthwhile covering them in my articles. I will concentrate on RANDOS, SEDORIC DOS and MS-DOS (trademark for Microsoft's DOS which is used in IBM-PC compatibles and the like).

DEFINITIONS   Let's start off by defining a few terms :-

DISC FILE - This term applies to any file on a disc that is an item listed with a directory instruction. It can equally apply to a file comprising a BASIC program, machine code program, BASIC variables, screen bytes, etc.

PROGRAM FILE - This specifies a disc file comprising executable program code in a language supported by the computer, which in our case will be BASIC, FORTH or machine code. The files are usually simple sequential files although files can be combined which are not contiguous. The BASIC disc access commands for these commands are SAVE and LOAD.

DATA FILE - This specifies that it contains data that is intended for use within a program or direct command. For instance, WORDSPEED (the new wordprocessor by Dr Ray McLaughlin) is able to store your text into a data file which can be accessed either in direct or program mode and allows users to view the file, using the TYPE and LTYPE commands, without requiring the loading of WORDSPEED. A data file storage forms may be sequential, scattered, index sequential or linked and the access modes can be indirect (sequential) or direct (random).

DISC - The discs themselves are of course the storage media and can ultimately offer unlimited indirect memory for the ORIC. You just use as many discs as required. What is limited is the amount of storage available on any one disc. The maximum size of a data file is usually limited to this amount although it is possible to split files across disc boundaries. Program files are limited in size to that which will load into the available computer memory although, again, there is a work-around, in that executable code can be loaded into a dedicated area of memory as and when it is needed, then released (overwritten) if other code is required. Both RANDOS and SEDORIC DOS uses this technique as the size of each DOS is greater than the 16k bytes of memory available in the ROM overlay of the computer. This technique can also be used for BASIC with the MERGE or JOIN facility.

BUFFER - Most DOSs have a buffer area which is used as a temporary storage area when handling data transferred to or from a disc drive. RANDOS and SEDORIC DOS are no exceptions to this. The block diagram represents this basic concept.

To be continued next month....

ORIC ATMOS and ORIC-1 GRAPHICS & MACHINE CODE TECHNIQUES

copyright of Geoff Phillips

PREFACE

This book is for ATMOS and ORIC-1 users who want detailed information about their computer. For machine code programmers, an account of the various ROM calls is given with a full description of the methods of handling the different parts of the machine.

This book was not written to teach machine code, but to provide enough background information for existing 6502 programmers to use an ORIC/ATMOS.

If you are not an experienced machine code programmer, you will still find a great number of hints and tips in the book. Even if you do not understand machine code at all you will still be able to use the numerous utilities - such as Renumber, Merge and Auto.

Chapter 1 summarises the hardware that makes up an ORIC or ATMOS computer.

Chapter 2 explains how BASIC works, from the way that programs and variables are stored, to creating different windows of scrolling text. A list of ORIC-1 and ATMOS bugs concludes the chapter.

Chapter 3 is about how machine code programs are entered, methods of calling your program, and how a machine code program can use the software timers. Some machine code pitfalls and tips are given at the end of the chapter, along with a real-time clock program.

Chapter 4 describes two important sections of ORIC-1 or ATMOS - the keyboard and the cassette system. This chapter describes how individual key presses are detected - very useful for games where several keys are used at the same time. A complete account of the cassette system is given, and after reading this chapter you will be able to write machine code programs that save and load blocks of memory, or individual bytes. A verify program is listed for ORIC-1 owners.

Chapter 5 gives an account of how BASIC uses RAM and ROM. All important ROM and RAM addresses are printed, plus details of how the stack area is used.

Chapter 6 explores three important subjects - maths, HIRES and music. On the maths side, a machine code programmer will now be able to use the ROM's floating point routines. On the HIRES side, you will find out how the high-resolution graphics can be used with different mixtures of text, and a complete account of the ROM routines for CURSET, DRAW etc. is given. On the music side, this chapter describes how the ROM routines for MUSIC, PLAY and SOUND are used, as well as giving details of how the sound chip is accessed.

Chapter 7 presents a number of fast high-resolution graphics routines. A single-point plotter is given which runs about 70 times faster than BASIC's CURSET command. A PAINT routine is listed that will fill in any shape on the high-resolution screen.

Chapter 8 gives six utility programs to help BASIC programmers. These are : Renumber, Delete, Merge, Auto-Data, Trace, and ON-ERROR. Other utilities can be found throughout the book.

Chapter 9 completes the book with some ambitious ideas, including a primitive form of speech synthesis, a multiprocessor and a program that allows single key entry of BASIC keywords.

<div align="right">Geoff Phillips.</div>

Next month -- Chapter 1, summarising the hardware that makes up an ORIC or ATMOS computer.

Machine Code for the Oric Atmos (Part 5)   Peter N. Bragg

The Story so far
---------------- Having looked briefly at the Oric and machine code in general,
we then went on to look at the three most important items required for machine
code programming. For Oric's 6502 microprocessor, they were three registers
called the Program Counter, the Accumulator and the Status Register.

At this point, we can now make good use of a small selection of instructions to
gain some practical experience. Trying out a few instructions first, to see how
they work, should make the rest easier to understand. The Instruction Table
below is a reduced version (subset) of the 6502 Instruction Set.

Accumulator Instructions	Absolute instruct	code	Immediate instruct	code
Load Accumulator	LDA	AD xx yy	LDA#	A9 xx
Store Accumulator	STA	BD xx yy		
Add with Carry	ADC	6D xx yy	ADC#	69 xx
Subtract with Carry	SBC	ED xx yy	SBC#	E9 xx
Compare Accumulator	CMP	CD xx yy	CMP#	C9 xx

Flag Instructions	instruct	code	
Clear Carry Flag to 0	CLC	18	no operand/data
Set Carry Flag to 1	SEC	38	no operand/data

Conditional Branch Instructions			
Condition	instruct	code	Flag set by -
Branch if Carry Flag = 0	BCC	90 xx	No Carry
Branch if Carry Flag = 1	BCS	B0 xx	Carry
Branch if Zero Flag = 0	BNE	D0 xx	Result Not Zero
Branch if Zero Flag = 1	BEQ	F0 xx	Result Zero
Branch if Negative Flag = 0	BPL	10 xx	Result Plus
Branch if Negative Flag = 1	BMI	30 xx	Result Minus

Subroutine Instruction	instruct	code	
Return from SubRoutine	RTS	60	no operand/data

We have already met three of the above instructions in Part 3. These were
LDA, STA and RTS. To refresh your memory, the RTS instruction is the essential
way to end any routine, particularly if you want to return safely to BASIC.

Instruction Modes
----------------- The Accumulator instructions in the above list give a choice
of two modes of operation. All deal with a single byte of data, using the
Accumulator and all except the STA instruction, can be used in either
"Absolute" or "Immediate" mode.

IMMEDIATE (#) instructions supply the required data byte as the operand "xx".

ABSOLUTE instructions on the other hand dont include the data byte, instead
they give the address of a memory location which holds it.

As we found in Part 3 of this series, addresses in all Absolute instructions, are written in reverse order, low part in "xx" and high part in "yy". For example, the LDA instruction AD 02 10 would load the contents of location #1002 into the Accumulator.

The two modes of operation each have their own advantages, which are best appreciated as experience is gained. Immediate instructions can make a program simple to follow and Absolute instructions allow many data items to be more easily arranged in blocks, rather than scattered about inside a program.

Accumulator Instructions
------------------------ Five of these are listed here. The first pair are used to set up the Accumulator and/or memory by copying data bytes to and from the Accumulator. The second pair do simple addition and subtraction. The last instruction is used to test the Accumulator contents.

LDA sets the Accumulator to a hex value in the range 00 to FF.

STA will copy the Accumulator contents to a location/address in memory.

ADC will add a single byte hex value to another value already held in the Accumulator. As its label indicates, it includes the Carry Flag in the addition operation. For this reason the Carry Flag should be cleared before using the first ADC instruction in any addition routine. The instruction CLC will do this by making Carry=0. The Carry Flag operation is then fully automatic after that.

This means that if you use ADC to add a value to the Accumulator contents and the result is larger than FF (255 decimal), the Carry Flag will be set to "1" and the next ADC instruction will include that in its sums. Obviously because the Accumulator only holds one byte, you should use STA to save each result between ADC instructions.

SBC is used in exactly the same way as ADC, the only difference is that as it is a subtraction operation, the Carry Flag must be set to "1" (not cleared) at the start of operations. The instruction SEC will do this by making Carry=1.

CMP is used to test the Accumulator contents. It only affects the Flags in the Status Register, the Accumulator contents are not changed in any way. For example, if the Accumulator contained the value 58 hex, then an instruction CMP#58 which is C9 58 would set the Zero Flag to 1, showing that the difference between the two values in the operand and Accumulator is zero. CMP can be used to set up the Carry, Zero and Negative Flags for the Branch instructions, described further on.

Flag Instructions
----------------- Just two of these here. Simple enough, they just set or clear the Carry Flag for you. One example of their use appears in the description of the ADC and SBC operations. Other uses will become apparent later on.

Conditional Branch Instructions
------------------------------- There are six listed, all of them identical in operation. The only difference lies in the individual conditions for the operation to happen. If these conditions are not met the instruction will be ignored. If the specific Flag conditions are correct for a particular Branch instruction when the program reaches it, the instruction will execute a short relative jump to a destination set in the Branch instruction operand "xx".

Hop, Skip and Jump
——————————————————— Setting the Branch instruction's operand for its relative
jump is fairly easy, although you would'nt think so from some descriptions I
have read. Because the operand is limited to one byte, the relative jump is
limited to a maximum of 256(dec) locations, that is 128 locations in each
direction. A value from 00 up to 7F will jump forward and a value from FF down
to 80 will jump back.

For example, a value of 05 will jump forward five locations. A value of FB
would jump back five locations, which would actually make the jump destination
just three locations behind the actual Branch instruction. Finally a value of
00 will obviously produce no jump at all.

Short distances can be easily counted using fingers and Mark One eyeball. Some
enthusiasts calculate these things in binary using "Twos Complement". Good luck
to them !! Binary calculations should only be used to impress the neighbours
and confuse the Tax Man. The best way to work out the Branch operand for the
relative jump is to let Oric do it for you. A small extension to the HexLoader
program (published in Part 2) will do the trick. We wont need it here so I will
include the updated version in the next part of the series.

Summary
——————— The above list of instructions is perhaps about one fifth of the full
instruction set. The list is much simplified by getting away from the
traditional alphabetical format. It is easier to understand the instructions
when you begin to see that a lot of them are related to each other and in many
cases, are just providing different options on a single operation (eg. Branches
In fact, as we progress, you will find that this is true for a large part of
the 6502 Instruction Set. Even some of the opcodes seem to be related.

Puzzle Korner
——————————————— It is a rotten trick to publish a routine with no supporting
information. Even worse, there are'nt any Assembler labels for the instructions
I wonder what it does and how it works ? ?   Despicable, thats me !!

```
          address  .................hex.code.......................
The       1010:   A9 A8 8D 1D 10 A9 BB 8D 1E 10 A9 2B 8D A8 BB 18
routine   1020:   AD 1D 10 69 01 8D 1D 10 AD 1E 10 69 00 8D 1E 10
———————   1030:   C9 BF D0 E6 AD 1D 10 C9 E0 D0 DF 60 ....end....
```

Seriously though, I wanted to include a routine that would illustrate some of
the Instruction Table above. Although the Table only contains fourteen
instructions they are sufficent for programming and divide roughly into four
groups. Essentialy they provide simple data transfer (LDA/STA), simple
arithmetic (ADC/SBC) also testing (CMP) for the purpose of (using Branches)
deciding which course of action to take next.

As we are running out of space, we will have to wait until next time to look at
the routine properly. Normally I would never produce a routine without any
supporting information, but just this once, it will give you something to look
at and see what you can find out about it. The routine is nothing much and may
well make the experienced programmer, cringe. All the instructions appear in
the table above. There are two branches, both jump to #101A. The routine starts
from #1010 and finishes at #103B. To run it CALL#1010 and dont forget the
golden rule "Save all machine code programs, before running for the first time"
Part 3 and 4 of this series will also provide some clues.

Now we can branch out......................Next time how to make Oric jump !!

AMATEUR· PACKET   RADIO is allowed on all amateur bands. Apart from the usual
radio &   antenna,additional equipment is required for packet communication.
One unit must assemble the digital data ,provide the error checking
sequence & convert the data to tones (and the reverse on recieve). This is
a 'Terminal node controller' (TNC). This unit must be controlled by
equipment that takes input from an operator (usually via a keyboard) and
converts it to a digital form for transmission or for local control of the
TNC. It must also display the recieved information. A typical solution
is to use a personal or home computer.
The general arrangement for a packet station is shown in Fig.4. It should be
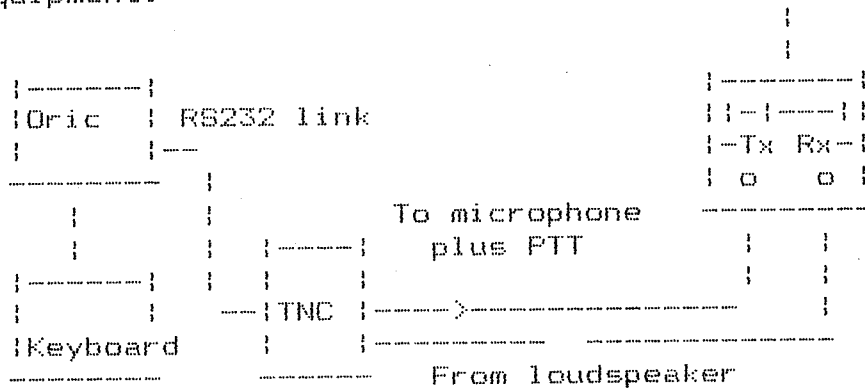mentioned,however,that there are varioutions on this theme for packet
equipment.

```
                                           |
                                           |
  |---------|                        |----------|
  |Oric  | RS232 link                || -|----||
  |    |---                          |-Tx  Rx-|
  ----------   |                     | o    o |
      |        |              To microphone  ----------
      |        |      |-----|   plus PTT     |      |
  |---------|  |   |  |     |                |      |
  |      |  | ---|TNC |------->--------------------|
  |Keyboard  |   |     |------------  -----------
  ----------  |   -------    From loudspeaker
```

Figure 4: Typical packet station arrangement.

THE TERMINAL NODE CONTOLLER

The TNC has several functions: a modem,digital encodind/decoding,error
checking (Rx),error coding (Tx),frame assembling/disassembling (Tx/Rx),
communication to and from computer/terminal,and data rate generator to Tx/Rx
A simple hardware arrangement is shown in Fig.5. The audio tones derived
from the modem in the TNC are fed,via the microphone socket,to the
transmitter;on recieve the audio is normally taken from the reciever.
Transmit control is also via the microphone socket (the PTT line) and it is
the TNC which keys the transmitter,prompted from the controlling computer
keyboard unless the TNC is acting as a repeater.
The data rates and tone frequencies used on the HF and VHF bands are shown
in Fig.6. It is possible to use higher data rates but these are very much
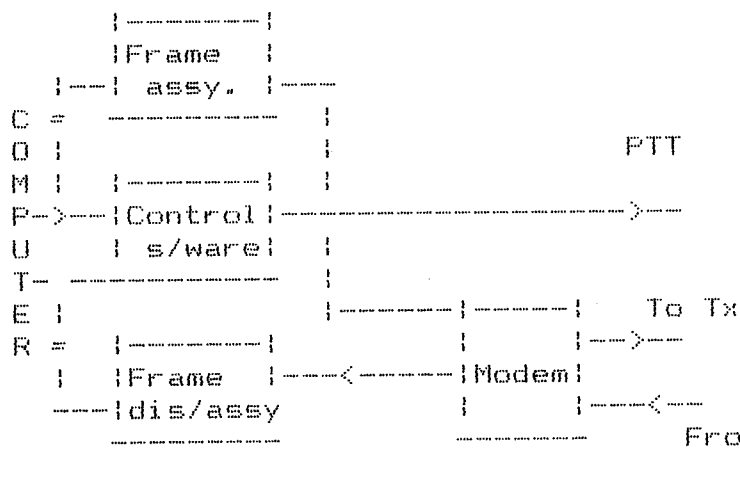in an experimental stage at present.

```
          |---------|
          |Frame  |
     |---| assy. |-----
  C =  ---------    |
  O |              |                    PTT
  M |   |---------|  |
  P->--|Control|----------------------->--        Figure 5: Block diagrams
  U   | s/ware|  |                                      of a basic TNC
  T- ----------    |
  E |         |-------|------|  To Tx
  R =  |-------|      |    |-->--
     |  |Frame  |----<-----|Modem|
     ----|dis/assy     |    |---<--
          ---------    ------   From
                              Rx
```

Fig 6:PACKET STANDARDS
```
                        HF        VHF/UHF
           LOGIC 1   1600 Hz    1200 Hz
           LOGIC O   1800 Hz    2200 Hz
           DATA RATE 300 Baud   1200 Baud
           SHIFT      200 Hz    1000 Hz
```

WILLY

AFTER A CHAT WITH THE AUTHOR OF 'WILLY' (DANIEL DUFFAU),HE HAS AGREED
THAT THOSE BUYING HIS PROGRAM FROM THE CEO WILL BE ABLE TO ALSO HAVE THE
CHEAT VERSION,WHICH ALLOWS YOU TO START AT ANY SCREEN. ORDER FROM JON
HAWORTH DIRECT.

SOFTWARE SALE

RECENTLY SOME SECOND-HAND ORIGINAL CASSETTES HAVE BEEN DONATED TO THE
CLUB BY Mr.TOWNSEND AND MONSIEUR DUFFAU. I HAVE ALSO ACQUIRED SOME GOODIES.
THIS ISSUE WE LOOK AT SOME OF THE RARITIES. ONLY 1 OF EACH. SO DROP ME A
LINE IF YOU WANT ANY. NAMES IN A HAT AND THOSE DRAWN OUT GET WHAT THEY
ASKED FOR. PRICES EXCLUDE POST/PKG. YOU WILL BE INVOICED AT COST. CLOSING
DATE IS JULY 31st.

"PAINTER" (A&F) - 7 different grids in 25 ways for you to fill in. Fast and
furious. Works on Atmos. Works with PASE joystick interface - YES another
one that your 'ALTAI' works on.
          PRICE - 1.50

"XENON III" (IJK) - the third in the trilogy.Also known as the GENESIS
PROBE. Really smooth Hires graphics. Again compatible with the ALTAI.
          PRICE - 3.00

"ORIC TREK" (SALAMANDER) - Lt.Uhura gives you your orders aboard the
USS Enterprise. Your mission is to rid the galaxy of the Klingons.
          PRICE - 1.50

"COPY" (PEACHBYTES) - This Atmos program will allow transfer to printer
that text (40 x 27 bytes),that you have built up on the screen and may be
incorporated in your own programs.Suitable for Epson/Centronics/MCP40
printers.Especially useful in Word processors,text editors & number displays
          PRICE - 2.00

"HICOPY" (PEACHBYTES) - Transfers contents of HIRES screen to printer
very swiftly - 100 dots per sec. on 40 or 80 column. The machine code can be
called into operation from a basic program.
          PRICE - 2.00

"NIGHTRIDER" (CIROSOFT) - A drive in the country with a difference. To
fight or to run in this basic program for the ATMOS where you must recover
stolen shares. A nice bit of strategy.
          PRICE - 1.50

"TIERCE" (ASN diffusion) - a text only horse racing game for ORIC 1/ATMOS.
It is ,however, all in French.
          PRICE - 2.00

"TRAITEMENT DE TEXTES" (PRORICIEL) - a simple Atmos word processor. But,
of course,it is in French.
          PRICE - 2.00

"ASSEMBLER/DISASSEMBLER" (DURELL) - states Oric 16k,but has examples for
48k version. Auto-line numbering,line-printer listing etc.etc.
          PRICE - 2.00

"ORICLONE" (KILOSOFT) - load and save programs,save a 2nd copy,display
memory and relocate the load/save routine - PRICE - 2.00

"ORICADE" (SEVERN SOFTWARE) - Assembler/Disassembler/Editor for the 48k
ORIC 1 - PRICE - 1.50

MORE GOODIES NEXT TIME AROUND,BYE FOR NOW - DAVE DICK