

DRAGON



UPDATE

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The Gaffer's Bit.....

The main question at the moment is whether or not this will reach you before Christmas!. What with the mess caused by the main post strike, and the current "localised" ones, and the usual pre-Christmas chaos, it looks rather doubtful, so I'd better just say "have a good Christmas / New Year / Easter", and leave you to delete as necessary!.

Next thing is the Show. It was a lot better than I think anyone expected, and if there is a valid complaint this time I think it has to be the one I heard most ... that most of the available hardware was too expensive (a lot of people were looking for cheap used equipment rather than top range new units), and that there was a shortage of REALLY new software ... variations on old themes are being over-worked. Generally speaking though it was a very good show, as a lot of you discovered, and I think John & Helen Penn deserve congratulations and thanks from all of us.

Now before you all start phoning to complain that I'M not complaining, I'll let you into a secret. The Show nearly stopped before it started!. The hall was perfect, the light fittings looked as though they were on loan from Buck House, and the chairs didn't collapse or leave splinters in awkward places, BUT, the catering was a major disaster area!. How the Hell can anyone be expected to run a stand when the bar doesn't open until after lunch time, and the "catering" can't even provide a stale sandwich?!. We DID, after a heated argument, manage to persuade them to allow a couple of coffees away from the "Lounge", at 85p per cup, but when you have to send someone out to the local shop to buy a sandwich, personally I would be willing to swap the tarty decor for some plain common sense arrangements.

Right, happy now I've had a moan?. Good!. To summarise, John & Helen Penn 10 out of 10, the actual show 9 out of 10, and Connaught Rooms Catering

Department 0 out of 10. OK?. I'll leave the actual reviewing to someone else. One last point, thanks to all of you who attended the Show, and especially those who put in so much time and effort on the stand, you did a good job, and it really is very much appreciated.

Well, have a good holiday, and if you get a chance, try writing Barry something for Update, PLEASE.

Barry

BARRY'S BIT.....

This month I am a tiny bit more organised.. Lots to get through and no space to do it so here goes...

Firstly, thanks to those who wrote to wish me luck and those who have sent in articles (although the next issue should be interesting with the present selection).

Next - A note on making my job easier - Please when you send in articles print them in an 80 column format without right hand margin justification. Also in an ideal world all articles would be convenient lengths but they aren't! Preferably not longer than 1 side (Split it up if it has to be longer) and also, 1/4, 1/2 and 3/4 page articles are ideal. I know you don't write articles anyway but if you feel one coming on, try and stick to these rules as it makes my life so much easier.

Read on and enjoy - Until next time...

B.C.

STARSHIP & PULSER SOFTWARE LATEST

Following the unfortunate demise of Microvision, Starship software were stuck for a distributor for many of their programs. Now Pulser software have come to the rescue and are selling Starship, Dungeon & Wild West Destiny, Composer Companion and El-Pea. All are 3.99 except El-Pea which is 2.49. All are available on DragonDOS or tape. ROLA-BALL, a new release by Starship, is being sold by Prestons at 2.99 on tape. We hope to get reviews in the future.

Pascal for Beginners (5)...Gary Coxhead

Last time we were talking about programming ideals. Well, these can't always be met, nor do we need them sometimes, so for those occasions Pascal provides a very powerful feature called parameter passing, i.e. allowing one procedure to use data from another procedure. Now as variables within procedures are "local" and once the procedure is finished these are lost, the compiler has to set up areas in memory called the "stack" and the "heap". I will not go into detail as to how these work but suffice to say that Pascal allocates this scratch area and those variables are stored in this area. As you might expect, the particular variables must be pre-declared in a special way so that the compiler knows that these are variables whose parameters will be used later on. Another time we will look at how this is done.

For the moment we will do a bit more on variables, their values and types. A variable is an identifier which names one or more locations in memory in which data can be stored. To "assign a value to a variable" means to store data in the location designated by that variable. A variable's type is the set of data values which can be assigned to it. In Pascal every variable must be declared before being used in a program, i.e. its identifier and type must be specified. e.g

```
VAR total, count : integer;
    area, volume : real;
    finished : boolean;
    character : char;
```

Standard simple types	Example of values	Description.
Integer	23,0,+16,-190,maxint	Whole numbers.
Real	4,1,4E3,-6.75E5,89	Numbers which may have a fraction.
boolean	true false	only 2 values allowed.
char	"A","b"," ", "*", "8"	single characters.

When a value is assigned to a variable both the value and the variable must be of the same type.

```
e.g. VAR letter : char;
      number : integer;
```

Valid assignments using the above declarations would include :-

```
letter := 'A';
letter := '6';
number := -6;
number := 8+12;
```

Invalid assignments would include :-

```
letter := 7;
number := '7';
number := 7.4;
number := 8/3;
```

I'll leave it to you to work out why!. Until next time. G.C.

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HENCEFORTH (3) BOB SMITH.

When a program is constructed in FORTH it is usually done by making a sequence of previously built and tested words which may themselves be built of sequences of words. This can be followed back until ultimately words consist of only primitives. Primitives are the basic machine code words that FORTH is made of. The magic wand that allows you to follow a word right back to its primitives or any levels in between is known as DECOMP. This is used in the form :-

DECOMP ---

where --- is any word known to FORTH. When it is started as above there are three options :-

These three keys are used by DECOMP :-
Q SPACEBAR or ENTER

Pressing Q abandons any further action and control is returned to the current vocabulary. The SPACEBAR causes the current level to continue without "decompiling" any of the words at that level. ENTER goes to the next level below, thus decompiling right down to the primitive level if used continuously. Judicious use of PRINTER and PRINTOFF (SCR#15) will give you a permanent decompilation of your masterpiece (or anybody elses' for that matter).

One of the delights of FORTH is that it can be expanded in all sorts of directions. One fascinating area is increasing the precision of the integer arithmetic that FORTH does so quickly. There are a few words already available and next time I shall be giving a few examples of how these can be integrated into a DOUBLE PRECISION package. I'm also toying with the idea of even higher precisions, so watch out!

SCR #150

```
0 ( DECOMPILER SCR#150 )
1 : MYSELF LATEST PFA CFA , ;
2 IMMEDIATE 2 VARIABLE GIN
3 : GIN+ CR GIN @ 2+ DUP GIN !
4 SPACES ;
5 : DIN CR GIN @ SPACES ;
6
7
```

SCR # 152

```
0 ( DECOMPILER SCR#152 )
1 : DEL5 2+ DUP C@ SPACE . 1+ ;
2 : DEL6 DUP @ 2+ ' (.) = ;
3 : DEL7 2+ DUP COUNT TYPE DUP C@
4 1+ + ;
5 : DEL8 2+ ;
6
7
```

SCR # 154

```
0 ( DECOMPILER SCR#154 )
1 : (GOESINTO) ( PFA---) DUP CFA @
2 ' : CFA @ = OVER ' ERROR = 0=
3 AND IF BEGIN DUP @ DUP ' IS CFA
4 = OVER ' (ICODE) CFA = OR 0=
5 WHILE 2+ DUP GIN+ NFA ID. KEY
6 DUP 81 = IF CR ." BREAK" CR SP!
7 QUIT
```

SCR # 151

```
0 ( DECOMPILER SCR#151 )
1 : DEL1 2+ DUP @ 2+ NFA ID. 2+ ;
2 : DEL2 DUP @ 2+ DUP ' LIT = OVER
3 ' JUMP = OR OVER ' OJUMP = OR 0
4 VER ' (LOOP) = OR SWAP ' (+LOOP
5 ) = OR ;
6 : DEL3 2+ DUP @ SPACE . 2+ ;
7 : DEL4 DUP @ 2+ ' LIT = ;
```

SCR # 153

```
0 ( DECOMPILER SCR#153 )
1 : GCHK DUP @ 2+ ' COMPILE = IF
2 DEL1 ELSE DEL2 IF DEL3 ELSE DEL4
3 IF DEL5 ELSE DEL6 IF DEL7 ELSE
4 DEL8 ENDIF ENDIF ENDIF ENDIF -2
5 GIN +! ;
6
7
```

SCR # 155

```
0 ( DECOMPILER SCR#155 )
1 ELSE 12 = IF MYSELF ELSE DROP EN
2 DIF ENDIF GCHK REPEAT "+ DIN NFA
3 ID. ENDIF DROP ;
4
5
6
7
```

```

SCR # 156
0 ( DECOMPILER SCR#156)
1 : DECOMP
2 ."      Q=BACK TO FORTH" CR
3 ."      enter=DOWN ONE LEVEL" CR
4 ."      space-bar=NEXT WORD" CR CR
5 -FIND IF DROP 0 GIN ! (GOESINTO)
6 ELSE ." NOT FOUND"  ENDIF ;
7

```

"This is the wordprocessor software, and these are the books of instructions for it...."



PEEKING THE DRAGON (2) ... M. Stott.

Although I was critical of the user in my October article this month I intend to keep people in touch with the Dragon scene. To start with however can I appeal on Paul's behalf for SOMEBODY to give him a hand in preparing Update? If he shuts down the Group I'll have no-one to publish all this!

To those of you in the North West can I bring your attention to The North-West TRS-80 Users Group. Formed in 1979 in a pub in Garswood it now caters for a wide range of computers although about 40% of members own Dragon or Tandy machines. Meetings are held on the last Wednesday of the month at Barton Aerodrome at 8PM and this venue is very convenient for the M62. Here you can have a drink while listening to very interesting talks about general computer topics like Logo and Databases. After an hour the time is your own and Dragon owners usually collect together to discuss their problems. Brian Disley is the Secretary and can be reached at 190, Turks Road, Radcliffe, Manchester, M26 0NW or on 061-723-5033.

Now a look at the software scene. Leaving out imports we have not had an outstanding game for ages. Talisman never appeared and Total Eclipse was marred by bugs though I believe the version obtainable from John Penn is free from them. So we go back to Beanstalker and Wintersoft's Rings trio. When I first heard about Rally I thought "On no! Not another text adventure with added pictures." How wrong could I be. This promises to be a real cracker. It is based on a car rally and you drive around looking for clues and believe me some devious thinking has gone into this one. Examining is done with a cursor moved around the screen. The street scenes are very good and I have enjoyed it even though it is not a full working copy and I have not had the clues that the purchaser will get. Rally should be out from Pulser in time for Xmas and I hope a copy is in my stocking. I appreciate being asked to give my opinion on it prior to release and wait to see how much of my advice is taken. Unfortunately due to it's size it will only be available on disk but pirates beware - Pulser have perfected an anti-piracy device so don't complain if you wipe out any disks should you copy any programs. The same firm has also just released Diskbase for 2.99 and you can catalogue your disks just by inserting them into the drive. The alphabetical sort means that you can have 600 titles for each letter. (Will my collection fit I ask myself)

After the demise of Microvision the Cartwrights were left without an outlet for their software but now Pulser have stepped in and taken over these titles. Bob Preston tells me that they will be putting out young Jonathan's Rolaball in November and possibly at only 3.99. Prestons have also got three other releases imminent and this has got to be good news for us. Unfortunately I have not been told of releases from other companies but watch Update for news. If there are other releases due please tell me and why not send a copy to Richard Boston for review.

If I do not get views and snippets from the user and the companies I will have to revert to Poking the user so please write to me so that I can leave the moans to Paul. (Sorry Paul but you are so much better at it than me)

MEMORY MANAGEMENT ON THE LARGE DRAGON

PART 3 : FLIP-FLOP, FLIP-FLOP

Last time I described the heart of my MMU, the mapping-RAMs and their multiplexors. In this part I describe the map-switching circuit - a simple circuit with a complex explanation!

The MMU has two basic states, (mapper switched in or out), which are set by altering a flip flop. For historical reasons I've made up this flip-flop from two NAND gates (half of IC11). The outputs from the flip-flop (STATE and NSTATE) are used to control the multiplexors (IC1 & 2) and the decoding circuits (see next time). The flip-flop is not toggled directly for two reasons: firstly, electronically, it's possible to get into a situation similar to sawing off the branch of the tree you're sitting on! Secondly, ethically, user programs shouldn't need to know all about the control registers of the machine - this should be left to the operating system. Switching out of the mapped mode is thus done indirectly, using software interrupts:-

There are seven interrupt calls on the 6809. Four are hardware-initiated - reset, nmi, firq, irq; three are produced by software-calls - swi, swi2 & swi3. (OS9 uses swi2 for its system calls). Each of these causes the 6809 to stack all or part of it's internal registers; it then indicates that it is acknowledging an interrupt, by raising "bus status", (BS, pin 5 of cpu - valid at leading edge of the Q clock). At this point the cpu is looking for an interrupt vector (ie the address it will jump to next), which it fetches from an address between fff0 and ffff. by switching map modes at this point we can insure that the cpu will arrive at a known address in the operating system

(unmapped) space, where the O/S is then ready to offer its services. My design can be set up to map switch on all seven interrupt calls. However, I have generally found it more sanitary to be able to limit the switchable calls to reset and swi only. This is because the few lines of code immediately after the map switch must not themselves be incorruptible, because the Stack Pointer is still pointing to the user stack and so needs saving and reloading. (Only nmi can interrupt after swi, and that's only used on the Dragon in the innermost disk read-write loops). The two different modes of operation (switching on all interrupts or on reset + swi only) are controlled by the setting of the second flip-flop (rest of ic11).

To go back cleanly from unmapped to mapped mode it's useful to provide a few machine-cycles delay - this allows the cpu to pick up an instruction (usually a JMP or RTI) from the O/S memory space, but to execute it in the mapped workspace. (The usual RTI-sequence is to turn the interrupts off, reload the SP to point to the user's stack, set the delayed map switch and then pick up RTI. The MMU then map-switches, so that as the cpu executes RTI it correctly unstacks the user's machine registers from the users stack, in user work-space.)

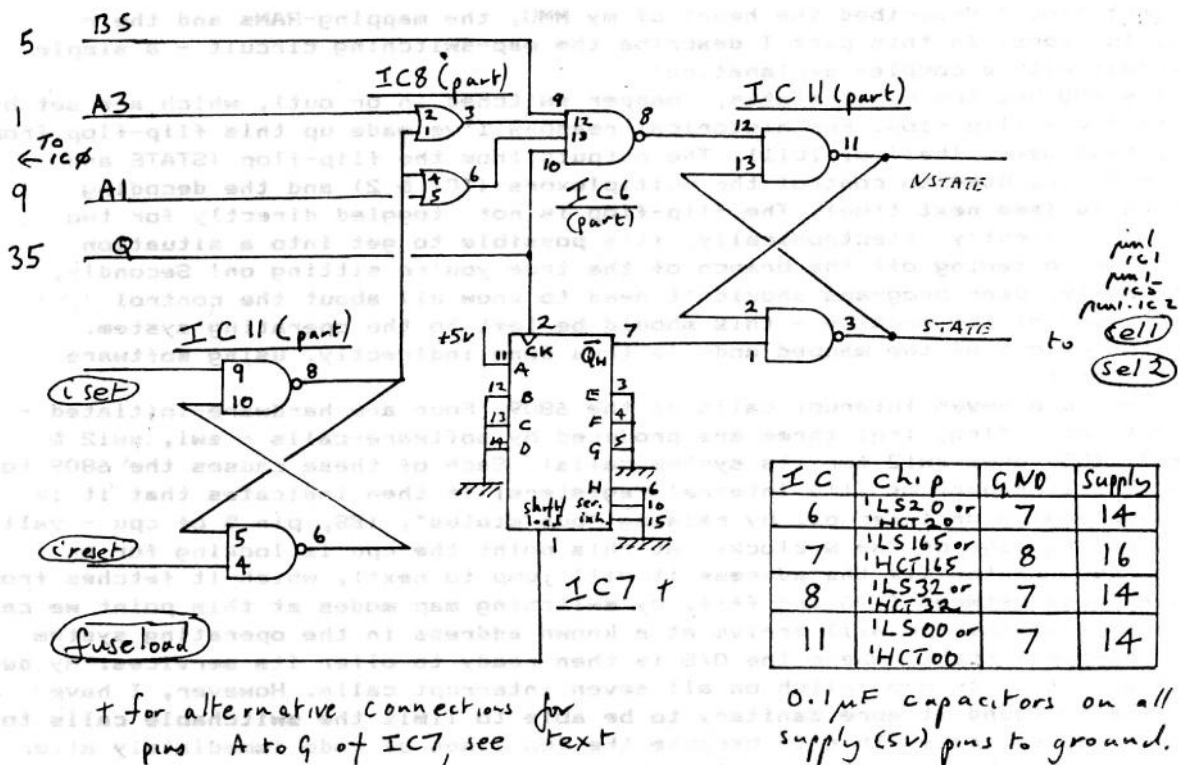
The delay is achieved by the shift register (IC7). Normally the register is pushing through zeros from its grounded serial-input (pin 10), under control of the Q clock (on pin 2). The inverted output (pin 7) thus remains high, and so doesn't switch the flip-flop. By loading a 1 into the nth stage of the register, the inverted output will be made to go low n-1 cycles later, and the flip-flop will then be set (STATE=1, NSTATE=0). I've shown this register wired to always give a 6 cycle delay, thereby removing the need to connect to the cpu data bus - it's possible to pad out extra cycles before loading RTI (1 cycle) by a combination of the NOP or BRN orders. If you use HCT logic here, you may like to wire IC7 so that inputs A to G of the shift register are loaded from the databus; however, you should keep input H (pin 6), the serial input (pin 10) and count-inhibit (pin 15) grounded. (note that since ic7 is a shift register, not a binary counter, it's the first bit to be shifted into the output stage that sets the delay - so loading 2, 6 or 130 all give only a 1 cycle delay).

Phew! ... next month, the final hardware episode Bob Hall



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Map-Switching Circuit for Mk I M.M.U



SCREEN INVERT (D32)..Jules Elias.

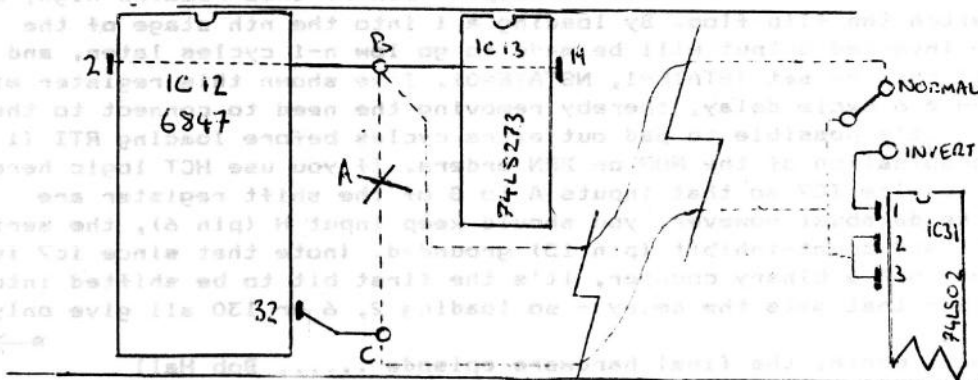
For those (and they must be many) who would prefer green letters on a black screen, here is an easy way to achieve this without any software and very little changes on the inside of the 32. The idea was taken from a newsletter of the Belgian 6809 Group.

First, you have to remove the main PCB by undoing a few screws.

Then locate the two plated-through holes B and C. Make a small cut on the track joining B and C on the underside of the PCB.

Get a miniature SPDT toggle switch and connect it to B, C and pins 1, 2 and 3 of IC-32 (74LS02). This switch can be mounted either side of the cartridge slot.

This should not prove too difficult to realize and it has the advantage that your 32 can easily be put back to its original state if this was eventually necessary Jules (G4VHB)



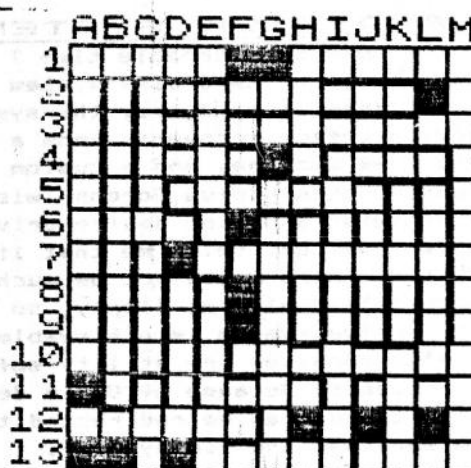
CROSSWORD NO.28 COMPILED BY J.D.BATEMAN

ACROSS:-

1A)Map book. 1H)Mad house. 2C)Found in a cassette box. 3C)Glasshouses.
 4C)Dislike intensely. 4I)Chess Piece. 5D)Type of pump found on equine
 accessories. 6B)Unit of resistance. 7F)Can be printed on a board. 10F)Graphic
 utility advertised in your favourite publication. 11E)Famous cricket ground.
 11J)Certain brand of flour. 12A)Software produced by Metasoft. 13E)Light
 amplifier. 13J)Bruce Springstein is known as the

DOWN:-

A1)Unit of pressure or gaseous envelope surrounding the Earth. B1)Heat
 measurer. C1)Helps prevent shipwrecks. C11)French word. D8)Fairly Tiny. E2)Not
 a number. E8)Whales may learn in this. G6)Sketches accompanying text. H11Pain
 in the head. H6)Rugby player found in a pit. I4)Person visiting several
 hostels on his hands and knees. J5)A dried plum. K5)A glass block which
 refracts light. K10)Nothing. L5)All in tree. M1)Place a compass point in Als
 mouse like to produce something consisting of various kinds.



EASY MACHINE CODE (15) ... R.A.DAVIS

A good exercise is to make a printer dump for a dot matrix printer. My printer is the DMP105, which is a seven dot machine, and even if yours is not the same, you will be able to follow the assembly listing. This introduces some new opcodes. I shall use PMODE4: PCLS1: SCREEN1,1: as the screen to be dumped. This is 256 x 192 pixels, and the scan will be from top left to bottom right, horizontally one pixel at a time and vertically seven pixels at a time. As 192/7 leaves a remainder of three

1. Setting printer to graphics mode
2. Make stores for information to be saved and used
3. Save information about the start and end of the screen
4. Provide a C/R command

5. Store the cumulative number needed to set the dot matrix of the printer. The DMP105 needs 128+1 for the top dot, 2 for the second, 4, 8, 16, 32, 64 for each of the others, and combinations of these for setting particular patterns of dots. Setting all seven dots would need 255, while 128 would set none of them.

6. Count each byte of 8 pixels as we move across the screen, so that the next byte will be accessed at the proper moment. The BITA opcode will be used to test for set pixels, and this will need a store of one byte (8 bits). The store must be loaded with \$80 (10000000 binary) to test the first pixel of each byte. To test the second pixel we LSR - logical shift right - this store, which then becomes \$40 (01000000), and continue this LSR until the whole byte has been tested. At that stage the store will be \$0 (00000000), so that testing it for zero will indicate that the next byte should be used.

7. Count each row of bytes so that we can detect when to move down seven rows, for the next horizontal scan.

8. Detect the end.

9. Make a subroutine to send the commands to the printer. We shall be using the X register to "point" at the screen addresses, and the A register to hold the byte. The address in the X register will be changed using LEAX - Load Effective Address X. BITA will be used to compare the A register with each pixel. The B register will be used as a counter for each row of 32 bytes. The U register will be another pointer for printer routines, allowing the A register to get the commands. Several types of BRANCH instructions will be used :- BRA = Branch always, rather like GOTO. BNE = Branch not equal (to zero). BEQ = Branch equal (to zero). BHS = Branch higher or the same as. The other Opcodes will be LDA, STA, ADDA, LSR, LDU, LDX, STX, CMPX, LDB, CMPB, PSHS, PULB, and JSR. You might like to look these up in one of the recommended books. Using the DASM assembler, we'll start next month, with full comment as we build it up.

HARD DISK SYSTEMS . . . ROGER MERRICK

For some considerable time I have been trying to find the time to write a bit about the Hard disk system I have running on my expanded Dragon 32.

In terms of hardware, the system consists of a 10Meg half-height Seagate, a SAI interface recovered from a Honeywell IBM compatible, a power supply from the same machine, and a custom board, designed, built and installed by (very busy) Dragon genius Gordon Twist.

Mr Twist supplies device driver and descriptor software to run the whole lot under OS9, but tells me that it could be possible to run it from the native system. There would not be much point, I think, since the OS9 system works much better with a floppy, so the improved performance that it offers over the native system is achievable.

Also supplied are utility software such as Hard disk format, and park commands. Because of OS9's device-independent I/O, all relevant commands (that I've tried) can be redirected to utilise the hard disk as the storage device rather than the floppy disk.

Cost - the "real" world of IBM compatibles has moved on so that 5 and 10 Meg drives (and increasingly 20 Meg) are too small to be useful when typical applications packages consist of a megabyte - upwards of code. Existing stock are being dumped out at a cost of around \$100. However, make sure that in any deal you do, a comprehensive guarantee is provided. Hard disks are very

delicate machines. You should also examine the device before you buy it. There should be a "bad sector" map stuck to one side of the machine, and you should try to choose one with few bad sectors.

The SASI interface and the Dragon interface, installation, software and help cost me \$100. An additional cost will be the power supply - the Dragon drive power supply is not adequate to drive the hard disk.

Amongst the many drawbacks attached to using OS9 with a single sided 40 track floppy, is that such a small amount of space is available on a single disk that you can't store an application, and a decent set of commands and much data. With the hard disk, 40,000 sectors are available at format.

Loading and saving is so fast you don't notice it happening! Gordon Twist's drivers are fully interrupted so that even when reading or writing the hard disk, the type-ahead in the keyboard buffer continues to work.

There are drawbacks of course - one of the reasons that my proposed article on this subject has never materialised is that on two occasions it has been half written and then a power failure has caused a corruption of the hard

disk, requiring reformatting. Obviously, one should have backups, but floppies are an extremely unattractive proposition, since a single directory may contain files in such a number or of such a size that the storage space of a floppy is exceeded. What is required is a tape streamer (or a backup hard disk - the controller card allows the connection of a subsequent drive) but these are still expensive. A possible substitute would be an OS9 driver for the Dragon cassette port - has anyone written one?

A further drawback is that (so far) one cannot BOOT straight into the Hard disk, but must BOOT from a floppy. It would be possible to store appropriate BOOT routines in the upper 8K of ROM space in the cartridge port, and EXEC the relevant address (I wouldn't know how to do this). At present, I use a floppy with a Startup file that transfers over to the hard disk.

Another, is the application software supplied by Dragon Data which has been written to assume (floppy) Drive 0 for I/O. Again, a suitably motivated genius could do the necessary zapping, but I don't qualify.

The hard disk becomes such a crucial element of the system that the term "peripheral" doesn't do it justice! In a (relatively) recent article, PCW referred to the hard disk as the "heart" of the machine. As one couldn't imagine doing without one or more floppies, so the hard disk comes to take this crucial role.

I become increasingly frustrated by the other drawbacks with the OS9-Dragon system, to wit, the inadequate memory and the poor display.

I welcome correspondence on this subject. (I will forward letters to Roger...BC)

COMPUTER LITERACY PHIL BEED

In response to Pauls recent piece about schools and computers I can only agree. I bought a computer as an adult to play arcade games and gradually became involved in the more serious aspects. I have picked up bits and pieces here and there and read things in books and magazines, but I would never consider myself an expert. What a shock then when I returned home and talked to my younger brother who attends a school with thousands of pounds worth of computers and has supposedly been taught about them, and even worse, his friend who is doing computer studies. I was looking forward to a stimulating conversation, even expecting to be lost by them, instead the moment I left games and tried for memory addresses, hex numbers, data bus, assembling in fact anything that wasn't Manic Miner I lost them. To try and flag some enthusiasm for what is going to be an important area for them as school leavers I tried to explain some simple areas like Operating systems, interrupts, disk random access, all in the simple terms in which I understood them but to no avail.

My feeling is that computer studies are treated by pupils and students as an opting out subject, one in which not much work needs to be done in order to get a break from the heavier academic subjects. When I was at school, automaintenance fitted that bill, very few of those attending really wanted to learn about cars, and I suspect with the exception of those who went on to work in the motor trade, most still wouldn't be able to change the oil on their cars despite two years on the subject. I think computers may have achieved the same status without the need to change into overalls and get dirty.

I would not suggest for one minute that life cannot be lived without a knowledge of computer, but no-one can disagree that where ever you go to work there is a high possibility of there being a computer about. Jobs are no longer easy to find and anybody with an edge over his opponents is going to keep afloat for longer and understanding and being able to use computers (any computer not just the BBC at home) could well be that edge. Anyone who has the opportunity to gain this knowledge and who passes it up can only blame

themselves when the only computer they are on is that of the DHSS, similarly, teachers should get together with computer users in the real world and recognise exactly what youngsters need to learn in readiness to leave the machines of the classroom and earn a living in the employment of the many firms which use computers in such a wide variety of ways for a wide range of reasons. Just to add a touch of humour to the subject, I asked my brother to get me a disk drive cleaning kit for a present, he visited LASKYS which sell a lot of computer equipment and asked the salesman for what he wanted, to which the salesman replied "It must be something to do with the laser! No I'm afraid we don't have one sir?" I don't know what he was on about but I wouldn't buy a computer from that man!

If I may put my oar in and give this topic a stir... I have had the pleasure of studying the O level GCE Computer studies course and I certainly was taught all of the terms mentioned (and millions more!). As for opting out ... well - those who wanted to opt out soon left the computer class when they got left standing in the first week.

Many jobs require a familiarity with computers but that is usually it - All you really need is to know how to type and how the particular package you are using works. I realise it would be better to know more but how deep a knowledge do you need (especially with a user friendly program)?

Part of the course I studied included a trip to a large computing company which was not only interesting but informative too. I think that we must realise that the computer scene is changing so rapidly that it is nearly impossible to keep the syllabus up to date with the technology but if people are going to be working with computers in any detail, they will probably take some sort of degree course or at least an A level.

Anyway who am I to argue - any other views on the topic please write
Barry.

DATA RETRIEVAL SYSTEM-GROSVENOR SOFTWARE

There are numerous databases available for the Dragon and if a choice is to be made then my recommendation would be DRS (Data Retrieval System) from

Grosvenor. It's normal price is #10 but at the shows recently, it was selling for as little as #3.50 and Microdeal were selling it for 50p which is

excellent value. It comes on tape but don't let this fool you, it is written in non-autorun machine code and is easily transferred to disk, the addresses being supplied in the manual. In use it supports tape or disk based files so one program should suit all, added to the fact that tape and disc users of DRS can swap useful files with no problem, or the upgrader to disc can easily transfer all his files. Loading files from tape is however a little slow so patience would be required. To create your files you first design a screen using the full screen editor. You may have 26 character fields, and 10 numeric fields which should be more than enough. Once designed you start entering your data, this is sorted into alphabetical order as it is entered so it is very fast. the program is very flexible in that if you want to alter the screen design changing or removing fields, or altering titles, then you simply

redesign your screen and it loads only the relevant data, a use for this could be a duplicate smaller file holding key information. Entries can be searched for by any field, and full details need not be known, searching is very fast. Typically a file would hold about 200 entries (depending on field sizes) on disk the file can be 8 fragmented files, and as loading can be selective (eg load all files with comedy in category field) all 8 fragments can be used

together as one file. A printer option is included and again the screen editor can be used to design the fields you want to output to the printer and the format. To my mind this is the most flexible data base available for the Dragon, and even at its full price it is cheaper than many inferior products.

DO YOU ENJOY RAG TIME ? R.A.DAVIS

Dave Cadman's disc of Ragtime music, using the Composer utility, popped through the letter box the other day. It is also available on cassette. If you enjoy Ragtime music or if you want to demonstrate the capabilities of the little Dragon to your friends then here is around 19+ minutes of your favourite Scot Joplin, arranged excellently by Dave. All the arrangements are much longer than the Composer program normally provides giving a better than usual performance of each piece with this utility. The first tune, The

Entertainer, lasts for 4 minutes 20 secs approx. It is delightfully arranged. The second, equally fine, is Maple Rag, lasting for 4 minutes. Thirdly, the Magnetic Rag, another of my favourites, which takes a mammoth 5 and a quarter minutes. Then Beaumont Rag which is 2 minutes 20 secs of delight, followed by Newrag at 4 minutes length, and finally Ragtime, about 4 minutes 20 seconds. The disc has a PLAYALL utility reminiscent of John Cox's Discmenu, which

enables the selection of any composition by entering a number corresponding to the title. My only criticism of the whole performance is that Dave did not use the "Graphics Off", as I personally do not like the screen with the graphics block characters, a short machine code program added to clear the screen and put up the title of the piece with a copyright logo would be an improvement. But some do like the coloured blocks, I suppose, and they do not detract from the very excellent quality of the arrangements. This is a disc I shall treasure.

The Good Old Days?

As those of you who were at the London Show will know, we now have two VERY good music selections from R.A.Davis, a "Victorian Songbook" and a "Comic

Songbook", both of which display the words on screen while playing the tunes. He has generously offered to donate ALL the proceeds from sales to Group funds, and all he asks is that you send a pound coin plus a DragonDUS (V1.0) formatted disc and suitable stamped return packaging for each selection ordered.

Orders MUST be sent direct to:- R.A.Davis esq, 39,Boxley Drive, West Bridgford, Notts. NG2-7GQ.

WARNING!!!!

Sorry about this, but I have to be serious for once. I've been asked by some of our members in the software business to pass on a warning. I'm not going to name any names on either side at this stage, those concerned know who they are, but I would suggest that those concerned take immediate steps to correct the situation.

It appears that at the London Show one of the groups was giving out copies of commercially released software, presumably under the impression that because they had adapted it to a different format, it was then "Public Domain". Now this is most certainly NOT correct, nor is it legal. While I'm sure than no software firm would seriously object to you adapting their program to a

different format, tape to disc, DragonDOS to DeltaDOS, or whatever, or even to you giving the occasional copy of your adaptation to a friend, the fact still remains that in ANY format the program is still copyright to the original company / writer, and anyone wishing to distribute it in ANY form must first obtain permission to do so, and it makes no difference at all whether you are giving the stuff away or selling it!.

The message I've been asked to pass on is, in effect, "Stop it now, or we'll see you in court", and to be honest I can't say that I disagree with the attitude. At one time, when software companies were charging the earth for rubbish, I would perhaps have thought differently, but the Dragon market is so small now that ANY firm writing for it simply has no alternative but to protect its interests.

Public Domain software is definable as programs distributed free or at a nominal charge BY THE WRITER, usually with a written permission included permitting further distribution, IT IS NOT, UNDER ANY CIRCUMSTANCES, COMMERCIAL COPYRIGHT PROTECTED MATERIAL. By all means start a "PD Library", but make very sure that the material IS "PD". OK?.

Now I've been very careful to avoid naming names this time, but it's only fair to warn you that in this I'm on the side of the software companies, so please correct the situation before they invoke the Law and I have to report in more detail.

Paul G.

COMPETITION TIME AGAIN!!

This time I think (I hope!) I've managed to come up with a REALLY difficult one for all you programming experts to solve!.

Ever heard of "sub-lim" advertising? ... the idea of flashing a single line message onto a screen so fast that it can't be "seen" in the accepted sense, but still registers on the brain?. A lot of work was done on the subject back in the days when everything was done on film, mainly by using one frame in every five hundred or so for the message, but so far as I know no one has seriously tried anything similar on computer, hence this competition.

What I want from you is a routine (in Basic or Assembler) that will allow the input of a message line, and then flash it on screen at a suitable speed and frequency. Easy, isn't it?!. I've tried, and failed miserably, so let's see how good YOU are.

The best (most efficient) entry will win you a tenner, and you will probably be able to make a fortune selling the idea to software companies who want to include a sub-lim "buy our programs" message in everything they send out!!.

Cheating IS allowed, if you can write a routine that works well enough to convince me that you've won while I'm testing it, how can you lose?!. You have until January 31st to get your entry in, so what are you waiting for, get writing!!!!. Paul Grade

Be Alert ..We need more Lerts.

FLEX, Printing on the DMP110. R.Hatton

Flex automatically issues a separate LF (0A) and CR/LF (0D) after printing each line. This can cause double spacing on any printer not equipped with the necessary DIP switches. The DMP110 is one such printer, and to overcome this problem a revised printer driver is required. Such a program is listed here. In this listing the code for CR/LF is changed to that required for a CR with NO linefeed prior to being sent to the printer. One problem however is lack of space in the reserved area of memory. Extra space has been utilised in the area BFF0-BFFF and this must be protected by resetting the memory-end pointer in the STARTUP.TXT file.

Assembler listing of printer driver: 0.PRINT.SYS

```

ORG    $CCCC      ^   ORG    $CCE4
LDA     $FF03      BSR     $CCD8
ANDA    #$FB       BPL     $CC4E
STA     $FF03      PSHS    A,B
LDB     #$FF       BSR     CCC0
STB     $FF02      PULS    A,B
ORA      #$04      LBSR    $BFF1
STA     $FF03      RTS
RTS
CLR     $FF20      ORG     BFF1
RTS      CMPA    #$0D
          BNE     SKIP
          LDA     #$1A
          STA     $FF02
          LDA     #$02
          STA     $FF20
          LBRA    $CCD3
          COMB
          PULS    B,PC

```

Modified file - STARTUP.TXT

TTYSET BE=8:ASN W=1: MEMEND BFF0

The Late, Late, Bit.....

Well, that's about it for this year. I don't know what it's been like for you, but personally 1987 has been a year I could have done without!. I really will have to get the "workforce" problem solved for 1988 or this Group is going to disappear under the weight of its own paperwork!. One curious point that you may be able to explain for me is that almost without exception the people who HAVE offered practical assistance have been among our more elderly members, many of whom already do more than their share for the Group, while there has been a deafening silence, broken only by the sound of feeble excuses, from our younger members. WHY?!. I thought that (according to all the "experts") computers were the exclusive province of the current generation of brats, yet from here it looks very much as though their main interest is watching others do all the work for them. How about some offers from our "under 17's" for a change? ... minding a copier doesn't require a great deal of energy or expertise, nor does filing and typing in material ... and no, I don't believe that you're fully occupied every weekend and holiday!. It's your group as much as it is mine, so how about doing something to keep it running?. Like 10 days in the factsheet, we have NO staff, paid or otherwise, and the work doesn't do itself.

Well, don't all rush at once, I'd hate you to strain anything!.

One final point, There will be another Dragon Show at Cardiff Airport on February 27th. I'm afraid the Group won't be taking a stand at this one, but we should be at the following Show at Ossett on April 30th. OK?.

Paul G.

Classifieds & Special Offers Ads.

DRAGON MUSIC!!!!. A selection of music on tape or disc, arranged by Dave Cadman and produced by him on a specially extended version of Composer. The tunes are divided into four categories, "Rags", "Classics", "Standards", and a "Miscellaneous" selection. This month's release is a "Christmas Special" selection, but "Rags", "Standards", "Classics" and "Miscellaneous" are still available. If you haven't heard one, buy now!. Prices are TAPE 3.50, DISC 4.00, inclusive of postage. Orders to Dave Cadman at 32, Brendon Hill Road, BERTY DE3-6TG.

FOR SALE. Cheap Dragon software on tape, disc, and cartridge. Please phone for details. (half the proceeds to the Copier Fund!). Phone 01-658-8379 any evening.

FOR SALE: All Dragon User back issues. 1.00 each. Phone P.N.Jones on 0304-270985.

Help wanted!. Manual required for FT50000 printer, also wanted a DELTA or Cumana DOS cartridge. Must be cheap!. Phone George on 0332-71309.

Hardware Bargains!. Dragon 64. 70.00; DragonDOS cartridge 30.00; 40 track SS disc drive, cased and complete with supply. 40.00; 40 track DS bare drive. 50.00; 80 track DS full height bare drive. 70.00; Philips greenscreen monitor. 35.00, Philips greenscreen with tilt and turn base. 50.00; 2 acoustic couplers. 15.00 each; D64 main board. 25.00; D32 main board. 15.00; Twin drive housing, with PSU, fan etc. 75.00. BOOKS... Inside the Dragon, Zaks, Leventhal, all at 5.00 each; All OS9 manuals except System and Cash/VAT. 30.00 the lot. Reasonable offers considered on any items. Phone Kevin on 0772-748145.

HELP!!!. Can anyone tell me where I can get spares for a Seikosha 108A printer, or do you have a scrap one for sale? I also want a good second-hand printer at a reasonable price. Phone Eddie on 0604-582639.

WANTED. Any software for B32/64. All interests. Geoff Rodsley, 253, Park Road, Heage, Belper, Derbyshire DE5-2AB.

Dragon 32 in full working order complete with tape recorder, two B.Data joysticks, and lots of software, many books and copies of Dragon User and Update included. The lot for just 50.00 including delivery. Phone Steve on 0272-791289.

FOR SALE. Dragon 64 plus various games, books, etc. 75.00. Phone Bob on Southend 523951.

Has anyone got the two OS9 accounts packages sold by Compusense about a year ago? Phone Chris on 091-416-5415.

WANTED!. Touchmaster Touchpad, reasonable price please. Phone Chris Jobson on: 091-416-5415.

Scrap Dragons and CoCo's wanted for spares. **MUST BE CHEAP!**. Phone Alan Butler on 0371-4234 (evenings only please.).

Three Casio electronic printing calculators for sale, one with built in calendar. 14.00 each. Two racks with baskets (office type) 8.00 per set. One wire catchframe for printer paper. 6.00. Phone Graham Strong, Worthing 48575.

Basic 09 10.00; OS9 System Programmers Manual 15.00; One Dragon Data disc drive belt,, NEW. 2.00. Spare Manuals for Stylograph, Basic09, RMS, Dynacalc, and "C". 2.50 each. Please phone Peter on: 0732-840153. (evenings only).

New Program!. Gives facts on the countries of the world. Areas, Capitals, Populations, Currencies and Languages. Includes analysis facility and map showing the position of the country required. Available on disc or tape at 4.00 inclusive. Also available is a very comprehensive Home Accounts program at the same price. Write to Graham Strong, 78, Coleridge Crescent, Goring-by-Sea, Sussex.

Basic Programs Listed. 1 Program Listing...75p. up to 4 pages. Additional pages 5p. each.

2 or more Programs...50p. each.

ALL tapes and listings will be returned as far as possible the following day...

E.V.Hale, 'Rose Cottage, Hungerhill, Coolham, NR.Horsham, W.Sussex. RH13 0BE.

MODERN PACKAGE SPECIAL!!!!. Complete package for D64 owners, comprising of a Prism Modem 1000, connecting lead and software to access Viewdata and all scrolling type BB's. The modem will operate on 1200/75 baud for Prestel, and on 1200/1200 for user to user operation. The price for the complete package is ONLY 35.00 to Group Members, 40.00 to non members. Cheque/PO or cash (registered post) to T.Hayton, 36, Laurel Drive, Villalston, South Wirral L64-1TW.

Games to disc transfer...Unprotected game code of any game sent in return for a blank tape and 22p stamp, but you **MUST** include the inlay card to prove you have bought the original. Contact M.R.Vine, 120, Auriel Avenue, Bagenham, Essex RM10-8BU.

FORTH OPERATING SYSTEM: Simply the best there is. Written by John Payne, and available for DragonDOS, Superdos, and 00 or 03 BeldadOS. Available ONLY through the Group. 8.50 inclusive. Orders/cheques to the Group, 6, Navarino Road, Worthing, Sussex.

Circuit Sheets: Available for B32 (most variants), D64, Dragon DOS controller, and Cumana DOS controller. All the same price 1.00 each. Cheque/orders to the Group. 6, Navarino Road, Worthing, Sussex.

Dragon Upgrade manual: 32/64 conversion method fully explained so that you can upgrade your 32 yourself without difficulty. Written by Bob Hall and available only through the Group. Price 2.00. Cheque/order to the Group. 6, Navarino Road, Worthing, Sussex.

Delta DOS utility: A m/c utility to copy all BASIC and m/c files from disc to tape in one operation. BASIC listing of loader and Hex dump 1.00 or on cassette for 2.50.

J.C.Bussell, 33, Tennyson Avenue, Clevedon, Avon BS21-7UJ. (0272-875328).

OS9 MODEM PROGRAM: Up and downloading of files. Any Baud rate from 50/50 to 9600/9600 (but not multiple rates). Up/Download buffer from 4k to 32k or program will adapt to largest capacity available. All other 6551 options supported. Price 8.00. Please phone Barry Knapp, 0932-242800 evenings only.

BRWEZEE! A graphics drawing program, on tape, which we think is one of the best!. Written by R.A.Davis, it must be a bargain at 2.50 including postage. Orders to Paul Grade, 6, Navarino Road, Worthing, Sussex.

DRAGONDOS EPRONS: Your DOS 2764 reborn to 'patched' V1.0 specification, or to Eurohard V4.0 or V4.1, or to PETER WILLIAMS TRANSLATED & DEBUGGED ENGLISH VERSION OF V4.1. Price for any version just 3.50. Computil, 24, Jays Mead, Wotton-under-Edge, Glos. GL12-7JF.

BACKDATE UPDATES: Copies of all earlier Updates available from John Cox, 3, St. Peters Road, Portslade, Sussex. (0273-422492). (Chris Channing, is currently having copier problems!).

BDCOPY: DragonDOS to OS9 file copy utility. Includes 'Telewriter' & Basic conversion filters....8.00.

CON89: OS9 comm. program. Xmodem (CRC & SUM), multiple upload modes, monitor buffer, function keys and more!. Suitable for any OS9 system (CoCo needs ACIA-Pak) and includes source files....8.00.

PD-PAK: Selection of useful public domain OS9 utilities on one disc....5.00.

Jason Showler. 70, Victoria Road, Parkstone, Poole. BH12-3AE. (0202-722599).

SPECIAL PRICE FOR 13th.TASK from ARC Software. Special reduction ONLY applies until 31st. January!. ONLY 1.99 inclusive of postage and packing. "A great adventure...go and buy it" (Update 12/86). Don't miss this never-to-be-repeated offer!. Send now to ARC Software, 272, Mearns Road, Newton Mearns, Glasgow G77-5LY.

PRINTOUT SERVICE.

1 BASIC program listing (up to 5 pages). 50 pence.
2 or more programs 40 pence each (up to 5 pages). All additional pages 5 pence each. (5 pages = app 250 lines).
Screen dumps 30 pence each, 2 or more dumps 20 pence each. (dump size appx. 4" x 4.5").
Text files, data files, BREAM source code files, please enquire.
All tapes or SuperDOS compatible discs (GMLV) must be accompanied by suitable stamped addressed envelope to hold tape/disc and printouts.
All enquiries must include SAE. 24 hour return service where possible.
Contact Z.Green, Aberllynid, Insh, Kingussie, Inverness-shire.
PH21-INT.

NEW DRAGON USER GROUP! Tommy Strand has just started a new Dragon User Group in Norway, called the Nord-Morge Dragon Brukergruppe (NMDB). They are now recruiting members from all over Norway, but of course would welcome Dragon owners from any country. Membership fees are 100 NKR per year, and in return you get a newsletter called Dragon Brukernytt from 6 to 10 times per year, and also access to the group's FREE Software Library!! The newsletter will have the usual articles and ads, and the group intends ordering software in bulk quantities both from Denmark and England in order to obtain low prices. If you want more details and a FREE newsletter, write to:- NMDB, Hamservien 130 b, N-8600 NO 1 RAMA, Norway.

GRAPHICS SCREENS... The Group Graphics Library, "DRAGONART" has a good selection of screens available now, so why not make use of the service offered? Why not submit YOUR graphics as well?, you could win a prize! All you need do is write for details.
Dragonart Library, 5, Glen Rd, Parkstone, Poole, Dorset.

NEUCOPY: A w/c tape utility program for the production of backup copies of w/c programs. Capable of loading either headed or headerless programs or sections of programs, and saving these in their original or alternative formats. Also allows easy tape positioning using motor on/off routines. Written by Stuart Mills, and available to Group members at 2.50 plus 25p postage/packing. Orders and cheques to the Group.

Tandy Speech/Sound cart. (as new). 30.00 or part exchange for half height drive (untested).
Jason Shouler, 78, Victoria Rd, Parkstone, Poole, Dorset. (0202-722599).

A NEW ADDITION TO NDUG FORTH. John Payne has now written a FORTH ASSEMBLER to run with the FORTH OS package. At the moment this is only available in V1.0 DOS, but other variants may be obtainable at a later date. If you already have a V1.0 version of our FORTH OS we can upgrade it to include the assembler package for just 3.00 simply return your ORIGINAL disc and a cheque for this amount. (Copies can NOT be accepted under ANY circumstances). If you do not yet have our FORTH OS, you can purchase the upgraded version for 12.50 inclusive. It includes all the original features, of course.
Cheques and orders to the Group, please, at 6, Navarino Road, Worthing, Sussex.



Enter the lost tomb of King Tutankhamun's father in this thrilling adventure game. Can you find the ancient Amenophis III's gold death mask as well as the fabulous treasures AND come out alive?

Real speech; full Hi-Res graphics loader and special "FREEZE" and "SAVE" facilities make PYRADVENTURE a real hum-dinger!

- PYRADVENTURE

PYRADVENTURE-An exhilarating new release exclusively for the DRAGON 32/64 computer.

Send a cheque or postal order totalling just £2.95 plus 50p postage and packing to T.Wheals at:-

23 Ashby Road
Thurton
Norwich
NR14 6AX

Tel. Thurton 378 (After 7)

DRAGON'S ROAR MAGAZINE

You probably don't believe all Simon Jones' claims in his advertising, any more than I do, (I have to read too many ads in this job!!) but whether you do or not, having read my copy of Simon's magazine I can honestly say that at 7.50 per year it represents very good value for money.

He has very obviously put a lot of work into the magazine, and it deserves to be a success, but that can't happen without YOUR help. The best magazine in the world can only fail if enough people don't buy it, so it's up to you ... why not give it a try? If you want more details why not write to Simon Jones at 37, Collins Meadow, Harlow, Essex CM19-4EN and ask for details and a subscription form. It's no use complaining that there's nothing for the Dragon if you don't at least take a look at what IS on offer!. Paul.

All the best for Christmas & New Year.