

The Newsletter of the National Dragon Users Group

DRAGON



UPDATE

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The Gaffer's Bit . . . . .

Firstly apologies for the lateness and poor quality of last month's issue. If ever there was a disaster area this was it, and I'm only surprised that issue 47 ever got out at all. Anyway, with any sort of luck this one should be back to the usual standard, and possibly even on time!.

As Stephen has so kindly pointed out in his Editorial, this issue marks four years of Update and the NDUG. From where I'm sitting it seems more like four centuries, but I suppose it can't really be that long, it just seems that way. As I didn't think the Group would survive its first year, or that it would ever get more than a hundred or so members, I suppose I shouldn't complain at the result, although I have to admit that there are times when I wonder why I ever started it at all!. (Last month was a good example!).

I warn you, do NOT take Stephen's suggestion of singing to me about it seriously!! . Anyone doing so will be immediately struck off the mailing list and their name and address passed on to the Spectrum Owners Club!. The nerve of it!, making suggestions like that and then scuttling off to France for a couple of weeks before I get a chance to see what he's written!. It may be the Editor that's "late" next month rather than Update!. Any more moves like that one, Stephen, and you'll find yourself on the mailing lists of Time Magazine, Readers Digest, the Young Conservatives, and Gay News!!.

Well, if THAT threat doesn't work, nothing will!. Still, I suppose next month's Editorial will be written in Franglais anyway, which will certainly confuse our French readers and leave everyone else convinced that my Dragon has scrambled it's ROM or something!. Personally I can't see why he wants to go off on these "educational" trips anyway, after all, France is only England with a different accent, (it is, didn't you ever see any Peter Sellers films?!), and has even fewer Dragons than England, so what's the point?.

Anyway, I'd better get the rest of these pages typed up if we're going to be on time, so as they say, Now Read On...

The Editor's Bit . . .

Not a lot to write about this month. We still need MORE articles, though! This is Mike Stott's first issue as our 'official' software editor, so please give him your support - his job's almost as hapless a THIS one!

Oh, by the way, it's our Fourth anniversary this issue - why not ring Paul up and sing Happy Birthday, or gently remind him if you write to him - He'll love hearing from you!...Stephen.

P.S.

If you want a stand at the Weston Show in December, either as an exhibitor or as a demonstrator, write to Andrew Hill about it NOW!. There's almost a "full house" already, but if you hurry there might JUST be room for one or two more. Don't leave it any later or it will be TOO late!.

## Peeking The Dragon (5).....Mike Stott

This is my first proper article as your Software Editor and I will start by letting you know what response I have had from the companies with regard to software for review. Up to now I have only had replies from 4 firms. They are Dragonfire Services, Compusense, Pulser Software and Orange Software.

Dragonfire sent me a copy of their adventure for beginners called The Bomb which gives you a choice of the level of difficulty to start with although this seems to be just the number of moves that you are allowed. You have to search for various parts to defuse a bomb and also find the instructions. This appears good value at 3.00 but a fuller review will appear later. The same company also sent me two pre-release versions of adventures called Diamond Manor and The Sunken Ghost which unfortunately appear to need a fair amount of work on them before they are ready for release.

Compusense tell me that they don't really have any new products for the Dragon but sent me a copy of their current comprehensive catalogue. Orange Software have sent me two ex-Microvision releases which both run only under Flex. The first is The Curse of Comarc which is a 47K text adventure which has over one hundred locations and more than twenty characters who move about within their own territories. The other is Sherlock which is described as a complete disk detective for Flex Dos. At 5.99 each these appear to be good value for money. Graham Smith, of Orange, asks me to point out that there is a 50P per order postage charge for their products. Full reviews of all the above will appear in later issues of Update.

The last program I received was Rally from Pulser Software. Brian O'Connor tells me that he has sent out a fair number of review copies of this but has yet to see a review in print and wonders if it is because most people are struggling to complete it. I have finished it, having played it before I received this copy. I must admit that it is a very difficult game to complete.

It is played similarly to a text adventure but you are greeted with a graphic display of the scenery which you can examine by moving a cursor round using the arrow keys. To really get to grips with this program you must imagine that you have a real car at your disposal and do everything you would do in a real car - or even don't do if you see what I mean.

As you move round the various scenes careful notes must be made of everything that is seen and many pitfalls must be avoided. The pictures on screen depict extremely well the street scenes and also other locations. I really enjoy a good text adventure and usually dismiss the graphics as being something added later as an afterthought but in this program they are an essential part.

When you feel that you have visited everywhere and gathered together all the clues you make your way to your final destination - clue within the game. There, if you can answer one simple question relating to the game, you are finally into the end part of the game which entails answering questions. For each right answer you are given a letter and having answered each correctly you must rearrange these letters into a word. Even now I still fail on this final part as the questions are not always the same nor are the letters.

As with all adventures frequent saving is a must as is watching your energy and fuel levels, which can be replenished although I played it for several hours before I even discovered the very basics of this. Examining just about everything is really essential although a lot of clues are easy to miss and some things are not needed. Most of the actions and clues are fairly logical when you really think about them although this game will take many hours of playing so don't expect to finish it at one sitting.

All in all very good value even at 7.99, disk only of course due to the size of the program.

I know of at least one graphic adventure nearing completion and several other items of software which will be released shortly and hope to bring you more news of these and others in the near future.

### OS9 Level 2 For the CoCo 3.

Although the CoCo 3 comes with super extended BASIC in ROM, it's performance is greatly enhanced by OS9, and hence Tandy sells OS9 level 2 for the CoCo 3 and have generated some very good OS9 software packages. OS9 Level 2 sells for \$80.00 and is supplied on 2 disks, one of which includes BASIC09. Level 2 greatly expands the capabilities of the CoCo 3, such as allowing definable windows, multi-tasking, and access to 512K internal memory. With this memory upgrade more than 20 modules are loaded into memory on startup. These modules include COPY, DIR, DISPLAY, ECHO, INIZ, LINK, LIST, LOAD, MDIR, MERGE, MFREE, PROCS, RENAME, SETIME, TMODE, and UNLINK. Notice that some of the modules that are included with Lv. 1 are missing such as DEBUG, SAVE, ASM, EDIT, and BUILD.

Tandy is now selling an extended Lv. 2 package that contains updated version of these and a full screen editor for an additional \$90.00. But many of the Lv. 1 v.2.0 modules and utilities can be used with Lv. 2, for example, SAVE, DUMP, EXBIN, BINEX and DEBUG work. SDISK, MODBUSTER, FLS and FASTBOOT also seem to work. The "X Commands" for Lv. 1 from Frank Hogg Labs. DO NOT work with Lv. 2.

Disk 1 contains, in the CNDS directory, MODPATCH to modify modules, MONTYPE to set up the monitor output, and TUNEPOR to set up the output ports. Disk 2 contains BASIC09, RUNB, GFX, GFX2, INKEY, SYSCALL, CONFIG, HELP, OS9GEN and RENAME.

After an initial evaluation fo Lv. 2 I have found it to have tremendous power, but as with all new software, there are hidden traps. The following describes some of these problem areas. Lv. 2 comes with a CONFIG routine to help create a working BOOT disk. In addition to device descriptors for drive 1 (called /do) and drive (/dl), there is a default disk drive call /dd which can be included on the BOOT disk using CONFIG. If you do not include /dd then you will not be able to access the modules, HELP and ERROR MESSAGES since they are routed from /dd. With Lv. 1, you only needed OS9Boot and a startup procedure to boot the system. With Lv. 2, however, you must include a CMDS directory with SHELL and GRFDRV, otherwise you will get a BOOT FAILED indication. It must also include COPY if you wish to DSAVE. Even though COPY is one of the modules initially loaded into memory, it must be in CMDS for DSAVE to work properly. I guess Tandy did not want DSAVE to be re-written.

One of the new commands in Lv. 2 is MODPATCH for modifying modules in memory with no intermediate steps. MODPATCH is very useful and a big improvement over editing modules with Lv. 1 which require long, complicated procedures. Unfortunately, the documentation given with Lv. 2 doesn't mention MODPATCH. This is strange indeed since it is very complete otherwise and gives very detailed descriptions of the other commands as well as the operations of OS9 Lv. 2. The HELP command will only give the MODPATCH syntax so here are a few tips about using MODPATCH. It MUST be followed by the name of a procedure file in the current data directory. This procedure file provides instructions for the actual patch or change. The first line of the file contains an "L" followed by the name of the module in memory to be patched. The next line of the procedure file starts with a "C" followed by the offset address to be modified, the value of the byte currently stored there and then the value of the byte to be stored there (all in Hex). Additional lines can follow, starting with "C" to modify several addresses. The last line of the procedure file MUST be a "V" so that verify will be run to update the CRC. As an example, consider changing the 35-track device descriptor to one for a 40-track single sided 6ms disk drive. The procedure file "40trk-6ms-mod" would look like this:-

```
L d0
C 14 00 03
C 18 23 28
V
```

With this procedure stored on disk, you type and enter:

```
MODPATCH 40trk-6ms-mod.
```

After the 40trk-6ms-mod has finished, you must CLOBBER a new boot disk from memory onto a formatted disk. You may the modify others such a dl or dd, or include all of them in the 40trk-6ms-mod procedure to change them.

As I find out more on Level 2, I pass on the information through Update-Randy Longshore.



## Slightly Untidy House...Keith Bean.

Guilt finally got me. I have been a member of NDUG for 2 years and my contribution to this essential lifeline has amounted to one very short article about Forth. The trouble was what to write. Then I thought of it. My favourite article in Byte is Jerry Pournelle's Chaos Manor. Why can't we have something similar? - it could become a regular feature! Anyway, here goes:

Ossett was fun. I hadn't been before and it was great to see so many people there. The problem was that I couldn't afford to buy everything I wanted! The best program that we bought (in my son's opinion anyway) was Lucifer's Kingdom from Orange Software - a really nice piece of arcade mayhem. We also bought Pancomms' Formula One - fun to play, but I can't overtake yet!

I decided to move from Delta to DragonDOS last year in order to be able to use Basic 42. Then I found that I couldn't use the old 35 track Shugart drives that I had had for some time. So I bought a 40 track DS Tandon from Display Electronics. Buying from them is rather different. Just call up their computer (01 679 1927), find what you want in the list (a pretty good retrieval system), enter your name, address and credit card details, and the stuff turns up on your doorstep in a couple of days. Are there any people there?? Anyway, the first drive was no problem - just plug in and go. A while ago I decided to get a second drive. The ordering and delivery were fine, but I made a mess of the installation. For most of the weekend I was sure that I had wrecked both drives, but in the end I discovered that they were more robust than I expected.

I was just too confident. It should have been straightforward, but I managed to connect the +5V line to a -5V supply! The fact which may be useful to other people is that after I realised my mistake and got the drives working individually I still had problems running them together. In the end, I discovered that you MUST set the addressing jumpers so that the drive which is physically nearest the computer is set up as drive 1

After that diversion, back to Basic 42 and KLIK. the system takes up 38K which feels like a large chunk of a single sided disk. Copying it to a double sided disk wasn't practical with only one drive but with two, and with KLIK to do the work, it was easy - well, quite easy. First I had to put the boot track onto the double sided disc, using Dragon User Jan + Feb. 1988. Then BOOT Basic 42 and KLIK on one drive and copy all 24 files. This would have been VERY tedious without KLIK. It's not a wild card facility, but picking up each file with the 'mouse' and copying them to the second drive was painless. So I now have plenty of room on the system disk and another drive as well. Luxury! I haven't yet made use of all of the facilities in KLIK, but it does drastically improve the user interface. If only I didn't have to go through all the setup routines each time, it OUGHT to be possible to store a default setting. HINT HINT Mr. Harris!!

...To Be Continued!...

## Telecom Gold+Prestel+Flex revisited.

Re Update 41, page 6 : accessing Telecom Gold from Prestel using Flex's Vdata. The suggested poke did not work, so myself and Stuart Mills put our heads together and found that poking A8AD,23 produced a carriage return when <ENTER> is pressed, <#> reverts to normal, pressing <CLEAR> sends <X> as before and Telecom Gold is accesses OK...Simon Davis.

## Crossword Prizes!!.

Thanks to a VERY generous offer from Andrew Hill we can now offer even more incentive for sending in your crossword entry each month!. As usual we will be giving a tape, usually a games tape, for the first two all-correct entries out of the box, but as of now the FIRST winner gets a voucher entitling him or her to pick a tape from the current Dragonfire list ... the second gets one from our collection as before.



Toolkit For Dragonos(3) . . . D. J. Gray.

Last month we had Listings 1 & 2. The latter dealt with modifying the FRAME, MOVE & CLS commands. Lines 230-290 dealt with these patches, which are called by inserting 2 Long Branch to Subroutine commands in lines 300-370. Having added the patches and made the modifications it is now possible to save all the coding to disk by SAVE"TOOLKIT.UTY",&HE000,&HFA0F,&HE002. The title TOOLKIT.UTY is used below in listing 3 as the title of the program to be autorun.

Listing 3: 40 REM \*\*\* AND PATCH TO AUTORUN TOOLKIT \*\*\*  
60 FOR I=&H4E20 TO &H4E71  
150 DATA 30,8C,26  
190 DATA 86,22,30,8C,0C,9F,A6,7E,01,94  
210 DATA 22,54,4F,4F,4C,4B,49,54,2E,55,54,59,22,00

```

4E20      *****
4E20      * ASSEMBLY LISTING TO TURN ON *
4E20      * EXTRA 32K OF RAM, MOVE ROM *
4E20      * AND DOS INTO RAM THEN CALL *
4E20      * AND RUN TOOLKIT.UTY PROGRAM *
4E20      *****
4E20  4E20      ORG      20000
4E20      OUT      20000
4E20  8E8000  @START  LDX      #$8000
4E23  1A50      ORCC     #$50
4E25  B7FFDE  LOOP1   STA      $FFDE
4E28  A684      LDA      ,X
4E2A  B7FFDF      STA      $FFDF
4E2D  A780      STA      ,X+
4E2F  8CDFFF      CMPX     #$DFFF
4E32  25F1      BCS      LOOP1
4E34  308C26      LEAX     RESET,PCR
4E37  108E03EB    LDY      #$03EB
4E3B  A680      LOOP2  LDA      ,X+
4E3D  A7A0      STA      ,Y+
4E3F  108C03FC    CMPLY     #$03FC
4E43  25F6      BCS      LOOP2
4E45  108C03EB    LDY      #$03EB
4E49  109F72      STY      $0072
4E4C  8621      LDA      #$21
4E4E  B7BEC5      STA      $BEC5
4E51  1CAF      ANDCC    #$AF
4E53  8622      LDA      #$22
4E55  308C0C      LEAX     TITLE,PCR
4E58  9FA6      STX      <A6
4E5A  7E0194      JMP      $0194
4E5D  12      RESET  NOP
4E5E  B7FFDF      STA      $FFDF
4E61  7EC706      JMP      $C706
4E64  22544F  TITLE  FCB  /"TOOLKIT.UTY"/,0

```

Crossword 34 Answers.

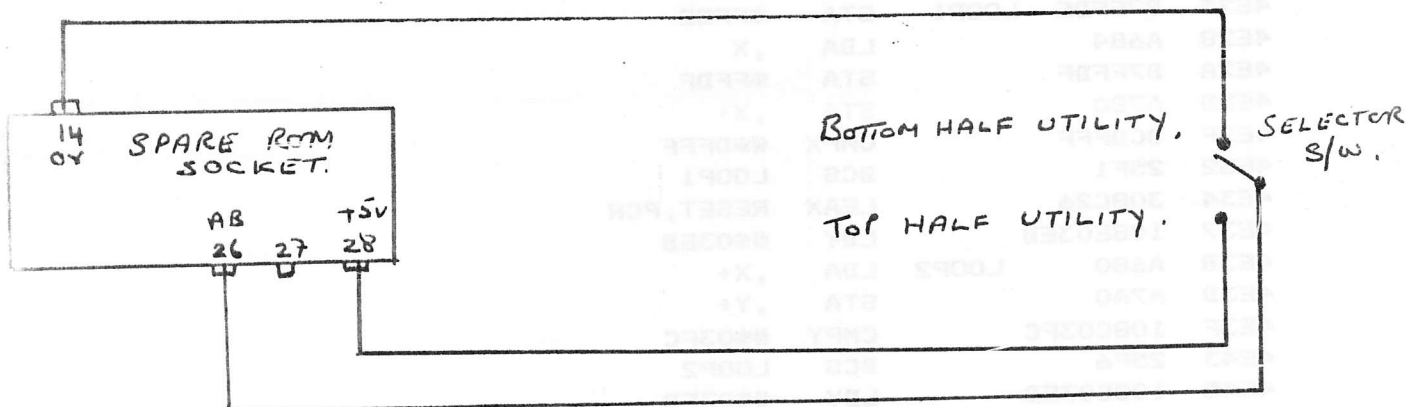
Across:- 1A) Manometer. 1J) Solo. 2G) Oxalic. 4G) Opaque. 5G) Ponder. 6A) Mask. 7D) Lucid. 8A) Seed. 8E) Spleen. 9A) Mallet. 10A) Alert. 10F) Blood. 11A). Tutu. 11E) Dimension. 12A) Croak. 12G) Iodine. 13A) Honeysuckle.

Down:- A1) Mafia. A6) Mismatch. B1) Amoeba. C1) Naked. C6) Skeleton. E1) Mumps. F1) Edam. F5) TUC. F10) Bits. G1) Toxophily. H5) Order. I3) Nanosecond. K6) Sunshine. L5) Rowan. M1) Omit. M5) Magazine.

## Two Into One Will Go... Chris Jobson.

I recently purchased a DeltaDOS controller and have been happily playing about with it. A friend who also has the controller pointed out that it has an extra socket fitted to enable Premier's ENCODER09 or TOOLKIT to work alongside. Not one to miss an opportunity I gave him a Blank 2764 and asked for a copy of ENCODER09. He duly returned the programmed EPROM which I eagerly fitted and switched on. Following the instructions I EXECed &HE000 to be greeted by that most popular of all Dragon programs, "CRASH". Several attempts after reading the instructions again produced the same result. I then decided that I had an incorrectly programmed EPROM and posted it back to my friend. He tried it in his programmer and it verified OK, but putting it into his cartridge produced the same result - CRASH. The mystery deepened. He then decided to erase the EPROM and try again. Removing the protective mask found the answer staring him in the face - I had stupidly given him a 27128 chip instead of the 2764.

This event set us thinking, which I didn't mind because he was paying the 'phone bill. Both devices have 28 pins, the difference being pin 26. In the 2764, it is not connected, but in the 27128 it is, to address line A13. When this is at logic '0', the lower address lines look at the bottom 8K, and when it is logic '1' they look at the top 8K. With a suitable switch it is possible to fit both programs into a 27128 ie ENCODER09 and TOOLKIT, and switch between them without opening up the cartridge to change the EPROM.



In my case I used a small changeover switch (break before make), With the connections going through the ventilation slots and soldered to the controller PCB via ribbon cable as per the above diagram.

After switching to the required utility, you only need to EXEC &HE000 for ENCODER09, or &HE002 for TOOLKIT. At the moment it does not seem possible to change utilities after having EXECed the other, even after returning to BASIC. The drive motor starts up in each case but I'm sure somebody will be able to work that one out with a few pokes.

The ready assembled EPROM programmer (formerly Steve's Electronics, then distributed by Compusense) can handle the 27128 EPROM and program it in two halves, but the self assembled version can only do upto 2764s. A way around this using the same idea would be to select 2764 and physically bend pin 26 of the 27128 up so that it does not enter the ZIF socket. Connect this pin to 0V to fool it into programming the bottom half, and then +5V for the top half. However, take care when bending the pin - it may break on you, and I'm not taking responsibility for damaging a 3.00 EPROM!

Star DP515 printer dump.

Although this program was originally written for the Star 515 it has been tested on Shinwa CP80 and Mannesmann Talley MT80 machines and works perfectly on them, and should also work on almost any "Epson" type printer, including HR5's etc.

```
1 REM STAR DP515 PMODE4 SCREEN DUMP
```

```
5 CLEAR 200,31899
```

```
10 X=31990:E=32742
```

```
20 FOR P=X TO E
```

```
25 READ A$:A=VAL("&H"+A$):POKE P,A
```

```
30 CS=CS+A:IF P=>E THEN 35 ELSE NEXT P
```

```
35 PRINT"CHECKSUM IS:-";CS:IF CS<>95086 THEN PRINT"DATA ERROR":END
```

```
36 CLS:PRINT" THERE IS A CHOICE OF 4 PICTURE HEIGHTS AND 3 WIDTHS. AFTER LO  
ADING A PICTURE, TYPE exec AND PRESS ENTER. THE ROUTINE WILL NOW EXPECT TWO  
KEYPRESSES - 1-4 FOR THE HEIGHT, AND 1-3 FOR THE WIDTH."
```

```
37 PRINT" UNTIL YOU HAVE DONE THIS, THE ROUTINE WILL NOT GO AHEAD."
```

```
40 DATA 86,1B,B7,7F,ED,B7,7F,EF,B7,7F,F2,86,40,B7,7F,EE,86,41,B7,7F,F0,86,07,B7,  
7F,F1,86,4B,B7,7F,F3,86,00,B7,7F,F4,8E,0C,00
```

```
45 DATA BF,7F,FE,8E,0C,20,BF,7F,FC,8E,23,00,BF,7F,FA,12,C6,05,BD,BA,A0,BD,85,2B,  
81,30,27,F9,81,35,24,F5,81,31,27,14,81,32,10,27,00
```

```
50 DATA 99,81,33,10,27,01,4A,81,34,10,27,01,EF,20,DD,C6,0A,BD,BA,A0,BD,85,2B,81,  
30,27,F4,81,34,24,F0,80,30,B7,7F,F5,8E,7F,ED
```

```
55 DATA A6,80,BD,80,0F,8C,7F,F2,26,F6,C6,04,8E,7F,F2,A6,80,BD,80,0F,5A,26,F8,BE,  
7F,FE,86,80,B7,7F,F9,86,08,B7,7F,F8,1F,12,86,08,B7,7F,F7,4F,E6,A4,48,F4,7F
```

```
60 DATA F9,26,01,4C,31,A8,20,7A,7F,F7,26,EF,F6,7F,F5,BD,80,0F,5A,26,FA,74,7F,F9,  
7A,7F,F8,26,D6,30,01,BC,7F,FC,26,C5,86,0D,BD,80,0F,30,89,01,00
```

```
65 DATA BF,7F,FC,BE,7F,FE,BC,7F,FA,24,09,30,89,01,00,BF,7F,FE,20,98,39,C6,0A,BD,  
BA,A0,BD,85,2B,81,30,27,F4,81,34,24,F0,80,30,B7,7F,F5,8E,23,80,BF,7F,FA,8E,7F,ED
```

```
,A6,80,BD,80,0F,8C,7F,F2,26,F6,C6,04,8E,7F,F2,A6,80,BD,80,0F,5A,26,F8,86,00
```

```
70 DATA B7,7F,EC,BE,7F,FE,86,80,B7,7F,F9,86,08,B7,7F,F8,1F,12,86,04,B7,7F,F7,4F,  
E6,A4,48,F4,7F,F9,26,01,4C,31,A8,20,7A,7F,F7,26,EF,C6,00,85,08,27,02,CB,C0,85,04
```

```
,27,02,CB,30,85,02,27,02,CB,0C,85,01
```

```
75 DATA 27,02,CB,03,1F,98,F6,7F,F5,BD,80,0F,5A,26,FA,12,12,12,74,7F,F9,7A,7F,F8,
```

```
26,B7,30,01,BC,7F,FC,26,A6,86,0D,BD,80,0F,12,30,89,00,80,BF,7F,FC,BE,7F,FE,BC,7F,  
FA,24,0A,30,89
```

```
80 DATA 00,80,BF,7F,FE,16,FF,72,39,C6,0A,BD,BA,A0,BD,85,2B,81,30,27,F4,81,34,24,
```

```
F0,80,30,B7,7F,F5,86,05,B7,7F,F1,8E,23,A0,BF,7F,FA,8E,7F,ED,A6,80,BD,80,0F,8C,7F,  
F2,26,F6,C6,04
```

```
85 DATA 8E,7F,F2,A6,80,BD,80,0F,5A,26,F8,BE,7F,FE,86,80,B7,7F,F9,86,08,B7,7F,F8,  
1F,12,86,02,B7,7F,F7,4F,E6,A4,48,F4,7F,F9,27,01,4C,31,A8,20,7A,7F,F7,26,EF,20,37
```

```
,12,F6,7F,F5,BD,80,0F,5A,26,FA,74,7F,F9,7A,7F,F8,26,D3,30,01,BC,7F,FC,26,C2,86,0  
D,BD,80
```

```
90 DATA 0F,30,88,40,12,BF,7F,FC,BE,7F,FE,BC,7F,FA,24,09,30,88,40,12,BF,7F,FE,20,  
95,39,C6,00,85,02,26,02,CB,E0,85,01,26,02,CB,1C,1F,98,20,B8,C6,0A,BD,BA,A0,BD,85
```

```
,2B,81,30,27,F4,81,34,24,F0,80,30,B7,7F
```

```
95 DATA F5,8E,23,A0,BF,7F,FA,8E,7F,ED,A6,80,BD,80,0F,8C,7F,F2,26,F6,C6,04,8E,7F,  
F2,A6,80,BD,80,0F,5A,26,F8,BE,7F,FE,86,80,B7,7F,F9,86,08,B7,7F,F8,1F,12,86,02,B7
```

```
,7F,F7,4F,E6,A4,48,F4,7F,F9,27,01,4C,31
```

```
100 DATA A8,20,7A,7F,F7,26,EF,20,37,12,F6,7F,F5,BD,80,0F,5A,26,FA,74,7F,F9,7A,7F,  
F8,26,D3,30,01,BC,7F,FC,26,C2,86,0D,BD,80,0F,30,88,40,12,BF,7F,FC,BE,7F,FE,BC,7F,  
F,FA,24,09,30,88,40,12,BF,7F,FE,20,95,39,C6,00,85,02,26,02,CB,F0,85,01,26,02,CB,  
0F,1F,98
```

```
105 DATA 20,B8
```



## Pascal For Beginners (12) ... Gary Coxhead

This time we will cover Functions and Procedures, followed next time by parameter passing and concluding the series with Record Structures.

**FUNCTIONS** - these are subprograms which return a result to the main program, giving a similar effect to using a procedure with a VAR parameter (covered next month). For some applications the use of functions instead of a procedure makes a program more readable.

e.g. `y := tan(x);` - function call

`tan(x,y);` - the equivalent procedure needs 2 parameters, the first being the argument and the second being the variable in which the result is to be stored. Pascal provides a limited range of standard functions, together with facilities to allow programmers to define their own functions as required. Some examples of standard functions include sin, cos, arctan, ord, eof etc. You will have to examine your own manual to see what functions your implementation offers. The following program shows how to declare and use a user defined function:-

```
PROGRAM power (input,output);
VAR real-no, answer : real;
    count, int-no    : integer;
    FUNCTION power (x      : real; index :
integer):real; (* the 2 variables inside the brackets represent the value
parameters, outside represents the result *)
    VAR count      : integer;
        product    : real;
    BEGIN
        product :=1;
        FOR count :=1 TO index DO
            product := product; (* this line assigns a value to the function :)
        END; (* of power *)
    BEGIN (* start of main program *)
        FOR count := 1 TO 4 DO
            BEGIN
                write(count:4,' : Enter real number and positive index : ');
                readln (real-no, int-no);
                answer := power(real-no, int-no); (* values of variables are passed to
the function in this manner *)
                writeln(real-no:6:2,' to the power ',int-no:3,' = ', answer:6:2);
            END;
        END.
    END.
```

Note particularly how the global variables int-no and real-no are used to pass their value to the function where x and index take on their values for the duration of the calculation. This is known as value parameter passing. The following program generates a set of random numbers and writes them to a file nominated by the user. It is used for generating test data. The program makes use of a function 'random' which is found in quite a few compilers and is an extension to the standard. The function is called without a parameter and returns a real number x such that  $0 < x < 1$ . The programmer can then manipulate the number to give an integer in the required range. The program also introduces the idea of a 'packed array'. This standard feature allows the implementor to store the data structure in the most efficient way possible e.g. two 8-bit ASCII codes in a 16-bit word. It has no effect on the way the programmer accesses the data structure. Using standar Pascal, in which only single characters can be read, the programmer would have to read in a string of characters by storing each one in turn in an array of characters. However, some implementations allow packed arrays of characters to be read in one operation from the keyboard.

```
PROGRAM random (input,output,integer-file);
VAR number, count, upper-limit    : integer;
    number-of-integers             : integer;
    filename                       : PACKED ARRAY [1..20] OF char;
    integer-file
BEGIN
    write(' Enter name of test data file : ');
    readln(filename);
```





```

rewrite(integer-file,filename); (* used to open a file for input *)
write ( ' Number of integers : ');
readln(number-of-integers);
write ( ' Upper limit of integers : ');
readln(upper-limit);
FOR count := 1 TO number-of-integers DO

  BEGIN
    number := trunc (random * upper-limit) +1; (* trunc = a function *)
    IF count MOD 8 = 0
      THEN writeln (number)
      ELSE write (number);
    write(integer-file,number);
  END;
  writeln;
END.

```

### Henceforth (11) . . . Bob Smith

The John Payne FORTH disk contains coding for setting up and using a RAM disk which will hold upto 28 Dragon FORTH screens (256 bytes each). This provides a useful way of transferring bulk data to physical disks. The RAM disk starts at hex C00, decimal 3072, and can be filled with data either manually or from a program. When complete the data can be transferred to disk by using the word RAMTODSK thus:-

```
n1 n2 ---
```

where n1 and n2 are the first and last screen numbers respectively on the disk which i being written to. The data can be read from disk by using the word DSKTORAM thus:-

```
n1 n2 ---
```

Both words are compiled by writing 13 LOAD.

It is important that the data is transferred as soon as they are complete as several FORTH words clear this buffer area. If you only have one disk drive then data transfers are done by careful swapping of disks at the right time. If you have more than one drive then you need to know that the FORTH words that specify the drive numbers are DR0, DR1, DR2...DRn where DR0 is drive 1, DR1 - drive 2 and so on. Only DR0 is specified on the FORTH disk as supplied so you will have to define all the additional numbers you require. The definitions are very simple, namely:-

```
: DR1 2 355 ! ;
```

```
: DR2 3 355 ! ; and so on.
```

Having defined the appropriate drive copy to, the word COPYDSK is defined as listed below. The word is used as:-

```
n1 n2 n3 ---
```

where n1 and n2 are the first and last screens you want to copy from and n3 is the first screen number you wish to copy to, e.g. 378 382 32 COPYDSK will copy 5 screens from the source disk starting at screen 378 to a second disk beginning with screen 32. This method is used for keeping a backup disk up-to-date by making copies of only those screens that have been altered during a FORTH session.

Next time we'll be looking at high-speed FORTH graphics for a modest CAD program.

#### SCR #112

```

0 ( DISK COPYING )
1 : DTR? IF DROP DROP ELSE 13 LOAD
2 ENDIF ; -FIND DSKTORAM DTR?
3 ( n1 n2 n3 --- )
4 : COPYDSK 2 PICK 4 PICK - DUP 28
5 > IF ."TOO MANY SCREENS"
6 ABORT ENDIF
7
-->

```

#### SCR #113

```

0 ( DISK COPYING )
1 2 PICK + 4 ROLL 4 ROLL
2 DSKTORAM DR1 RAMTODSK DR0 ; ;S
3
4 SCREENS TO BE COPIED:-
5 n1=1ST,n2=LAST
6 n3 IS THE FIRST NEW SCREEN
7

```

Easy machine Code Extra...RAD

A convenient method to get the equivalent of PRINT @ n, in Lachine language is by using the locations which track the cursor position. These are addresses 136-hibyte, and 137-lowbyte. They can be peeked to find the cursor position on the text screen, or poked to set the cursor position. the text screen hex addresses are from \$0400 to \$05ff (decimal 1024 to 1535). here is the routine I have used to give a prompt which in BASIC would be PRINT@452, ...

@PRESS FCC "PRESS C TO CONTINUE",0

@PAUSE LDX #1476 (ADDRESS FOR PRINT@452)

STX 136 (PUTS 1476 ONTO ADDRESSES 136/137)

LDU #@PRESS (GET DATA ADDRESS INTO U REGISTER)

@LOOP5 LDA, U+ (GET CHARACTER INTO A REGISTER, INCREMENT U REGISTER READY FOR NEXT CHARACTER)

CMPA #0 (HAS END OF TEXT BEEN FOUND?)

BEG @KEY (IF SO, MOVE ALONG)

JSR \$800C (PRINT THE CHARACTER ON SCREEN)

BRA @LOOP5 (GO BACK FOR NEXT CHARACTER)

@KEY LDA #255 (AS THIS IS NOT A KEYPRESS CHARACTER)

@TEST JSR \$8006 (SCAN THE KEYBOARD)

CMPA #67 (67 IS ASCII FOR C...KEY PRESSED?)

BNE @TEST (C NOT PRESSED SO SCAN AGAIN)

RTS (IT WAS PRESSED SO RETURN FROM ROUTINE)

AVAST  
CEASE

Crossword NO.35.

ACROSS:- 1A)I=, 1H)Venetian or Genoan Chief Magistrate, 2J)Leave stage right perhaps, 3A)Lacerate surface soil, 3H)Deciduous coniferous tree, 4J)Duty list, 5A)Fortified residences, 6F)To give in or die, 7J)To cheat or mislead, 8C)Forbid or withhold permission, 8G)Engineers tool, 9A)Childrens comic, 9I)Superior of a religious house, 10E)Of the liver, 12C)Bitterly pungent (eg smoke), 13A)Prince Andrew is an amateur one.

DOWN:- A4)Word boardgame, B4)Brown substance obtained by heating sugar, B11)Burnt tree, C1)Supposedly the homeland of Dracula, D3)Made by a wheel in mud, E1)Short pointed dagger, E10)Main character in a poem or story, F1)Small type of flute, F6)Twenty, G1)Small abscesses on the eyelid, H1)To stop temporarily, H7)Wrench or strain a muscle, I1)Logic gate having output of logic value 1 when any of its inputs have value of logic 1, I6)Tricks made in speechmaking to win applause, K1)To expel from the church, L10)Rosa is flying high, M1)Red fruit of trailing white flowered plant,

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	W	A	T	T	S	P	S	D	O	G	E	S	
2		R	T	I	T	E	R	E	X	I	T		
3	S	C	A	R	I	F	Y	L	A	R	C	H	R
4	S	C	H	U	L	E	R	A		R	O	T	A
5	C	A	S	T	L	E	S						
6	R	R	Y	E	S	U	L	C	U	M	B		
7	A	A	L	T	C								
8	B	M	V	E	T	O	S	P	A	N	N	E	R
9	B	E	A	P	O	R		R	A	P	I	O	R
10	L	L	N		H	E	P	A	T	I	C	S	I
11	E	A	I	E									
12	S	A	C	R	I	D	N	A		T	A	S	
13	P	H	O	T	O	G	R	A	P	H	E	R	



Dragon Music . . . . . Geir Hovland.

If you want to create music with four voices in your machine language programs, there are at least two excellent utilities on the market which will help you to do so. They are COMPOSER and DAMS. In the Composer manual you will find details of the "Basic" command. With this command you can, for instance, show the text while your tune is playing, but what the manual does NOT tell is that the "Basic" command is of great interest to machine code programmers as well. Let us assume that we have written a tune using Composer and compiled it. We will have used several "Basic" commands. The start of the machine code is placed at 12800, and we can now use it in our own machine code programs. For example:-

```

      LDA #80                ;number of "Basic" commands
LOOP  DECA
      BEQ END                ;if finished then end
      PSH A
      JSR 12800              ;play tune
      PULS A
      BRA LOOP
END   LDA #180
      STA $FF01
      LDA #53
      STA $FF03
      LDA #55
      STA $FF23
      RTS                    ;close sound output and return to Basic

```

The other utility, DAMS, can also be used to write music in your machine code programs. This however is not as easy as with Composer. Also some potentially very useful information in the DAMS manual is wrong, making it almost impossible to discover how to use DAMS fully.

Take a look at page 17 in the DAMS manual. There you will find an example of how to run music modules from Basic. Line 100 of this example reads as follows:-

```
100 DATA 86,00,30,8C,03,17,4F,F8,39
```

The correct version should read:-

```
100 DATA 86,00,30,8C,03,17,0F,F8,39
```

Once this is corrected it should be possible to use the music modules in both Basic and machine code programs. If you POKE the values in line 100 into memory and then use a disassembler you will discover how to use the module from a machine code program. Happy programming!. Geir.

**DRAW!!**

If you think that Update is a bore, you're probably correct, but DON'T tell me about it, DO SOMETHING USEFUL FOR A CHANGE!!.

For several months Tony Davis supplied us with some very good cartoons for publication, and this was in addition to all the other work he has put into helping us with articles, programs, etc. I've asked several times for someone else to help out and draw something in the cartoon line for us, but so far the result has been precisely NIL.

It's no use expecting the same people to do all the work all the time, even the most easy going person is going to get sick and tired of that, so when are the rest of you going to stop sitting around telling yourselves how clever you are and actually get around to DOING something?!

Why don't I do the drawings?, because I don't get the time, and that goes for the rest of the "regulars" too.

If sales are anything to judge by, you must all have a copy of either Drawezee or Dragdraw by now, so when are you going to use them?. All I'm asking for is a few simple cartoons, on any subject you like. All you have to do is draw them and send me the result as a Basic or machine code file on tape or disc.

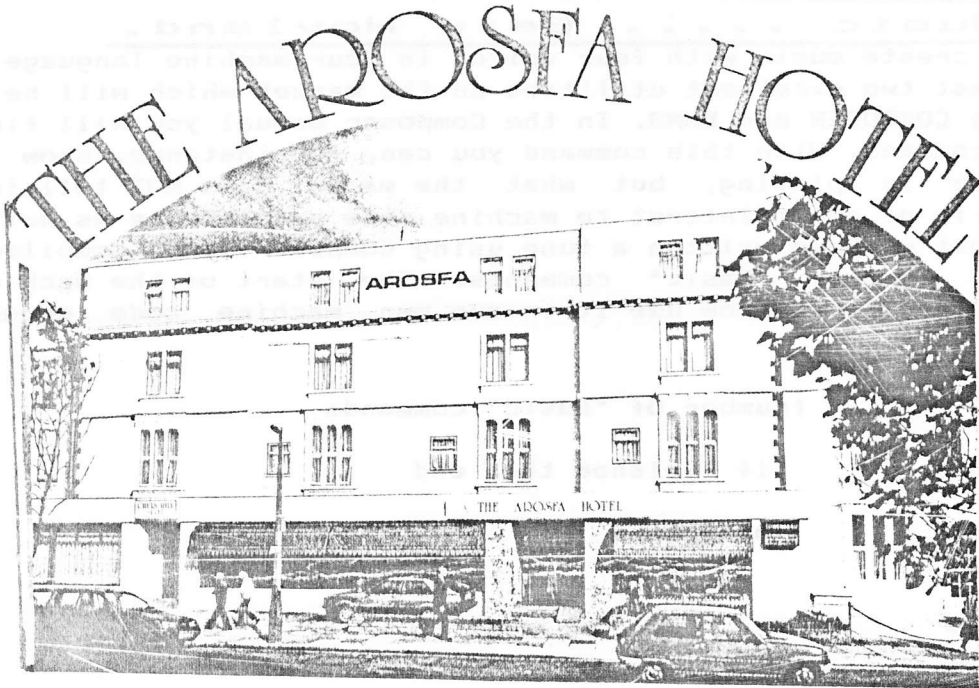
After all, you're the ones who have to read this rag, and if you can't be bothered to do something to liven it up it's no use expecting anyone else to do so.

Paul Grade. ●

---

 THE COLOUR COMPUTER CONVENTION!!
 

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 The New National Dragon & Tandy Show.
 

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### The Late, Late Bit. . . . .

I'm going to put a contract out on my Editor!. Not only does he go swanning off to France leaving me to sort out this lot with no-one to complain to, but even worse than that, his disc drives still haven't fully recovered from last month's fit of belt flipping, and although Stephen doesn't realise it, several of the files on THIS month's master disc were corrupt, which has meant a lot of retyping and improvisation, because I don't have the originals for some of them!. So, if the article you were expecting to read isn't here, that's the reason. I think I'll set Rentokill onto him or something!. Anyway, to get on with other matters and stop Simon Jones nagging me, I think I'd better give his latest contribution to the Dragon scene a mention. You all know Simon, of course, world famous throughout Harlow for his Dragon's Roar / 6808 User magazine. He had now compiled a Dragon Users Handbook, which he says lists EVERY piece of software, hardware, accessory, etc currently available for the Dragon, and listing prices and addresses as well. At the asking price of 1.25 to Roar subscribers (1.65 to no-subscribers) it has to be a worthwhile purchase, and if nothing else will save you having to write and ask ME every time you want to get a particular program!. You can order it from Simon at 37, Collins Meadow, Harlow, Essex. CM19-4EN. OK?.

There's been comment from several of you about the fact that I'm doing a bit of writing for D.User. Most of the comment was, for some peculiar reason, complimentary, but the point was raised that I seemed to be toning things down a bit. There IS a good reason for this ... Dragon User readers are sensitive souls, and not used to getting snapped and snarled at, so I thought it best to "break them in gently". It's easier on Helen's nerves too, because it means she doesn't have to pretend she's the office cleaner when she answers the phone in case it's someone's solicitor threatening to sue her for every penny of last month's expenses cheque!. Don't worry, it won't last, even D.User readers don't have immunity!.

Oh yes, before you rush to tell me, I KNOW there was a couple of lines missing from the article on page three of issue 47, unfortunately I didn't notice until too late that they weren't on the master disc ... more corruption!. However, I'll try to get Stephen to check the originals and print the missing line/s in the next issue. Sorry. Well, that had better be the lot for now, if only because my typing finger is suffering from concussion!. Four years down ... how many more to go?.

*Paul G.*

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## CORRECTION!!

- > Well, not really a correction, more an addition to avoid any confusion. In line 36 of the screen dump on page 7, "type EXEC" should read "type EXEC 31990", otherwise on a D64 you could end with 48K mode instead of your dump!



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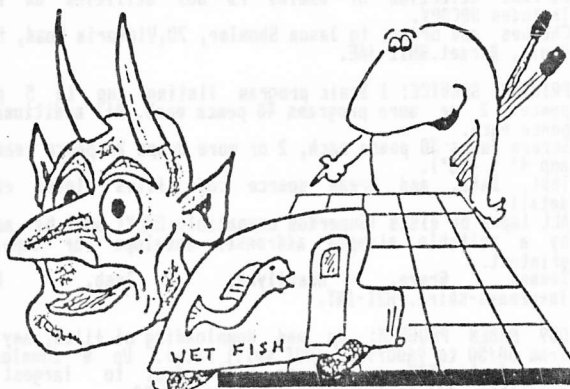
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