The Newsletter of the National Dragon Users Group

DRAGON UPDATE

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The Gaffer's Bit.....

I suppose the main thing I ought to mention this month is the show.....You know where it is, you know when it is, so PLEASE make a point of being there. It doesn't take a genius to work out why, does it?.... you've all got money tied up in your Dragons, right?, and that means that you want to be able to buy hardware and software to use with it, but it's no good just sitting around complaining about "lack of commercial support"....you need to actually demonstrate that there IS a market for Dragon related products if you expect anyone to invest money in producing them, and the London shows are your best chance to do so. OK?. There's the other point too, that these shows cost a lot of money to put on, and unless they make a reasonable profit they'll stop, or to put it another way, YOU are the one who ought to "support the Dragon"...you OWN one, remember?.

OK, lecture over, you can relax again now. In case I forgot to mention it last month, the copier fund is around the 240 mark at the moment, many thanks to all of you who have contributed....the old Toshiba is still coping (well, with the aid of a few new parts!), but we're going to have to get a replacement eventually, and with any luck we'll be able to get a good one by then. Not many of you seem to be taking advantage of the "Helpline" yet, though I dunno why, most of the members who have volunteered for it know a LOT more about their subjects than I do, and they don't bite...well, only if there's a full moon.

Anyway, I feel generous for once, so I'll leave the rest of this page to Your Beloved Editor (I THINK that's the correct phrase...isn't it?). See you at the Show.

Paul G.

THE EDITORIAL BIT.....

Well we have another show, I'm not sure if you'll get this before the show but if you do then I trust YOU'LL show your face, if not, I hope you did show it! If we want these shows to continue (Paul just loves dragging himself up from Worthing!!) then you've got to show YOURSELF, if they don't make a profit from the day, they'll not keep putting them on will they ??

The redundant info this issue is a repeat from issue 15 (well, part of it) I've had nothing to put in and I thought I'd repeat some for those of you who joined since then (and anyone who didn't take any notice the first time I printed it).

Final bit for this month is an observation of my own. Do you find that people are laughing when they find you have a Dragon? I've had this quite a bit lately, oddly enough it seems to come from those who still own BBCs and Spectrums and not those who may have a machine which actually is superior. Just a couple of suggestions, ask a BBC owner how to draw a circle or a Commode owner how many pokes it takes to make a noise, that should shut them up.

Spectra, well, just pity them, they've got more than enough woes already. T.L.

INTRO TO FLEX (2) ..... G.C.

This time I'm going to concentrate on the 3 parts of the Flex system and the more useful features.
When you first boot Flex you are faced with a '+++' prompt and you are not sure what to do. Typing CAT<enter> lists all the files on the disc, and I mean all. Unlike OS9 there is no 'tree' structure to worry about. What actually happens is that the DOS processes the command 'CAT' and pases this to the FMS which then loads the program 'CAT' from disc to memory where it is automatically run. This is totally transparent to the user. One thing you get when you step up to an operating system is much more powerful commands. Even the humble CAT allows you to list only specified files of a particular letter or a particular extension such as .TXT etc. With other utilities, you can force CAT not to show them to you at all! One thing I did straight away was to change 'CAT' to 'DIR' with the rename facility, being a Delta user I was more used to this. Again, this is the beauty of an OS, you can call the program anything you like, just by renaming it. Other facilities on the disc allow you to change character sets, screen width and depth etc, more of that later.
What I want to talk about next is DBASIC. This is probably the most useful program of the lot for the average Dragon user. When Flex is first loaded it sits in RAM from C000 upwards. This is the normal location for the DOS, you can see you have to rely on Flex to talk to the discs for you. You now have a machine with 48k RAM and a nice 51x24 screen. But what of all your own Dragon software which you have on disc or tape? Have you got to go back to DragonDOS or Dragon Basic to use them? No, this is where Dbasic comes in, what it is is a modified version of Dragon Basic with a few added routines to allow it to talk to the discs (through disc of course). Once loaded it sits in RAM where the old Dragon ROM used to be and to all intents and purposes you have a standard Dragon 32. If you print MEM you get the usual 27.5k! The difference now is that you can load all your existing Dragon software and it will run! Also, if you have a lot of programs that are unprotected, you can save them to disc under DBASIC with the SAVEF and SAVEB commands (Basic and machine code) which are now available; all those programs that won't run with either Delta or DragonDOS because they clash with the DOS will now run unmodified. The only drawback is that if the reset vector program has been modified by the program then, on pressing <reset> you are either locked out or dumped back into the Dragon ROM and Flex will have to be rebooted. A small price to have to pay for compatibility and being able to transfer 95% or so of your programs on disc. A nice touch is that all Basic programs which save and load data files to tape can be easily modified to run from disc, which makes them faster, easier and more convenient to use. The only time consuming task is to transfer all your programs from disc to tape for reloading into Dbasic and saving under Flex and Dbasic but once it's done, that's it.
To be continued ..... TL

DRAGON USER .....TL

The latest Dragon User just popped through my letter box as I was about to get this finished, so what's in it this month.
There are some reports on the last 6809 show, a bit on the future of the poor old Dragon, Stylograph under OS9, and a utility for disc control under Cumana (funny, I thought the DOS was meant to do that itself). A bit about using hooks, the usual bits and a mention for us on page 4 (top right).

Don't forget Saturday March 28th. 10a.m.

ASCI CORNER ..... PAULINE HAMPSON

Back this month to getting stuck into machine code adventures. I often like to do this when I am stuck. I find locations I've missed, objects I need and verbs I hadn't thought of using. For this you need to get access to the keywords. Simple games that you EXEC are no problem, in other adventures, quitting, pressing the break key or reset button can help. To the honest eye, the game may seem to have been wiped from memory as the power on message appears, usually it is still there, even though you may not be able to play the game. The adventure is stored somewhere between 1536 and 32767, try typing FOR L=1536 TO 32767:PRINT X,CHR$(PEEK(L)):NEXT This is a long process but somewhere you will find all the vocabulary used and all the messages which appear on the screen. When you find the right part or parts, you can print them to save writing.
Most new adventures are not easy to break into. For this I use a routine to load headerless programs from tape. I usually keep on trying until something loads. With patience, this works on all the right bits of Microdeal adventures including Trekboer, Tanglewood and Vortex Factor. The only problem adventures are those written by Scott Adams which have a unique loading system. Graham Smith has written me a program to get round this. Anyone who needs a copy just needs to send me a blank tape and postage.
To finish, here are the useful routines:

```
FOR I=1536 TO 32767:P=PEEK(I):IF P>32 AND P<122 THEN SOUND 1,1:PRINT
#-2,CHR$(P);:NEXT ELSE NEXT
```

Headerless Loader;

```
20 CLEAR9,&H7FF0:A=&H7FF0
30 READ D$:IF D$<>"**" THEN POKEA,VAL("&H"+D$):A=A+1:GOTO30
40 DATA 8E,10,00,BD,B7,5B,39,**
50 EXEC &H7FF0
```

A LETTER FROM ROBERT MORGAN

The following letter was sent to the group and is reproduced in full.

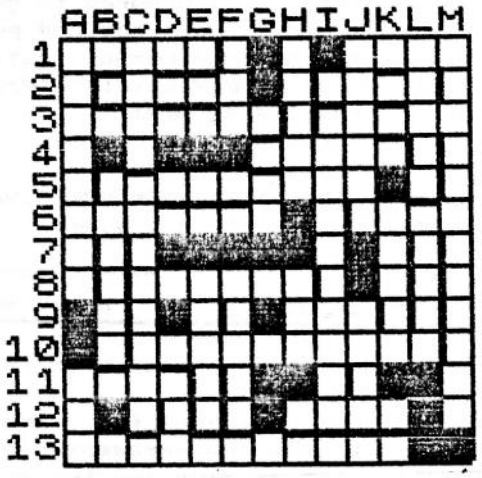
Further to your reminders for renewing my membership to the Dragon Users Group. I have given an unreasonable amount of thought to this relatively small contribution to the club for the following reasons.
1) Is the future life and success of our favoured machine going to be helped by such fragmented support or would the better solution be to publish the very worthwhile articles in a regular section of Dragon User (this would save your mailing, paper and copying costs... not to mention your time!)
2) The tone of your front page still jars with me in the negative tone you adopt, it certainly does not engender confidence and enthusiasm.
One effect of this might be to rebuild, to some extent, the commercial sector's support (partly demolished by your naive attitude towards the real world out there!) another would be to give people like me a reason to subscribe to the magazine.
I would be very interested to see this letter published (unedited) and to read the views via your pages from other members. Assuming you are prepared to do this I have enclosed my cheque for 10.00 as a demonstration of goodwill.

Well, that's it, unedited. In this case I'd like to add my comments.
1) Dragon User is a commercial magazine, they are very unlikely to give us editorial control of even a portion of the magazine, not that I blame them, I wouldn't allow them full editorial control of part of this newsletter. If the suggestion were to be followed up, it would be the equivalent of you as individuals sending articles to Dragon User via me or Paul, a waste of postage and my/his time. The other thing which would happen is that some of our members who may not be as proficient at writing or programming would find no way of getting published. This newsletter provides a place for proficient

writers, programmers etc (we have many members who work in the computer industry), it also provides room for others to get started, get articles published which Dragon User would be unable to use. It would also mean that Dragon User would have the Dragon publishing scene to themselves, that cannot be a healthy position either for them or the Dragon owners, the more outlets we have for Dragon related subjects the better.
As to the tone of the front page, this is the place where Paul and I air our views on the market, Dragon scene etc. I don't feel naive, I say what I think, if a firm is doing something I feel I should comment on, I will do so, we didn't demolish the commercial support, it demolished itself, the firms who moved in when micros were new made their quick buck and went on to other machines, the firms who gave good deals and supported the Dragon either tailored their prices and support to meet the market and are still around or kept their prices higher than demand allowed and went under. If I feel something needs critisism, it will get critisised..... TL

CROSSWORD NO. 20

ACROSS:-
1A)Kind of market where you can buy almost anything 1J)Wooden runners 2B)Name of a comic 2I)A holy picture 3A)They swarm over Africa 3I)A lifting device 4G)Drive a cow? 5B)An electrical instrument consisting of a mouthpiece and an earpiece 6A)Gold is supposedly found at the end of this 8C)An easily fusible alloy used for cementing metals together 9H)All behind at sea 10C)Put out 11A)Having a Ph less than 7 12H)Little friend of Bill & Ben 13A)This device will soon make the long playing record redundant
DOWN:-
A1)A device which gives a 3D representation A11)New (scottish) adventure producer B5)A stone pill perhaps C1)Old unit of weight equal to one quarter of a bushel C5)a famous scientists computer perhaps D11)A small depression E8)Another name for bingo F1)A small drink F8)Move out of position at sea H1)A type of horse H8&J9)A lot of Joplins music is played at this pace I3)High speed device for separating liquids and solids J1)White projection equipment K6)Sporting trophy fought over between England and Australia L1)Part of an archery target L6)American rubbish M1)Description for equipment capable of sending sounds from two directions.



No crossword last month, so this month's winner will get TWO games tapes!. First correct entry received wins. OK?.

The Late News.....

I've just had a phone call from Proops, and they have a few NEW Dragons in stock.....these are complete, boxed machines, still sealed, and while there's no manufacturer's guarantee (Well, Dragon Data have been a long time dead!) Proops state that they'll give a full refund on any defective machines if notified within seven days. Prices are 45.00 for D32's and 60.00 for D64's, both PLUS 2.50 postage/packing.
If you want to order one (or more!) send your order (cheque payable to the Group) to Paul, but please note that there is only a small number of machines available, so don't dither around too long!.

On the subject of hardware, we should be having some VERY interesting things on the stand at the London Show, so don't forget to bring your cheque book with you!!.

Helpline 87.....

If you have queries on any of the subjects mentioned here, write to the apropriate volunteer, enclosing a stamped envelope for reply. If you need help with a subject that isn't included in the list yet, or you aren't satisfied with the reply that you get, then contact Paul Grade as usual.
FORTH: John Payne, 3,Sibland Close, Thornbury, Bristol.
FLEX: Jurgen Mitchell, 62,Victoria Grove, Lupset, Wakefield, Yorks.WF2-8JD.
PROGRAMMING LANGUAGES AND STRUCTURED PROGRAMMING METHODOLOGY: Stan Davies, 153, Allestree Lane, Derby DE3-2PG.
GAMES SOFTWARE (MAINLY ARCADE BUT SOME ADVENTURES): Stephen Wood, 52,Downsway, Springfield, Chelmsford, Essex CM1-5TU.
M/C (EXCLUDING FLEX & OS9); DRAGON MUSIC; ARTIFICIAL INTELLIGENCE; "C" (UNDER OS9): Chris Jolly, 4,Pinehurst Walk, Orpington, Kent.
TAPE TO DISC CONVERSIONS (DRAGONDOS): Graham Smith, 3,Ashton Gate Terrace, Ashton Gate, Bristol BS3-1TA.
GENERAL HARDWARE AND UPGRADE CONVERSION PROBLEMS: Bob Hall, 22,Cumbria Close, Thornbury, Avon BS12-2YE.
CGP115 & MCP 40 PRINTER SOFTWARE QUERIES: Philip Beed, 27,Findon Road,Elson, Gosport, Hants.PO12-4EP.
WORD PROCESSING & GENERAL BASIC PROGRAMMING: F.J.Fisher, 29,Thornham Road, Gillingham, Kent.
BASIC PROGRAMMING: Ian Rockett, 2,Knowle Road, Burley, Leeds, Yorks.LS4-2PJ.
RTTY / RADIO; LISTINGS FROM INPUT MAGAZINE; SPRITE MAGIC; AMATEUR RADIO; UPDATE ARTICLES / LISTINGS BY R.A.DAVIS: R.A.Davis, 39,Boxley Drive, West Bridgford, Nottingham NG2-7GQ.
OS9 SYSTEM AND UTILITIES: Jason Shouler, 70,Victoria Road, Parkstone, Poole, Dorset.BH12-3AE.
BASIC PROGRAMMING AND TAPE TO DISC CONVERSION (DRAGONDOS): John Cox, 3,St.Peters Road,Portslade,Sussex.BN4-1LS.
MODEMS, BASIC ELECTRONICS, ADD-ONS, and FLEX: Tim Hayton, 36,Laurel Drive, Willaston, South Wirral L64-1TW.
DELTA PROGRAMMING: Stuart Mills, 49,Templegate Crescent, Leeds, West Yorkshire LS15-0EZ.
DRAGON HARDWARE PROBLEMS AND MINOR REPAIRS: Alan Butler, 16,Barnston Green, Barnston, Great Dunmow, Essex.
MODEMS AND BULLETIN BOARDS / GENERAL COMMS. Gary Coxhead, 54,The Sorrels, Corringham, Stamford-le-Hope, Essex.
COMPOSER PROBLEMS:- Dave Cadman, 32,Breedon Hill Road, Derby DE3-6TG.
PLEASE NOTE...as of now we will only be printing the Helpline list in alternate issues, in order to save space.

ADVENTURE HELPLINE ..... TL

I was chatting to one of the editors of Adventure Helpline on Cluspot the other day (Prestel for those who don't know), for those who use Prestel and don't know about it, I thought I'd let you know what it's all about.
Adventure Helpline is part of Prestel on the Micronet CUG (closed user group) on page 81051. It's run by Clubspot 810, which is the electronic publishing part of the ACC (Association of Computer Clubs) A completely ameteur organisation.
There are pages of hints and tips, short reviews and a TALKABOUT (sort of instantly published letters) which is of course for talking about adventures and adventure playing. There is also a swapshop for selling and swapping adventures that you don't want any more. Adventure Helpline has a team of around 15 helpliners who cover most computers. Where we are asked for help and we don't have the answer, the requests are put up on a 'can you help' section for anyone who can help to answer.
Thanks to Marion for the info.

MIRROR IMAGE . . . . . R.A.DAVIS.

Those who are into dumping screens to the printer, and who would sometimes like a mirror image of the screen will find that using PPOINT and PSET to do this takes a long time for the whole screen. The method below is for PMODE4 screens and does quite a fast job. The DATA lines contain the mirror image of every byte from Ø to 255. Some bytes such as Ø,255 and a few others are their own mirror images as well. The program reads the screen loaded into pages 1 to 4, byte by byte, starting at the top left. It then finds the mirror image of that byte and pokes it into pages 5-8, starting at the top right. When the last byte has been poked, you can press '@' to get the image screen PCOPY'd down to pages 1-4 for dumping. The picture can be saved to tape with <break> 'CSAVEM"TITLE",1536,7679,1536. DOS users will of course have to alter the addresses to conform to the DOS screen addresses. If your screen contains text, this will appear backwards but if you have Draweeze this will be easy to alter using B to erase and * to put in the text correctly. This program will only work on black and white screens as coloured screens will require mirror images of pairs of bits in the image byte, much more difficult to do. It would be easier to use PPOINT and put up with the delay.

```
1Ø PCLEAR8:PMODE4,1:PCLS:PMODE4,5:
PCLS
2Ø DATAØ,128,64,192,32,16Ø,96,224,
16,144,8Ø,2Ø8,48,176,112,24Ø,8,136
,72,2ØØ,4Ø,168,1Ø4,232,24,152,88,2
16,56,184,12Ø,248,4,132,68,196,36,
164,1ØØ,228,2Ø,148,84,212,52,18Ø,1
16,244,12,14Ø,76,2Ø4,44,172,1Ø8,23
6,28,156,92,22Ø,6Ø,188,124,252,2,1
3Ø,66,194
3Ø DATA34,162,98,226,18,146,82,21Ø
,5Ø,178,114,242,1Ø,138,74,2Ø2,42,1
7Ø,1Ø6,234,26,154,9Ø,218,58,186,12
2,25Ø,6,134,7Ø,198,38,166,1Ø2,23Ø,
22,15Ø,86,214,54,182,118,246,14,14
2,78,2Ø6,46,174,11Ø,238,3Ø,158,94,
222,62,19Ø,126,254,1,129,65,193,33
,161,97,225
4Ø DATA17,145,81,2Ø9,49,177,113,24
1,9,137,73,2Ø1,41,169,1Ø5,233,25,1
53,89,217,57,185,121,249,5,133,69,
197,37,165,1Ø1,229,21,149,85,213,5
3,181,117,245,13,141,77,2Ø5,45,173
,1Ø9,237,29,157,93,221,61,189,125,
253,3,131,67,195,35,163,99,227,19,
147,83,211
5Ø DATA51,179,115,243,11,139,75,2Ø
3,43,171,1Ø7,235,27,155,91,219,59,
187,123,251,7,135,71,199,39,167,1Ø
3,231,23,151,87,215,55,183,119,247
,15,143,79,2Ø7,47,175,111,239,31,1
59,95,223,63,191,127,255
6Ø CLS:DIMA(255)
7Ø FOR N=Ø TO255:READA(N):NEXT
8Ø PRINT:PRINT" POSITION TAPE WITH
 PICTURE AND  HIT A KEY.MOTOR IS O
N":MOTOR ON:EXEC34Ø91:MOTOR OFF
9Ø CLS:PRINT:PRINT" PUT TAPE ON PL
AY AND HIT A KEY":AUDIO ON:EXEC34Ø
91
1ØØ PMODE4:PCLS1:SCREEN1,1:CLOADM
11Ø X=1536:X1=7711:Z=X1
12Ø PMODE4,1:P1=PEEK(X)
13Ø PMODE4,5:POKEX1,A(P1)
14Ø IF X1=13792 THEN 19Ø
15Ø IF X1=<Z-31 THEN X1=Z+33:Z=X1-
1
16Ø X=X+1:X1=X1-1
17Ø SCREEN1,1
18Ø GOTO12Ø
19Ø PMODE4,5:SCREEN1,1
2ØØ I$=INKEY$:IF I$<>"@" THEN 2ØØ
21Ø PCOPY5 TO1:PCOPY6 TO2:PCOPY7 T
O3:PCOPY8 TO4
22Ø PMODE4,1:SCREEN1,1:SOUND12Ø,1
23Ø GOTO23Ø
1ØØØ PMODE4:SCREEN1,1
1Ø1Ø GOTO1Ø1Ø
```

Dragonart Library. . . . . .

The Library is now fully operational, so write for details and list of graphics screens currently available to:-
The Librarian, Dragonart Library, 5,Glen Road, Parkstone, Poole, Dorset, enclosing a large s.a.e.....and how about sending YOUR Dragon produced artwork as well so that we can ALL admire it?!.

BACK UP . . . . . GRAHAM SMITH

This utility is designed to enable unprotected copies of auto run games to be made. The main uses would be for cheating in adventure games to allow you to search for hidden text or to allow you to use those multi-life pokes that are often given.
Note that this program only works on a Dragon 64 as it switches the machine into RAM MODE and modifies the ROM (which it has copied into RAM) and installs a short routine at &HEØØØ.
The routine relies on the fact that most games use the standard ROM keyscan routine to check for input. The utility modifies this routine to point to the routine it has installed at &HEØØØ. This checks to see if the 'Q' key has been pressed and if so, it saves a specified area of RAM to tape. It assumes that the RESET vector has been altered by the game to point to the EXEC address for the game.
The procedure would be to run this routine first, then load the game as normal and put a blank tape in the recorder. When a 'Q' is pressed the routine at &HEØØØ is activated and a second press will start the CSAVEM routine. When it has finished, the game will usually crash as the stacks may have been modified, you just switch off and try loading the copy. It will not be titled so just a flashing 'F' will appear on the screen.
You will notice that the default start and end addresses given in the listing are the bottom of the text screen and the top of RAM, you can alter these if you like. If you have an Assembler / disassembler, you can use the same principles to alter other ROM calls such as the joystick routine.

```
1 X$=CHR$(128):CLS5:PRINT@27Ø,"wait";
2 FORI=&H4ØØØTO&H4Ø5Ø:READD$
3 POKEI,VAL("&H"+D$):NEXT
4 EXEC&H4ØØØ:PRINT@264,"modrom";x$;
  "installed";
5 PRINT@327,"do not press reset";
6 PRINT@42Ø,"NOW CLOADM GAME AS NORMAL";
7 PRINT @48Ø,""
8 DATA 1A,FF,8E,8Ø,Ø,B7,FF,DE
9 DATA A6,84,B7,FF,DF,A7,8Ø,8C
1Ø DATA EØ,Ø,25,F1,BF,BB,EA,1Ø
11 DATA 8E,4Ø,27,A6,AØ,1Ø,8C,4Ø
12 DATA 4F,27,2B,A7,8Ø,2Ø,F4,81
13 DATA 51,27,3,7E,BE,EØ,BD,AØ
14 DATA EA,8E
15 'RETURN ADDRESS
16 DATA B3,B4
17 DATA 34,1Ø,8E
18 'START ADDRESSES
19 DATA Ø4,ØØ
2Ø DATA 34,1Ø,BF,1,E7,8E
21 'END ADRESS
22 DATA 7F,FF
23 DATA 34,1Ø
24 'LOAD EXEC FROM RESET VECTOR
25 DATA 12,9E,72
26 'ALTERNATIVE TO PREVIOUS LINE
27 'CHOOSE YOUR OWN EXEC ADDRESS
28 'DATA 8E,xx,xx
29 DATA 34,1Ø,BF,Ø1
3Ø DATA E5,7E,99,1B,1C,EF,39
```

REDUNDANT INFORMATION DEPARTMENT

Do you keep getting ?PE errors in when writing to a disc file ??, this can occur if-
a) the file length is a multiple of 256 and an extension is required or;
b)an extension directory record is needed and this is the first file write access
For machine coders, if the directory backup routine to copy track 16 to 2Ø is being used and an error occurs, the routine can return to basic instead of the calling routine.
If you can use the 'speed up poke' then CSAVE it in dual speed mode, load it back at normal speed then POKE146,8:POKE147,4:POKE148,8, the time saveing is 5Ø%!! (I havn't tried this as my machine won't work at 'high speed' but I'm assured that it works. Try it if you like....TL)
To create a flashing cursor for INKEY$ then try:

```
1Ø A$=INKEY$:EXEC&H8ØØ9:IF A$=""THEN 1Ø
2Ø PRINT A$:GOTO1Ø
```

ARTIFICIAL INTELLIGENCE .... P.BEED

'What are you doing Dave?' the voice of the now famous Hal, the computer onboard and in control of Voyager on it's way to Jupiter in the film 2001, a super intelligent computer possessing most of the mental faculties of a human but causing the death of the ships crew. In 2010, his sister SAL asks of her programmer 'Do computers dream?'. These are predictions of Arthur C.Clarke, in the past many predictions made in science fiction have come to pass but many have not. Does this have anything to do with the Dragon? Well, it's certainly an interesting subject for anyone with more than a space invaders interest in computers and a little bit of reading time on their hands. It is also possible to replicate some of the early A.I. experiments which can produce an interesting insight, as well as plenty of entertainment and a useful exercise in string manipulation. Where to start? I don't intend to go into detail here about the subject, it is better to tell you where to look to find out more.
'The Super Intelligent Machine' by Adrian Berry published by Jonathan Cape is very well written and blends the authors own thoughts on the subject with factual information. It is very readable. It takes the subject from the very beginnings, dealing with all major names programs and advances in AI. Whole chapters are devoted to Alan Turing and the (now outdated) Turing test for artificial intelligence. It also contains a host of references for anyone who wishes to delve deeper into the subject. On the practical side, AI is really the domain of mainframes using languages other than Basic. Some early experiments can be duplicated on micros but, there is a snag! There is a Dragon specific book on AI which unfortunately only skims the surface and deals mainly with the subject of deciphering text input and altering tense for output. To a lesser degree it deals with rule construction and learning from experience. The programs in it, although demonstrating the theories concerned are not very entertaining and one is not compelled to enter them. Though I hate to say it, there is a much better book available called 'Artificial Intelligence' by Tim Hartnell for the Sp..... (deleted in the interests of good taste...TL), it explains some of the theories of AI and the famous programs and computers are introduced, alongside this are example programs for you to try. For example, a Os and Xs game in which the computer can easily be beaten at first as it plays in a random manner, as each game is played, it learns the rules and strategy of the game, until it can't be beaten. A copy of the famous Eliza is included of course, the syntax of the programs needs altering to suit the Dragon of course but it is a much better book. If you want a copy, I suggest you order using a pseudonym and collect it wearing dark glasses! Also of interest is a Dragon variation of Eliza the computer psychiatrist in the Dragon 32 Book of Games. As well as being interesting to learn about computer intelligence, these programs can be very entertaining, especially if you have friends who are not familiar with computers, it is surprising that they can often be fooled into believing that the computer can understand what they are typing in. If you wish to have a look at any of these books, do bear in mind that the local library can usually obtain any title, it isn't neccesary to go out and buy them.
As a final thought, it is worth considering a fear held by some that having designed and built a computer capable of thought, it will then become superior to us, rule us and become impossible to switch off. Although we may get close to that mark, I think it is an unobtainable goal, however it is one which should be striven for, if xxxyears ago, it had been believed that it wa not possible to travel faster than 4mph and still be able to breathe, we'd still be travelling by canal barge.

I can't really see what all the fuss is about when it comes to "AI"....after all, how do you judge intelligence?....Personally I've always thought it was PEOPLE who needed AI rather than computers!....if you don't agree then try talking to some "Experts", I've never met one who knew which end of his/her anatomy was designed for speech...or if they do, they always APPEAR to prefer using the other end!. Now if someone were to design a form of AI for PEOPLE..... Paul.

EASY MACHINE CODE (6) ... R.A.DAVIS

The first thing you should do when writing an assembler program is to clear the space it will occupy in RAM. Normally the Dragon clears the top 200 bytes for string storage. This space can be moved downwards in memory with the CLEAR command. CLEAR 200,&H6FFF will leave the RAM from &H7000 to &H7FFF free for your machine code program, which can start at &H7000. The DASM assembler allows you to write your program in assembly language using normal Basic line numbers and the normal Dragon EDIT facilities. You can save the assembly version as well as the final machine code. As far as I am concerned this gives it a head start. Your first line with DASM would be;

10 CLEAR 200,&H7000 if you only need 200 bytes for strings and want your code to start at &H7000.

The second command is always the EXEC command to start DASM converting the assembly language into machine code equivalents. This could be line 15. There are then various alternative nstructions you can put on subsequent lines, depending on what you want. Eg. Complete list of the 'passes' etc.etc. Then you define the start address by;

20 @START EQU * which puts the start at &H7000 in this case.

From this point on, you can begin to assemble the machine code itself. Take note that SPACES are important in assembly lines. Now we can make a start.

COM09 REVIEW ..... RANDY LONGSHORE

The COM09 program written by Jason Shouler has all of the bells and whistles one needs for communicating with a BBS and for less than one tenth the price asked by Anderson for their OS9 comms software. COM09 is written specifically for the Dragon 64 with level 1 version 2.00 of OS9. It is a very flexible program (written in Basic09) that can be easily modified to work with other OS9 systems with a resident ACIA driver. It is XON/XOFF driven and fully supports XMODEM protocols. Messages can be uploaded in both prompted and unprompted format. COM09 comes on a single disc with both object and source code. The files on the COM09 disc in CMDS must be copied to your system disc, instructions for this are given. In addition to the CMDS files, you must load the driver and descriptor for the RS232 port, 'asci51' and '/p1' respectively for the Dragon. The five and a half pages of instructions that come with the program are very clearly written and include information on how to modify the program to fit your system. I have used COM09 for over six months, it is the primary program that I use for interacting with BBSs. Comparing other programs such as Ninecom, Xcom09 and Kermit I find COM09 the best and very easy to use. However I find Kermit preferable for up/downloading, if the BBS supports it, Kermit can be LOADed to allow fast uploads and downloads, allowing up to the capacity of a single disc. But COM09 is better for reading BBSs and sending messages. A very useful feature is the buffer which collects your entire session and dumps it to disc. This monitor can be turned off but I find it most useful for later reading. A seperate file, 'download' is used to store programs downloaded in XMODEM mode.

COM09's menu gives the following options:

Receive mode - for initial contact, in this mode the <clear> key acts as <control>; Upload a file - XMODEM can be toggled; Send a message - block prompted and unprompted supported; Login toggle - for auto login sequence on Tandy BBSs; Duplex toggle - toggles half/full duplex; Prompt toggle - used with 'send a message' option; XMODEM toggle - selects XMODEM/XON; Monitor toggle - turns buffer on/off; Hard copy toggle - copies to printer; Pass an OS9 command - useful for directories finding files etc.

COM09 is very easy to install and well worth the price.

... Note that it does NOT support split baudrates ..... TL

DELTA DOS (1) ..... MARTIN LAYLEY

When Premier produced the DeltaDOS crtridge, they also produced two books on the system. These were a users guide and a programmers guide which was issued only to a few professionals. This guide contains much useful information, some of which is detailed below.

Track Ø holds the system information that goes into the disc direct page:-

$7900 Start of first file buffer
$7A00-$7Aff Disc direct page (disc control block)
$7A00/01 Number of tracks on the disc
$7A02 Number of sectors per track
$7A03/04 Sector lengths in bytes
$7A05 8" drive indicator
$7A06 No. of the last directory sector
$7A07 Double density indicator
$7A08 step rate
$7A09 Double sided indicator
$7A0A Current track
$7A0B-0F reserved

Disc direct page (Disc control commands)

$7A10 =F2 Disc restore command
$7A11 =E2 Seek track
$7A12 =C2 Step command
$7A13 =A2 Step in
$7A14 =82 Step out
$7A15 =73 Read sector
$7A16 =53 Write sector
$7A17 =3B Read address
$7A18 =1B Read track
$7A19 =ØB Write track
$7A1A =2F Force interrupt
$7A1B =E4 Seek without verify
$7A1C =F4 Restore without verify
$7A1D Not used

(To be continued ..... TL)

COMPATIBILITY ..... LES GUTTERIDGE

The following tapes/cartridges are Tandy/Dragon compatable.

TAPES

Attack, Ninja Warrior, Rommels Revenge, The Dark Pit, Dark Star, Trekboer, Rommel 3D, Mud Pies, Juniors Revenge, Space Wrek, Lunar Rover Patrol, Synther 7, Vortex Factor, Starfighter, Speed Racer, Tubeway Army, Syzygy, Bloc Head, Nerble Force, Moon Hopper, Aquanaut 471, Cuth in the Cooler, Moon Cresta, Shocktrooper, Storm, Cashman, Shark Treasure and Worlds of Flight.

CARTRIDGES

Skiing, Tennis, Androme, Dino Wars, Chess, Super Bustout, Wild Catting, Quaser Commander, D/D Doodle Bug, Colour Backgammon, Slay the Nerius, Galactic Attack, Space Assault, Project Nebula, Roman Checkers, Bingo Maths, Spectaculator, D/D Starship Chameleon.

There you are, now you can go and raid your local Tandy shop. If anyone else knows of more, let me know.

Note that some SAVE GAME facilities may NOT work.

Dragon Magazine.....

I've just had a letter from Andrew Hill asking me to give Dragon Magazine a plug.....well, It's a bit difficult, because I have to admit that I've never seen it, but I do know it has been going for the past year, and that most of the games players seem to like it, so if you want to try it yourself write to Andrew at 13,Parry Jones Close, Blaina, Gwent NP3-3NH. If Andrew cares to send me a copy I'll give it a proper write-up in a future issue. Paul.

PANASONIC KX-P1080 .... BILL STEVENSON

The first good point, the handbook is intelligible! Remember that LPRINT means PRINT#-2 and as far as I can see, WIDTH 'LPT1',N converts to POKE155,N. What will the machine do? It has the now usual draft and NLQ options, with emphasised mode in both and double strike in draft mode (NLQ is struck twice anyway). It is logic seeking in draft mode, NLQ is uni directional. Using the bench test from Practical Computing Feb '87 I made the draft (100 cps nominal) at around 72cps for the standard letter and NLQ at 18+. This compares well with the article's tests for the FX80 and FX85 both of which are more expensive. It will print 10 letter per inch (pica) 12 (elite), 15, 17 plus double width in all of these, all in Roman, Italic, superscript and subscript, and all mixable on one line. There is no seperate sub/superscript in NLQ but compressed subscript produces a very nice set of figures which with some juggling of codes will combine with NLQ. Software (or more awkwardly dip switches) will give you 11 international character sets, 12 of the printer chracters can be changed around to give accents, currency signs etc. This is complemented by an international italic set. The type face in NLQ Roman is almost indistinguishable from a typewriter. Both tractor and friction feeds are built in. Ribbons are expensive at 7-8 pounds but are claimed to last for 3 million strikes. In short it's a very versatile and efficient machine. I'm glad I bought it and I just wish it had been around at the price (under 200.00 now) when I was looking for a printer 3 years ago.
Other features? It will use all Epsom control codes and a good many others (not IBM) Text can be alligned right or left or be centred or justified (which eliminates the need for same on word processors). You can adjust the line space to pretty nearly anything you like; there are controls for 1/6' 1/8' and 7/72' but another enables you to choose anything from 1/72 to 84/72 or for a single line, any movement in fractions of 1/216.
Snags? I had to move dip switch 3 to ON because the Dragon doesn't send an automatic line feed to the printer. The print head is below the sprocket, so you can't put the first sheet into tractor feed without loosing half a page. All in all this seems like a very good buy at under 200.00.

FIRE FORCE ..... CHRIS PARKINSON

The story: The year is 1996, the only prototype of the IMFTC X18 SPIRIT low level attack plane has been forced down in Africa by a foreign power who are holding it for ransom. Your mission; to lead a crack commando assault team codenamed FIREFORCE penetrate the enemy defense installations and fly this awesome combat machine home! Need I say more?
No doubt you've all seen pictures of this game due to the heavy advertising that's been done. According to the manual there are three phases to the game, as I haven't got past stage one yet, I can't vouch for the other two. Phase 1 is played in a rain forest where you control your commando, trying to avoid being shot (difficult) and to penetrate the enemy lines to get to the bridgehead (phase 2), which seems to be a race against time to get across the bridge before it is shut off. Phase 3 is called the SPIRIT of FLIGHT which entails flying the plane home whilst avoiding suicide attack craft, the landscape and the ground installations.
The game has nice big easy to see graphics which move smoothly. The music is excellent and the overall presentation is good. My only critisisms are that 10.00 seems too expensive and I found the game too hard. Apart from this I think it is an excellent piece of programming and a good game.
... Anyone finished it yet ??? ..... TL

Software firms please note...

Our Software Editor is now Barry Caruth (address on front page heading), and ALL software for review in Update should be sent direct to him for allocation to reviewers. P.G.

Classified and Special Offers Page.

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...
G.W.Hale, 'Rose Cottage, Hungerhill, Coolham, NR.Horsham, W.Sussex. RH13 8QE.

SELLING UP!: Dragon 64 complete and with manual 75.00.
Dragon 32 complete plus a 'vandalised' 32 for spares, (result of failed upgrade attempt!), plus set of 8 64K RAM chips and NDUG Upgrade Manual 30.00 the lot.
Tandy Speech / Sound cartridge, works well with Dragon, (cost 60.00+) 30.00
Premier Sprite Generator card with built in PSU and manual. Plugs into cartridge slot and uses a TMS9929A and 16K onboard RAM to give enhanced taxt display and 32 sprites in 16 colours. WORKS ON D32 ONLY. (cost 100.00+) 20.00
Radio package consisting of: Eddystone EC10 Mk2 SW receiver with mains PSU, one RDU RTTY demodulator card, one homebrew Morse demodulator, Grosvenor RTTY, Morse, and Slowscan software, Amateur Radio Operating Manual, World RTTY frequency list, UK Listeners frequency list. 80.00 the lot.
DELTA discs...FORTH and Telewriter upgrade.
Akai 20" colour monitor, PAL/SECAM/NTSC 4.32 & 3.58 Composite and RGB inputs, plus Stereo sound!. 200.00 (local delivery only!).
TAPES: Acetrace, MST Calc, DRS, Sprite Magic, Printer Control + Dumper...all 5.00 each.
ASSORTED GAMES TAPES ALL AT 1.00 each...too many to list!.
BOOKS: Inside the Dragon, Complete FORTH..2.00 each. Hackers Handbook, CoCo Technical Reference MAnual...1.00 each. All Dragon Users from June 1983, plus 2 Rainbow mags..offers.
Write to:- D.Clark, 5,Cintra Road, Norwich, Norfolk NR1-4AF. (or Phone 0603-31791).

COWEN SOFTWARE Ltd. Colossal Cave (with game save)...6.00. Adventure Writer (full documentation)...8.00.
Both available on cassette from Cowen Software Ltd, 23,Bristol Avenue, Levenshulme, Manchester M19-3NU.

MODEM 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, Willaston, 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, Dagenham, Essex RM10-8BU.

THE ADVENTURE RELEASE OF THE YEAR!. "13th Task" from ARC Software.
Only 2.50 + 30 pence postage.
ARC. 272,Hearns Road, Newton Hearns, Glasgow.G77-5LY.

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

STICK IT!!!...Dragon User Group self-adhesive stickers available in two sizes, 2.25"x1.5" or 3.25"x2". Price 10p and 18p each. Include a stamp with your order please.
Orders to Paul Grade, 6, Navarino Road, Worthing, Sussex.

Circuit Sheets: Available for D32 (most variants), D64, Dragon DOS controler, and Cumana DOS controler. 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 uprate 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. (0272-875528).

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, 0932-242888 evenings only.

DRAGONDOS DISC EDITOR: Easy to use. Two oprational modes, examine and edit. Will read and edit ANY disc including those written on other systems. Reclaims KILLed files. Accesses and changes files directly on disc. Includes DISCMENU which can be used with any of your own discs. Written by John Cox. Price 6.50 inclusive.
Cheque/order to the Group, 6,Navarino Road, Worthing, Sussex.

DRAWEZEE! A graphics drawing program, on tape, which we think is one of tthe 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 EPROMS: Your DOS 2764 reblown to "patched" V1.0 specificaton, 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!).

Disc Diary: Program written for the Group by Tony Simmons....keep track of dates and events without having to keep track of all those bits of paper you wrote them down on!. Available on DragonDOS for D64's at only 5.00 inclusive.
Cheques and orders please to the Group at 6,Navarino Road, Worthing, Sussex.

AUTODIAL: Available ONLY through the Group!. This unit operates via the Dragon cassette remote port without interfering with its normal use, and enables you to dial direct from your keyboard or via a menu, and includes a redial facility. For use with any modem, or just as a memory dial unit for your phone!. NOT BT app. (but nor are 99% of phone accessories....we KNOW you'd never dream of offending Telecom), but complete with software for ONLY 13.50 plus postage.
Phone T.Rees on 01-998-0519 for further details.

DDCOPY: Dragondos to OS9 file copy utility. Includes 'Telewriter' & Basic conversion filters....8.00.
COMMS: OS9 comms. 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: Selecton of useful public domain OS9 utilities on one disc....5.00.
Jason Shouler, 70,Victoria Road, Parkstone, Poole. BH12-3AE. (0202-722599).

LAST FEW LEFT!!. NEMESIS programs, Dragon55 and Meddler utility programs on cassette at the special price to members of only 3.50 each inclusive.
Cheques / orders to Paul Grade, payable to the Group.

WANTED!. Any good educational and business accounts programs, either on cassette or Dragon DOS disc (D32 only). Details please to:-
L.Ho, 101,Battle Road, St.Leonards-on-Sea, Sussex TN37-7AD.

Book for sale: CELESTIAL BASIC by E.Burgess. Original price 13.00, asking 10.00 ono.
Phone Barry on 0424-714648.

And still more ads!!!.

WANTED!. Contact with any CoCo owners, especially anyone owning CoCo AND DRagon machines.
Write to: Martin Bateman, 121,Coppice Way, The Coppice, Aylesbury, Bucks.

Dragon 32, complete and as new condition, with a good selection of software. 45.00.
Phone Dave Rothery on 04574-3912.

2 Dragon 32's, in good condition, with manuals etc, 40.00; Dragon Data Chess, Superwriter2, and Hi-Res cartridges 10.00 each; several cassette and cartridge games, complete set of Dragon User magazines (up to sub.only time), and various books including Inside the Dragon and Reference Guide. All sensible offers considered.
Phone Graeme on 0789-842015.

Do you have a monitor without sound facilities and wish you had sound?. Then you need our miniature audio amplifier (less than 2" square!). Simple to fit into your Dragon or Monitor. 13.00 inclusive of post and packing.
Alan Butler, 16,Barnston Green, Barnston, Gt.Dunmow, Essex.CM6-1PH.

NEWCOPY: A m/c tape utility program for the production of backup copies of m/c programs. Capable of loading either headed or headerless programs or sections of programs, and saving these in thier 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.

Household Accounts program: Written by Graham Strong this program is ideal for almost all home accounts purposes. Capable of providing estimates of next years bills!!!, and many more features. Price (DragonDOS disc) 5.00 inclusive.
Orders to G.Strong, 78,Coleridge Crescent, Goring, Worthing, Sussex.

Fed up with that grotty black text on a green or white background whenever you use FLEX or OS9 etc.?. You need our INVERSE VIDEO board. This board produces green or white text on a black background when using Hi-Res graphics text. Easily adapted to operate on text screens if required. Suitable for D32 & D64, and simple to fit. Price 15.00 inclusive.
Cheques / orders to Alan Butler, 16,Barnston Green, Barnston, Gt.Dunmow, Essex.

Letter from the Tail!.

Julian Cogdell has asked me to print the following extract from a letter he has written to me re Dragons Tail Magazine.

"Due to the controversy in Dragon Update regarding Dragons Tail Magazine, I'd like to tell everyone that if they would like to see a copy of DTM, before parting with any money, they have only to write to me at 34,Shooters Drive, Nazeing, Essex. EN9-2QD, enclosing a stamped addressed envelope, and I'll pop the current issue in the post to them. In this way they may decide about DTM for themselves rather than relying on someone else's personal opinion."

Well, hopefully the subject should now be well and truly closed. If Julian cares to send me a copy of Issue 2 I'll give it a write-up in Update.

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

Having spent the entire day (Sunday) typing up these master pages ready for the copier I can't help wondering whether it's worth all the effort!. Yes, I KNOW a lot of you take the trouble to write and tell me how much you appreciate Update, etc, and I'm very grateful to you for doing so, but you'd never believe the letters that I get from Dragon owners who have only just heard about the Group via someone at their local computer shop or somewhere similar!.
Depressing, isn't it?...we've been around for over two and a half years now, been at all the London shows, had dozens of mentions in magazines (notably Dragon User), and grown to almost a four figure membership. Either Dragon owners must be a remarkably secretive lot, or someone must have started a rumour that Update is covered by Section 2!. Anyway, I've decided to stick my neck out this time.....What I'd like you to do is write to your usual computer magazine, whether Dragon User or one of the more general publications, and tell them what YOU think of the Group....the good things about it and the bad, and whether you think it's value for money or not. Whether you write it as a letter or an article is up to you, and whether or not it gets published is up to the Editor..(Yes, that IS a hint, Helen!), but it might help others to learn more about the Group, and hopefully it might give ME a better idea of what you do or don't like so that I can try to make the Group a better one.
OK, I know I'm asking to get shot down, but what's wrong with that?.....How do I know if I'm making a mistake if no one mentions it?!, but the main point is that there are a lot of Dragon owners out there who sell their machines simply because they believe that there isn't anyone around to help them if they get stuck, and while YOU know we're here and what we can and can't do, THEY don't unless YOU tell them. So how about it?....want to help other owners?. Paul.

The Thirteenth Task

An Adventure of Classical Proportions

'The Thirteenth Task' puts you, the player, in the role of Hercules, that hero of Classical times. According to ancient mythology, Hercules was obliged to perform twelve harsh labours, all of which he completed without fail. Now, however, he has been given a thirteenth task - he must kill Hades, the ruler of the Underworld, and so win his crown for his master Eurystheus.

YOU are Hercules. This is YOUR task.

Your endeavours seem to be thwarted at every turn, as many of the characters of Classical times re-appear to cause havoc and plague your efforts with misfortune. Still, at least you have plenty to keep you occupied!

Here's what the reviewers said about 'The Thirteenth Task':-

"...a nice display... a good adventure with a lot of logical puzzles and a good storyline too." - ADVENTURE PROBE, Nov 1986.

"...I loved the atmosphere and the unusual plot... a great adventure at twice the price... Go and buy it." - DRAGON UPDATE, Dec 1986.

"...a decent-looking product... well worth investing three quid in." - DRAGON USER, Dec 1986.

'The Thirteenth Task' is available as a special offer to NDUG members for only 2.50 + 30p postage. So send off now to Arc Software, 272 Mearns Road, Newton Mearns, Glasgow G77 5LY.

DRAGON

VISIT THE NEXT

6809 SHOW

ROYAL HORTICULTURAL OLD HALLS, WESTMINSTER, LONDON

SATURDAY 28th MARCH

10.00 a.m. - 5.30 p.m.

Admission: Adults £2.50 Children £1.75

Reduction for Advance Ticket:

Adults £2.00 Children £1.00

Cheques payable to JPPR

Forward to: 28, Trevarrick Road, St. Austell, Cornwall

Further information from **Jenny Pope** at the above address

UPDATE

THE 2nd. DRAGON COMPUTER SHOW (OSSETT).

Ossett Town Hall, Nr. Wakefield. W. Yorks.

Saturday 11th. April 1987. 10.00 to 3.00. Admission 1.00, Children and OAP's 50p.
All the major Dragon retailers will be there, and you can watch demonstrations by Dragon owners who use their computers in an interesting or unusual way. Refreshments are available, so bring the family along for a good day out. If you'd like to take part, either as a Demonstrator or a retailer, please contact John Penn on Bordon (04203) 5970.