

DRAGON Data Ltd.™ **WORLD**

FIRST EDITION December 83



INTRODUCING THE NEW DRAGON MICRO



SPECIAL FEATURES
DRAGON 64
 Details



INTRODUCTION TO 'DRAGON WORLD'

MESSAGE FROM MR. BRIAN MOORE DRAGON DATA'S NEW MANAGING DIRECTOR



May I welcome you to our new magazine, "DRAGON WORLD", which is Dragon Data's first step towards improving our service for all Dragon users.

I have recently taken over as managing director of Dragon Data and am delighted to tell you that the company is now entering a very exciting phase of its development during which, over the next few months, we will be introducing new products and a whole new range of software.

Finally, may I take this opportunity of wishing you all a happy Christmas and New Year, and continued enjoyment of our products. I look forward to hearing from you on any aspect of Dragon Data which interests you.

INSIDE INFORMATION

Apart from the obvious step of renaming our publication 'DRAGON WORLD', one of the many changes in this issue is that we have brought in more staff from within Dragon Data to help in its production.

There are now representatives from the Customer Support Department, whose main aim in life is to keep you happy, and one of the objectives of this magazine is to help do just that.

The Marketing Department is strongly represented, and this should mean that excellent offers are made available on a regular basis.

We also have administrative help, which should mean this bi-monthly magazine reaches you on time!

The central contributing team remains the same, and all your old favourites such as 'Machine Code Corner' and 'Young Users' Pages' will still be included.

A more serious aspect is introduced in this issue with details of the Dragon 64 and the applications software associated with it.

AIMS AND OBJECTIVES

These are quite simple; we aim to help Dragon users with information and also to help them contact other users to meet and exchange ideas. In this and future issues, you will find two pages devoted entirely to user clubs and groups. However, there is a small catch (as with everything!), we need to hear from you with details of your club so that we can continue with these pages. We would also like to have your ideas and suggestions for future issues of 'DRAGON WORLD'. There are obviously certain restrictions as to what we can do, but ideas within reason will certainly be taken into consideration. Requests for autographed photographs will be turned down due to camera-shy staff.

CONTRIBUTIONS

As previously with 'STOP PRESS', all contributions will be gratefully received — not the monetary kind — but programs, articles and suggestions. All you need do, if you fancy going into print, is to send us a copy of the program, preferably on cassette, with a written description of what the program does. Articles and other suggestions need only be legible and sensible. We obviously cannot include everything sent to us, but we shall certainly endeavour to print the best contributions.

The address for all correspondence is:—

Editorial Team,
'DRAGON WORLD',
Dragon Data Ltd.,
Kenfig Industrial Estate,
Margam,
Port Talbot,
West Glam. SA13 2PE.



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EDITORIAL

We would like to introduce you to our new publication, 'DRAGON WORLD', which takes over from issue number 5 of the existing 'STOP PRESS'. This is in direct response to your requests for a bigger, more complete and informative magazine. Since Dragon is now represented in 16 countries throughout the globe, from places as culturally distinct as the USA and Iceland, we felt that this expansion would aid us in appealing to a wider audience.

We aim to stay in constant touch with you, and will be introducing our new products as they become available. We also aim to devote certain pages specifically to you, the reader, for your comments on anything connected with Dragon Data. After all, communication of information is not all one-way.

The Dragon 64 is now available and, for those of you who have been awaiting news on an upgrade, the insert in this magazine should be of interest. The advent of the Dragon 64 opens up a whole new world for home computer users, with high-quality business software available at an unparalleled price. Further details on this are to be found within the magazine.

We have had many requests from users to sell software direct. As many of you seem to have been having problems in obtaining software through our existing network of dealers, we now intend to make it possible for readers of 'DRAGON WORLD' to buy software direct from us. There is an order form included in the centre of the magazine; if you wish to take us up on this offer, just complete the form and send off your cheque to the address given.

Following on from the success of our Birthday Offer, we are offering you the chance to buy special packs of our software posters. These have proved very popular at exhibitions in the past, and now you can obtain a complete set at a very reasonable price. (See centre fold.)

For those of you within easy reach of Wembley, we shall be demonstrating and selling our software at the Christmas Fair to be held at the Wembley Conference Centre from 15th — 18th December. There will be staff on hand to advise on our products and to answer your queries. In future,

we shall hopefully be able to give you more notice of such events, and I am sure we will be able to meet a broad base of our many users.

We know that Dragons can be used for many serious applications, but would like you to tell us if you have any unusual or interesting uses that may be of interest to other users and ourselves.

If you know of any Dragon users who have not yet returned their warranty card, then tell them to do so quickly so that we can include them on our mailing list.

We hope that you will enjoy reading this magazine as much as our staff have enjoyed writing it. And don't forget, any comments from you on its contents or ideas for improvement, can only help in producing the biggest and best DRAGON magazine on the market.

Due to the resounding success of our Birthday Offer featured in the last edition of "Stop Press" we have decided to extend the offer until the end of December. The cassette contains three games — HOPPY — can you help Hoppy cross a busy road and fast flowing river to reach his lilypad? SANTA LAVERNA — an adventure game for the whole family and MESON RAID — your mission as Captain of the Starship Challenger is to destroy all the Meson craft before it's too late.

Hurry — if you don't want to miss this once in a lifetime offer, send in your cheques immediately for £14.95 to Dragon Data Limited, BIRTHDAY OFFER, Kenfig Industrial Estate, Margam, Port Talbot, West Glamorgan SA13 2PE — please allow 28 days for delivery.

PLEASE NOTE

When typing in programs always make sure that you are using the correct key for the number 1 and the letter I.

```

Ø REM EDITORIAL MESSAGE
2Ø FOR I=1 TO 52: READ A:
  A$=A$+CHR$(A+32):NEXT
3Ø FOR I=1 TO LEN(A$):P$=MID$(A$,I,1)
4Ø L$=CHR$(134+RND(7)*16):B$=" "
5Ø PRINTTAB(12);L$L$B$P$B$L$L$
6Ø READ T$:IF T$="XXX" THEN RESTORE:
  RUN: ELSE PLAY T$
7Ø NEXT:GOTO3Ø
8Ø DATA Ø,33,Ø,4Ø,33,48,48,57,Ø,35,4Ø,5Ø,41,
  51,52,45,33,51,Ø,33,46,36,Ø,46,37,55,Ø,57,
  37,33,5Ø,Ø,52,47,Ø,33,44,44,Ø,47,53,5Ø,Ø,
  5Ø,37,33,36,37,5Ø,51,Ø,Ø
9Ø DATA Ø3,L2,T5,G,L4,G,G,L2,G,Ø4,E,D,Ø3,B,
  G,L4,G,G,L2,G,Ø4,E,L1,D,L4D,C,Ø3,B,A,L2,
  G,B,L4,E,E,L2,D,L4,G,A,B,Ø4,C,L2,Ø3,B,A,G,
  P2ØØ,XXX
  
```




USER CLUB NEWS

Well, here it is at last! the long awaited Users Club information as promised in earlier issues of 'Stop Press'. The feedback from clubs was, unfortunately, not as large as expected, but this is a start at least and will hopefully encourage more clubs to contact me. If you want your club included on these pages, then write to me at the editorial address giving details of the club, or proposed club, and I shall include the information in future editions, of 'DRAGON WORLD'. Also, if your club has any special events planned, let me know in plenty of time and I shall try to give news of it on these pages.

In future, I should like to be able to feature a different club every issue so that you can find out what particular clubs are doing and all the behind-the-scenes information. If time and work permit, I would like to visit clubs and develop a greater rapport.

CLUB LIST

ENGLAND

Buckinghamshire
J. Griffin,
1 Garrard Road,
Britwell Estate
Slough. Tel. Slough 35268.

Essex

Dragon Independent Owners Association (DIOA)
School House,
Winter Gardens,
Hilton Road,
Canvey Island, SS8 9QA.

Leicestershire

Paul A. Thomas,
1 Whitelake Close,
Melton Mowbray, LE13 0EQ.
(Paul is thinking of setting up a club)

London

West London Dragon Users.
Telephone Bob Palmer on 01 427 2038.

Tyne and Wear

Dragon 32 User Group,
22 Lyndhurst Avenue,
Jesmond,
Newcastle Upon Tyne, NE2 3JL.

West Yorks

Mr. J. W. Smith,
63 Hamworth Road,
Heaton, BD9 6LM.

Warwickshire

Tame Computer Club,
29 Holte Road,
Atherstone.
(Alan Harper — Hon. Sec.)

WALES

Mid-Glam.

Beddau and District Computer Club,
6 Lewis Street,
Church Village,
Pontypridd, CF38 1BY.

Gwent

Mr. G. Powell,
8 Hillcrest Road,
Coed-y-Cando,
New Inn,
Pontypool. NP4 0RB.

NORTHERN IRELAND

Peter Leach,
Northern Ireland Dragon User Club,
95 Donegore Drive,
Antrim, BT41 1DZ.

North Down Microcomputer Users Club,
(Chairman — Mr. E. S. Doak)
Tel: 0247 50902.

SCOTLAND

BP Forties Bravo Computer Club,
Forties Bravo,
BP Pet. Dev.
Farburn Industrial Estate,
Dyce,
Aberdeen.
(Off-Shore Oil Rig)

OVERSEAS

There are clubs starting up world-wide, a few of which are given below. One user has suggested we start a pen-pal network with overseas users; I would be pleased to hear from interested users both in this country and abroad.

BELGIUM

A. R. J. Timmermans,
Rue Des Combattants 4,
B-6110 Montigny-le-Tilleul,
Belgium

SPAIN

Fernando Lusa,
Gran Via 7,
San Sebastian 2,
Spain.

SWITZERLAND

Chris Donatsch,
24 CH David Hunier,
1224 Chene-Bougeries,
Geneva,
Switzerland.

CHRISTMAS FAIR

As mentioned earlier in this magazine, we shall be at the Christmas Fair at Wembley, December 15th — 18th. Those clubs who have contacted me previously should by now have received the information leaflets on this. These shows present an ideal opportunity for you, the user, to meet the people behind Dragon Data Limited. I shall be at the Christmas Fair myself for the duration except Sunday (the fact that I have a Birthday that weekend has nothing to do with my absence on Sunday!) and should be more than pleased to meet not only existing clubs on the list but those clubs that are interested in being included in future.

Once your club is included on the list we will be able to send you details on party bookings for shows and exhibitions and keep you posted on when our staff will be appearing in public.

Merry Christmas to all the Clubs.

Cathy Hyde

DRAGON CHRISTMAS COMPETITION (Under 13's)

Free software for the best program to draw "the star in the East". Programs should be not more than 20 lines long and should be sent to the editor stored on a cassette together with a listing. The cassette should be clearly labelled with your name and address and will be returned on receipt.

Entries should be received by JANUARY 30th at the editorial address

DRAGON PUZZLE 3: SOLUTION

```
10 CLS:PRINT"DRAGON PUZZLE 3"
20 PRINT@173,"FLAG"
30 PRINT@266,"DREAM"
40 PRINT@227,"STORM ARROWS"
50 PRINT@331,"CHESS"
60 PRINT@106,"QUEST"
70 PRINT@299,"BERSERK"
80 PRINT@140,"POSEIDON"
90 PRINT@203,"METEORIDS"
100 FORI=109TO360STEP32:
    P=PEEK<I+1024>:PRINT@I,CHR$(P+32);:
    NEXT
110 PRINT@400,""
```

DRAGON PUZZLE 4

Fill in the missing words and then type and run the program to find the hidden message.

For a hint, type the extra lines 110 and 120 and all will be revealed.

```
10 CLS:PRINT@10,"DRAGON PUZZLE 4"
20 PRINT@259,"-----"..... ONE OF THREE
                                GIFTS
30 PRINT@328,"----"..... ANOTHER ONE
40 PRINT@165,"----"..... YOU CAN'T HAVE IT
                                AND EAT IT
50 PRINT@360,"----"..... WHITE AT CHRISTMAS
60 PRINT@198,"----"..... FOLLOW IT FROM
                                THE EAST
70 PRINT@99,"-----"..... FIND THE HIDDEN
                                ONE
80 PRINT@229,"----"..... CHRISTMAS CARDS
                                TRAVEL BY IT
90 PRINT@291,"-----"..... THIS ONE'S A GIFT
100 PRINT@133,"-----"..... WHERE THE
                                PARTRIDGE WAS
130 PRINT@400,""

110 FORI=3 TO 10:FOR J=6 TO 8 STEP 2
120 X=32*I+J:P=PEEK(X+1024):
    PRINT@X,CHR$(P+32);:NEXTJ,I
```



LETTERS FROM READERS

Tornado

This joystick game was contributed by Brian Olsen, of 6965 Cadro, Switzerland. The object of the game is to make the yellow circles "eat" the apples (red circles with yellow lining), before a tornado comes. You have about 10 seconds to eat one (only one) of the apples. The low beeping sound warns when the tornado is arriving. You must not run into the blue circles because they are holes. When the tornado comes, you can eat an apple, but eat it before it gets you! You use the right joystick.

```
10 CLS:PRINT@204,"tornado":PRINT@234,
  "BRIAN OLSEN":PRINT@266,
  "6965 CADRO":PRINT@298,
  "SWITZERLAND"
20 PLAY"T10BDEBDEBDEGGL5DCBAGDDBL2
  T70BDEBDEBDEBDET12BDEBDEBDEBAG"
30 FORT=1TO400:NEXT:SC=0:CH=0
40 UI=45
50 VV=35:OP=0:Pmode 3,1:SCREEN1,0:
  PCLS
60 A=RND(70):IF A<15 THEN 60
70 E=RND(11):IF E<5 THEN 70
80 FOR B=1 TO A
90 C=RND(240):IF C<15 THEN 90
100 D=RND(175):IF D<15 THEN 100
110 CIRCLE (C,D),E,3:PAINT(C,D),3,3:NEXT B
120 XX=RND(3):FOR ZZ=1 TO XX
130 AA=RND(240):BB=RND(175):
  CIRCLE(AA,BB),E+2,4:PAINT(AA,BB),4,4
140 CIRCLE(AA,BB),E+2,2:NEXT ZZ
150 OP=OP+1:IF OP>UI THEN 160 ELSE 170
160 CIRCLE(F,G),VV,3:VV=VV-1
170 F=JOYSTK(0):F=F*4
180 G=JOYSTK(1):G=G*3
190 IF F>247 THEN F=247
200 IF F>8 THEN F=8
210 IF G>185 THEN G=185
220 IF G<5 THEN G=5
230 CIRCLE(F,G),5,2
240 IF OP<UI-6 THEN SOUND 252,1
  ELSE SOUND 1,1
250 IF PPOINT (F,G)=4 THEN 280 ELSE 260
260 IF PPOINT (F,G)=3 THEN 330 ELSE 270
270 GOTO 150
280 PLAY"T65EDCCEDCCGFEEGFEE"
290 IF E>7 THEN SC=SC+9 ELSE SC=SC+18
300 IF VV<UI/2 THEN SC=SC+50
  ELSE SC=SC+20
310 UI=UI-1:IF UI<=8 THEN UI=34
320 GOTO50
```

```
330 SOUND 1,8:FORD=1TO600:NEXT:
  CH=CH+1
340 IF CH=3 THEN 400 ELSE 350
350 CLS3:PRINT@128,
  "YOUR SCORE IS ";SC PRINT @
  192,"CH" DONE .. "3-CH" TO GO I"
360 PLAY"T20CCCCDDDEDGAFAG"
370 PRINT@256,"YOU EITHER FELL
  IN A HOLE OR GOT CAUGHT IN THE
  TORNADO"
380 PRINT:PRINT" PRESS SPACEBAR
  TO CONTINUE
390 M$=INKEY$:IF M$=" "THEN390
  ELSE IFM$=" " THEN 40 ELSE IF M$
  <>" " THEN 390
400 FOR A=0TO8:CLSA:PRINT@192,
  "YOUR SCORE WAS ";SC
410 SOUND A+10*10,3:NEXT A
420 PRINT@256,"ANOTHER GAME (Y/N)":
  F$=INKEY$:IF F$="Y" THEN 10 ELSE IF
  F$=" " THEN 420 ELSE IF F$="N" THEN
  430 ELSE GOTO 420
430 CLS:SOUND 250,10:END
```

Spinning Ball

This program, which shows a spinning ball on a piece of string, was contributed by Christopher Mckinna of Ulverston in Cumbria. It demonstrates how the PCOPY command can be used to "animate" graphics.

```
5 REM SPINNING BALL BY C.J.MCKINNA, 1983
10 PCLEAR8:Pmode2,1
20 PCLS
30 FORX=0TO1STEP(.1+(A/16))
40 LINE(30,60)-(170,60),PSET
50 CIRCLE(100,60),40,1,X,1,0
60 NEXTX:PCOPY1TO3
70 IFR=1THENRETURN
80 FORB=2TO6:R=1:A=1/B
90 GOSUB20:R=0:PCOPY1TO2+B
100 NEXTB:SCREEN1,0
110 FORX=3TO8:PCOPYX TO1:NEXTX
120 GOTO110
  The graphics take about 10 seconds to set up —
  if you want to see what's going on, insert
  15 SCREEN1,0
```


DRAGON ANSWERS BACK

Question

I have owned a DRAGON 32 computer for three months and have now encountered two problems with it:—

1. If the computer has to wait for an input for approximately ten minutes or more, bugs appear in the program and the program is lost if RESET is pressed.
2. Sometimes during a program, the screen fills with inverse @ signs and the keyboard loses control.

Can you give me any help?

Answer

The two problems you have described are most probably related. I suggest you check for fluctuations in your domestic power supply during these "crashes". If these are apparent, a small line filter should allow you to overcome them. Also, check whether the speed up POKE (65495,0, for those who are unaware) is used, as this may also give some adverse affects.

If neither of these points are apparent, you may have a problem with your machine. Your best course of action would be to get the machine checked by your original dealer or a service agent.

Question

I am hopefully going to buy a monitor soon to connect to my DRAGON 32, but am a little confused by the terms used to describe monitors.

1. What is PAL?
2. Does the DRAGON need a composite signal or RGB?
3. Can you recommend any particular monitor?

Answer

The DRAGON's monitor socket allows connection with a PAL monitor (PHASE ALTERNATE LINE) using a composite video signal. The impedance should be matched and as the DRAGON has an impedance of approximately 370 ohm, and most monitors have 75 ohm, you may need to have the cable modified.

While I cannot recommend any particular monitor, we have had good reports from people using monitors by MICROVITEC, LUXOR and the new FIDELITY.

Question

Have Dragon Data Limited got a word processing package available as yet? I have seen some commercially produced packages, but I feel £50 for a cassette to be a little steep, even for a word processor.

Answer

Dragon Data Limited will have a word processor available in the near future called SUPER DRAGON WRITER II. This will retail at £49.95. It will be on cartridge and will come with complete documentation. It will give a 51 x 24 screen, with auto-repeat on all keys. It will also have upper and lower case characters.

Its facilities include 80 column width for use with correspondence quality printers, the ability to save standard letters and paragraphs onto cassette, and it will also have the ability to access all the printer's specialist character output modes direct from the package.

Question

I recently purchased a DRAGON 32 from Boots and in the package there were the software titles "Personal Finance" and Selection II. After experimenting with games and my own programs, I attempted to use "Personal Finance" and Selection II to help with the household accounts and to "computerise" my record collection. After many attempts at retrieving my data, I kept having I/O errors in 4000, when the line was listed, it was usually an INPUT or open statement. My cassette recorder works perfectly with all other programs. Can you help please?

Answer

We are aware of the problem some people are experiencing when saving and loading DATA files. These are usually caused by the Automatic recording levels used in most modern recorders. When saving DATA, the header may be saved at a volume slightly too low for the DRAGON to recognise. This would give the I/O errors you have mentioned. I suggest that, before creating the files, you POKE 144,3. This raises the DRAGON's output levels and enlarges the header to allow the recorder to save it correctly.

Question

I have been recently writing programs for my DRAGON 32 and find it frustrating, when listing a program, that the screen flashes past at a ridiculously fast speed. Is there any way of slowing down the scroll speed?

Answer

You can slow down the DRAGON's character output by entering the POKES shown below:—

POKE &H167,&H13
POKE &H168,&H13
POKE &H169,&H13

The above POKES give a scroll speed which is readable. To reset it POKE the numbers with 0.

If you have any queries you would like answered on these pages, then please write to 'Dragon Answers Back' at the editorial address. We regret that, initially, we will be unable to answer each letter personally, but we will try to get a large cross section of letters printed.



YOUNG USER'S PAGE

Well it's nearly Christmas and I expect you are looking forward to the school holidays and lots of presents and good food. Your page this week contains programs for Christmas; one to help you get ready, a game to play and a program to help you write those thank-you letters. They all need to be typed very carefully so take your time or ask someone to type them in for you-in the Christmas spirit of goodwill!

CHRISTMAS TREE

The first program shows a Christmas tree which needs dressing. Dragon will provide a never ending supply of candles, parcels and baubles with which you can decorate the tree. When you RUN the program you see the tree and a tiny dot in the middle of it. Put the dot where you want the decoration by using the arrow keys. Press the spacebar to stop it moving — the dot disappears but now you can press keys C, B or P and Dragon will put a Candle, a Bauble or a Present in that place. Now the dot has reappeared and can be moved about. If you want a change of colour, press the spacebar and key 1, 2, 3, or 4, for colours green, yellow, blue or red. When the dot reappears you can move it and the next decoration will be that colour.

You must make the dot disappear by pressing the spacebar before the program will accept a colour or decoration request. If you forget where the dot is press Ø to make it reappear. You stop the program with the break key. (If you then want it back type SCREEN 1, Ø: GO TO 1ØØ.) Now you can light the tree with candles and pile up presents underneath it.

(The dot in this program moves in the same way as the dot in the ISLANDS program. In fact lines 5ØØ-55Ø are lifted straight from that program and if you have saved a version of ISLANDS you can load it, type the line

DEL-499:DEL551-

you can now type in the rest of the lines of the CHRISTMAS TREE. You could also alter it to run off joysticks just as ISLANDS did.)

```
1Ø REM CHRISTMAS TREE. MCPS.NOV 83
2Ø PCLEAR8: CLEAR5ØØ: G=1: LE=2: B=3: R=4:
  X=128: Y=99: RA=6: D=8: L=2
3Ø S$=CHR$(8)+CHR$(9)+CHR$(94)+CHR$(
  1Ø)+CHR$(32)
4Ø DEF FNC(X)=-(X+2)*(P<5)-(P=5): S1$="
  Ø1234BPC": C=3
5Ø PMODE 3,1: PCLS(LE): SCREEN1,Ø
6Ø D$="U2ØF7ØL14ØE7Ø": D(Ø)=X: D(1)=Y
```

```
7Ø FOR I=1 TO 4: DRAW D$: NEXT: PAINT(1,1),
  B,R: PAINT(X,Y),G,B
8Ø LINE(124,147)-(132,16Ø), PSET,BF
9Ø LINE(113,16Ø)-(143,19Ø), PSET,BF
1ØØ P=PPOINT(X,Y): PSET(X,Y,FNC(P)): XP=X:
  YP=Y: GOSUB5ØØ
11Ø PSET(XP,YP,P): IF IJ=5 THEN GOSUB7ØØ:
  IJ=Ø
12Ø GOTO1ØØ
2ØØ CIRCLE(X,Y),RA,C: PAINT(X,Y),C,C:
  RETURN
3ØØ C2=FNC(C): COLOR C: LINE(X+D,
  Y+D)-(X-D,Y-D), PSET,B: PAINT(X,Y),C,C
31Ø COLOR C2: LINE(X+D,Y)-(X-D,Y), PSET:
  LINE(X,Y+D)-(X,Y-D), PSET
32Ø RETURN
4ØØ COLOR C: XX=X+D/2: YY=Y+3*D/2:
  GOSUB6ØØ
41Ø DRAW"BM"+STR$(INT(X+D/4))+", "
  +STR$(INT(Y))+"; C2BU3U2E2D3"
42Ø RETURN
5ØØ K$=INKEY$: IF K$="" THEN 53Ø
51Ø IJ=INSTR(1,S$,K$): IF IJ=5 THEN JJ=Ø:
  RETURN
52Ø I=(SGN(IJ-2.5)+1)/2: JJ=IJ-2*I-1.5
53Ø IF D(I)<L THEN D(I)=L+1: GOTO55Ø
54Ø IF D(I)>256-L THEN D(I)=255-L ELSE
  D(I)=D(I)+SGN(JJ)*L
55Ø X=D(Ø): Y=D(1)*3/4: RETURN
6ØØ COLOR C: LINE(X,Y)-(XX,YY), PSET,BF:
  RETURN
7ØØ I$=INKEY$: IN=INSTR(1,S1$,I$):
  IF IN<2 THEN 7ØØ
71Ø IF IN<6 THEN C=IN-1: RETURN
72Ø ON IN-5 GOSUB 2ØØ,3ØØ,4ØØ: RETURN
```

HOLES

Now we have a game called HOLES which is for one or two players. The aim is to get your counter to the other end of the board. But beware some of the places are holes down which your counter might disappear. It will also disappear if you land on your opponent! When it is your turn you can move your counter using the left and right arrow keys. If you want to move only one place, press the enter key after your move. You have four counters or 'lives'. The winner is the one who reaches the end or who survives the longest.

```
1 REM HOLES.M.PEARSON.1.JY.83.
1Ø DIM AT(17), AS(17): B$=CHR$(143): CLS:
  PRINT@75,"HOLES"
2Ø FOR J=Ø TO 2: FOR K=Ø TO 5: AT(
  J*6+K)=128*J+4*K+66: AS(J)=Ø: NEXT K,J:
  !:=1
3Ø FOR I=1 TO 2: INPUT"PLAYER'S NAME";
  N$(I): IF N$(I)="" THEN 6Ø
4Ø E$=CHR$(143+I*16):
  N$(I)=E$+B$+E$+B$+E$+B$+E$+B$+N$(I)
5Ø GH$(I)=E$: NEXT P(Ø)=1: P(1)=17
6Ø N=I-1: IF N<1 THEN END
65 PQ(Ø)=P(Ø): PQ(1)=P(1): I=1:
  DEF FNI(I)=-(I=2)-2*(I=1)
66 R=RND(4): IFR=1 THEN AS(I)=-1: I=I+1
```



```

67 I=I+1:IF I<17 THEN 66
70 CLS:BB$=STRING$(24,B$)
80 C$=CHR$(143)+STRING$(3,128):
  FOR I=1 TO 6: CC$=CC$+C$:NEXT
90 PRINT:FOR I=1 TO 3:FOR J=1 TO 3:
  PRINTCC$:NEXTJ:PRINT BB$:NEXTI:I=1
104 I=RND(N)
105 FOR K=1 TO 2:AS(K)=PQ(K):
  PRINT@AT(PQ(K)),GH$(K):NEXT
110 GOSUB1000:GOSUB2000
115 IF PQ(I)=P(FNI(I)) THEN SC(I)=SC(I)+1:
  PQ(I)=P(I):PLAY"1504CDEF":NC(I)=NC(I)+1
118 IF N>1 THEN I=FNI(I)
120 PLAY"03T10CGCGCGC":GOTO105
400 CLS4:PRINT@100,NC(FNI(I)):" IS
  THE WINNER";
410 PRINT@325,"ANOTHER GAME? (Y/N)";
420 GOSUB4000:IF K$="Y" THEN RUN ELSE
  END
1000 PRINT@448,MID$:N$(I),1+2*NC(I)):"
  YOUR TURN"
1100 J=PQ(I):PP(I)=J:AS(J)=0
1120 C=0:GOSUB3000
1130 IF AS(J)=0 THEN AS(J)=I:RETURN
1140 SOUND100,1:SOUND50,1:
  NC(I)=NC(I)+1:PQ(I)=P(I)
1150 IF NC(I)=4 THEN 400
1160 RETURN
2000 FOR TT=0 TO 800:NEXT:RETURN
3000 GOSUB4000:IF K$=CHR$(8) AND J>0
  THEN:PRINT@AT(J),CHR$(128):J=J-1
3010 IF K$=CHR$(9) AND J<17
  THENPRINT@AT(J),CHR$(128):J=J+1
3020 GG=PEEK(1024+AT(J)):
  IFGG=AS(PQ(I))THENPRINT@AT(J),B$
3030 PRINT@AT(J),GH$(I):GOSUB2000:
  PRINT@AT(J),CHR$(GG);
3040 C=C+1:IF K$=CHR$(32)OR C=2 THEN
  PQ(I)=J:SOUND 100,1:
  RETURN ELSE 3000
4000 K$=INKEY$:IF K$=""
  THEN4000 ELSE RETURN

```

THANK-YOUS

After Christmas, when you have had a whale of a time opening all those presents, you will want to write and thank all those people who sent them: to show how much you appreciate their kindness. Here is a little program to help you think about the letters. It asks you questions and composes a letter for you. It is all right to press ENTER without an answer (e.g. if your house doesn't have a name). The words in brackets are provided as suggestions and to help spelling—your younger sisters and brothers might appreciate this. The program stops after your address (just in case it takes up all the screen!). It prints the rest of the letter when you press the spacebar.

You will find it is good fun writing letters like this sometimes they sound funny. I'm sure you can write much better letters on your own. If you have a printer then you could print the letter by replacing PRINT by PRINT #—2 in lines 70 to 130.

```

1 REM LETTERS.M.PEARSON.NOV 83
10 CLS:T=1:B$=" ":Q$="?:C$=",";
  GOSUB170:N$=I$
20 FOR I=1 TO 7:GOSUB170:AS(I)=I$:
  LI=LEN(I$):IF LI>L THEN L=LI
30 NEXTI
40 CLS:GOSUB170:G$(4)=B$+I$+".";
  GOSUB170:G$(1)=I$
50 READ S$:FOR II=1 TO 3:GOSUB2000:
  NEXT:G$(6)=G$(6)+". "
60 FOR II=1 TO 5:READ N,G$(N):NEXT:
  READ A$(8)
70 L=30-L:CLS:FOR I=1 TO 6:IF A$(I)<>" "
  THENPRINTTAB(L);A$(I);C$
80 NEXT:PRINTTAB(20);A$(7);B$;A$(8)
90 IF INKEY$="" THEN 90
100 PRINT G$(0);G$(1);C$
110 PRINTTAB(4):FOR I=2 TO 6:PRINTG$(I):
  NEXT:PRINT
120 PRINT TAB(3);G$(7);". "G$(8);". "
130 PRINT TAB(4);G$(9);C$:
  PRINTTAB(8);N$;". "
140 PRINT:PRINT:INPUT"ANOTHER
  LETTER Y/N";W$
150 IF W$="Y" THEN RESTORE:FOR I=1 TO 8:
  READ W$:NEXT:F=0:GOTO40
160 END
170 READ D$:PRINT TAB(T);D$;
180 IF F=0 THEN PRINTQ$;:LINEINPUT I$
190 F=0:RETURN
200 READ K,J:F=1:GOSUB170:FOR I=1 TO K:
  F=1:PRINT TAB(6);I:GOSUB170
210 P$(I)=D$:PRINT:NEXT:PRINTS$;:INPUTX:
  G$(J)=P$(X):CLS:RETURN
220 DATA YOUR NAME,YOUR ADDRESS—
  HOUSE NAME,—HOUSE NUMBER AND
  ROAD(AVENUE CRESCENT LANE
  STREET),AREA,TOWN,COUNTY,
  POSTCODE,DATE OF MONTH
230 DATA WHAT WAS THE PRESENT,WHO
  GAVE IT (GRANDMA GRANDPA NANA
  UNCLE AUNT AUNTIE MR MRS MISS)
240 DATA ENTER A NUMBER,6,3,WAS IT—,
  LOVELY,DELIGHTFUL,SUPER,GREAT,
  SMASHING,GENEROUS
250 DATA 4,6,WILL YOU ENJOY—,USING IT,
  SPENDING IT,PLAYING WITH IT,
  WEARING IT
260 DATA 4,9,SIGN OFF,WITH LOVE,YOURS
  SINCERELY,YOUR EVER LOVING,YOURS
270 DATA 0,DEAR,2,THANK YOU FOR THE,
  5,I SHALL ENJOY,7,I HOPE YOU
  HAD A HAPPY CHRISTMAS,8,WISHING
  YOU EVERY HAPPINESS IN THE NEW
  YEAR
280 DATA JAN 1984
290 FOR I=0 TO 9:PRINTI,G$(I):NEXT

```




MACHINE CODE CORNER

In issue 5 of STOP PRESS we looked at ways of creating an index using BASIC programs, and a machine code routine was used to interrogate the index. The datafile contained a series of references consisting of words in ASCII code (setting bit 7 of the final letter) followed by 1-byte reference pages, and ending with a zero. The end of the file was marked by an extra zero.

The assembly listing for the machine-code retrieval routine is as follows.

1	LDY	\$1B	10	9E	1B
2	LDX	4,Y	AE	24	
3	LDB	2,Y	E6	22	
4	STB	\$7FFF	F7	7F	FF
5	LDY	#100000	10	8E	27 10
6	LDU	#9900	CE	26	AC
7	CLR	,U	6F	C4	
8	STX	\$7FFD	BF	7F	FD
9	LDA	,Y+	A6	A0	
10 LOOP1	CMPA	#128	81	80	
11	BHI	LASLET	22	2A	
12	CMPA	,X	A1	84	
13	BLO	NEXWD2	25	1D	
14	BHI	RET	22	14	
15	DECB		5A		
16	BEQ	NEXWD1	27	12	
17	LEAX	1,X	30	01	
18 LOOP2	LDA	,Y+	A6	A0	
19	CMPA	#128	81	80	
20	BHI	LASLET	22	19	
21	CMPA	,X+	A1	80	
22	BLO	NEXWD1	25	06	
23	BHI	RET	22	03	
24	DECB		5A		
25	BNE	LOOP2	26	F1	
26 RET	RTS		39		
27 NEXWD1	LDX	\$7FFD	BE	7F	FD
28	LDB	\$7FFF	F6	7F	FF
29 NEXWD2	LDA	,Y+	A6	A0	
30	BNE	NEXWD2	26	FC	
31	LDA	,Y+	A6	A0	
32	BNE	LOOP1	26	D3	
33	RTS		39		
34 LASLET	SUBA	#128	80	80	
35	CMPA	,X	A1	84	
36	BLO	NEXWD1	25	EB	
37	BHI	RET	22	E8	
38	DECB		5A		
39	BNE	NEXWD1	26	E6	
40 LOOP3	LDA	,Y+	A6	A0	
41	STA	,U+	A7	C0	
42	BNE	LOOP3	26	FA	
43	RTS		39		

This has the effect of "searching" for the required reference word, and recording the relevant page numbers in successive memories, starting at 9900. We shall now investigate how this works.

The input word is obtained from the BASIC program, making use of the fact that memories \$1B/\$1C point to the beginning of the variable storage (after the BASIC program itself). The variables are stored in the same order that they are mentioned in the program. They are listed using the ASCII codes for the first two letters of their names, so it is possible to search for a particular variable. But if we make sure that X\$ is the first variable mentioned in the program, it will always be stored at the point indicated by \$1B/\$1C. The first two bytes are 88 (X) and 128 (which indicates \$). The 3rd byte indicates the number of characters in the string, and the 5th and 6th bytes are a two-byte address — where the 1st letter of the string is stored. (The rest of the letters follow in order.)

The first eight lines of the Assembly listing load X with the address of the first letter of X\$ (the 'target' string) and B with the number of characters in X\$. These are stored respectively in \$7FFD/E and \$7FFF. Y is loaded with 9900 (where the list of reference pages must appear). Line 7 "clears" memory 9900 (i.e. sets it to zero).

The U register is one of the most useful registers available on the 6809. It is called the User Stack Pointer, and in our present program it is simply used as an extra index register (like X and Y). In almost all circumstances it can be used as an alternative to X or Y (an exception occurs when the LEA instruction results in zero — LEAU does not set the Z flag, whereas LEAX and LEAY do). Its real usefulness, however, lies in its ability to create a User Stack, with "push" (PSHU); and "pull" (PULU) instructions to operate on all (or any subset of) the other registers. But that's another story . . .

Lines 9-17 of the program are used to look at the first letter of words in the index. Line 10 checks whether the 7th bit is set (i.e. it is the last letter of the word) and "branches if higher" (BHI) to LASLET. BHI causes a branch if there is neither a "carry" nor a "zero", i.e. if the C and Z flags are both zero. Line 12 compares the letter with the first letter of X\$ (indicated by X) and "branches if lower" (BLO) to NEXWD2. BLO causes a branch if the C flag is set, and is identical to "branch if carry set" (BCS). If the letter is "higher" than the first letter of X\$, then the target word is not in the index, and line 14 passes control to a return (RTS).

If line 15 is reached, we have a match on the first letter. B (the number of letters in the target) is decremented by 1 and a branch occurs at line 16 if B is zero. Otherwise X is incremented by 1 in line 17.

Lines 18-26 operate in much the same way as lines 9-17, looking for a match on the 2nd, 3rd, 4th letters etc. If B becomes zero before a "last letter" is found, or if the word is "higher" (further down the list) than the target, there is a return at line 26.

Otherwise there may be branches to the "last letter" or "next word" routines.

The "next word" routine (lines 27-33) reinstates the X and B values (if necessary) and looks for the next zero in the index (lines 29-30). Line 32 checks for the "end of index" zero, and branches back to LOOP1 if it is not found.

The "last letter" routine (lines 34-39) checks for a match on the last letter. If a match occurs, lines 38-39 check whether it is also the last letter of the target.

Finally, LOOP3 (lines 40-42) transfer the reference pages to 9900, 9901 etc.

On a less serious note, this contribution by Gareth Rowlands shows how a small machine code routine can be used to "animate" low-resolution graphics.

```

10 REM G.ROWLANDS 1983
20 CLEAR200,32000:CLS3
30 GOSUB 150
40 DEF FNA(Z)=Z/2+1
50 CLS0
60 FOR Z=0 TO 15 STEP 2
70 J=Z:FOR I=Z TO 63-Z:SET(I,J,FNA(Z))
: NEXT
80 I=63-Z:FOR J=Z TO 31-Z:
SET(I,J,FNA(Z)):NEXT
90 J=31-Z:FOR I=63-Z TO Z STEP -1:
SET(I,J,FNA(Z)):NEXT
100 I=Z:FOR J=31-Z TO Z STEP -1:
SET(I,J,FNA(Z)):NEXT
110 NEXT
120 EXEC32001
130 SOUND200,2
140 GOTO 140
150 P=P+1:READ R$:IFR$="END" THEN 170
160 V=VAL("&H"+R$):T=T+V:
POKEP+32000,V:GOTO 150
170 IF T=4560 THEN RETURN
180 PRINT"7ERROR IN DATA":PRINT:PRINT"
EVERYTHING":PRINT"IS NOT ":END
190 DATA 86,FF,8E,04
200 DATA 00,E6,84,C1
210 DATA F0,24,19,C1
220 DATA 80,25,02,CB
230 DATA 10,E7,80,8C
240 DATA 06,00,25,ED
250 DATA 10,8E,12,FF
260 DATA 31,3F,26,FC
270 DATA 4A,26,DF,39
280 DATA C4,7F,20,E7
290 DATA END

```

Here is an assembly listing of the machine code routine.

1	LDA	#\$FF	86	FF		
2 LOOP1	LDX	#\$400	8E	04	00	
3 LOOP2	LDB	,X	E6	84		
4	CMPB	#\$F0	C1	F0		
5	BHS	SCREEN	24	19		
6	CMPB	#\$80	C1	80		
7	BLO	NOINC	25	02		
8 LOOP3	ADDB	#\$10	CB	10		
9 NOINC	STB	,X+	E7	80		
10	CMPX	#\$600	8C	06	00	
11	BLO	LOOP2	25	ED		
12	LDY	#\$12FF	10	8E	12	FF
13 LOOP4	LEAY	-1,Y	31	3F		
14	BNE	LOOP4	26	FC		
15	DECA		4A			
16	BNE	LOOP1	26	DF		
17	RTS		39			
18 SCREEN	ANDB	#\$7F	C4	7F		
19	BRA	LOOP3	20	E7		

The routine may be used to enhance any low-resolution graphics-text is left untouched. Line 8 increments graphics characters by \$10, which has the effect of replacing them by the "next colour up". The number of iterations is controlled by the second byte, here set to its maximum value of \$FF

Question

I have owned a DRAGON 32 for six months now, and have recently started delving into the depths of machine code. I have two questions:—

1. Where can I get a comprehensive guide to the 6809 machine code?
2. Have Dragon Data Limited got a more detailed memory map available than the one at the back of the manual, as this is not very instructive.

Answer

For a good guide to Machine Code, I suggest you read a book called "Programming The 6809" by Zaks and Labiak, published by Sybex. This book gives complete insight into 6809 assembly language techniques. An editor/assembler is also required for use with this book.

Dragon Data Limited have a booklet available entitled "Information For Machine Code Users!" which gives a more complete memory map and also includes some useful locations which are of use to programmers. To obtain a copy of this booklet, send a SAE (A5 size) to us, and we will despatch one to you.

If you feel you need more information on the DRAGON's memory locations, I suggest you read a new book, which will be available soon, entitled "Inside The Dragon" by Smead and Sommerville, published by Addison and Wesley, and priced at £7.95.



THIS MONTH . . .

Using DATA Statements

The programming language BASIC has many attractive features, including its facility to read data (numbers or strings) stored in the program itself. Let's examine some of the possible ways of using this facility.

Program lines that make assignments such as (for example)

```
10 A=2.345:B=6.43:C$="ABCD"
```

can be replaced by

```
10 READ A,B,C$
```

together with a line anywhere in the program of the form

```
DATA 2.345,6.43,ABCD
```

Note that quotes are not required around strings but you do have to be careful to make sure that when the READ instruction in line 10 is encountered, the data pointer (which progresses item by item through all DATA statements) is positioned at item 2.345.

If you wish to read through data again, you can do so using the command RESTORE which sets the data pointer back to the beginning. Alternatively, (see issue 3 of STOP PRESS) with careful preparation you can begin at any previously determined point.

It is very important that any assignments such as in the line 10 above are used, particularly where repetitive calculations are involved. (Try running the two short programs below and see how much faster the second one is.)

```
10 TIMER=0:FOR I=1 TO 1000:  
X=2.4+3.4*4.5:NEXT I  
20 PRINT TIMER
```

```
5 A=2.4:B=3.4:C=4.5  
10 TIMER=0:FOR I=1 TO 1000:X=A+B*C:  
NEXT I  
20 PRINT TIMER
```

Using DATA statements to make these assignments often makes it easier to amend/edit the contents later on if they prove to be incorrect, without disturbing the syntax of a program line.

DATA statements can also provide a most effective alternative to typing in INPUT statements, although it is then no longer possible to give useful prompts. To demonstrate this we provide a program which allows you to regard a rectangle of the hi-res screen (from pixels AA to BB horizontally and from CC to DD vertically, with CC below DD) in terms of user units A to B horizontally and C to D vertically. (Lines 10 and 20

define two functions which are used in line 70 to convert user units to pixels.)

```
10 DEF FNX(X)=AA+(BB-AA)*(X-A)/(B-A)  
20 DEF FNY(Y)=CC-(CC-DD)*(Y-C)/(D-C)  
30 PMODE4,1:SCREEN1,1:PCLS1:COLOR0,1  
40 READ A,B,C,D  
60 READ AA,BB,CC,DD  
70 X=FNX(A):Y=FNY(C):U=FNX(B):V=FNY(D)  
80 LINE (X,Y)-(U,V),PSET,B  
100 NEXT I  
110 GOTO 110  
120 DATA 0,10,0,10  
130 DATA 0,40,30,0
```

Because of the data values in lines 120,130, the program translates a 10 by 10 box (in user units) to a box 40 pixels by 30 pixels at the top left of the screen. (to see this, add line 65 to place a dot at the centre of the box!)

```
65 PSET(FNX(5),FNY(5))
```

Insert lines

```
50 FOR I=1 TO 4  
100 NEXT I
```

and further lines of data such as

```
140 DATA 120,170,40,10,10,50,180,50,120,  
170,180,150
```

and similar boxes appear at different places on the screen. This method is thus particularly useful in creating more than one picture on the screen using common user units for each picture.

Designing patterns on graphics screens can often be approached via DATA statements. See for example lines 50, 60 of RACE (issue 5 of STOP PRESS) or try the following short adaptation which constructs a "skyline" of buildings starting in position P, with width W, constructed from graphics character C, and of height H. Line 50 controls the number of buildings in the program and can be easily amended as you add more data.

```
10 CLS  
20 READ N:FOR I=1 TO N:READ P,W,C,H  
30 FOR J=1 TO H:PRINT@P,STRING$(W,C):  
P=P+32:NEXT J,I  
40 GOTO 40  
50 DATA 6  
60 DATA 0,32,175,11  
70 DATA 352,32,143,5  
80 DATA 70,1,182,11  
90 DATA 250,4,242,6  
100 DATA 362,15,255,5  
110 DATA 175,5,231,11
```

Another 'graphic' use of data statements occurred in the program CONCORDE (Stop Press 3). Here is a further version of that program to include yet another seasonal feature to the magazine.


```

10 REM STAR A.M.SYKES NOV 83
20 PMODE4,1:SCREEN1,1:PCLS0
30 FORJ=1TO4
40 N=10:FORK=1 TO 8:READ A(K):NEXTK
50 FOR I=0 TO 10:Z=I/N:FORK=1 TO 7 STEP 2
60 X(K)=A(K)+(A(K+1)-A(K))*Z:NEXTK
70 LINE (X(1),X(3))-(X(5),X(7)),PSET:NEXTI,J
80 PAINT (125,95)
90 GOTO90
100 DATA125,115,0,95,135,125,95,0
110 DATA125,115,192,95,135,125,95,192
120 DATA 70,125,95,80,125,70,110,95
130 DATA 185,125,95,80,125,185,110,95

```



The use of DATA statements can be pursued further to control the branching of the program to different subroutines and it is indeed possible for long programs of a repetitive nature to be constructed by changing the program "script" into DATA statements. The following program demonstrates the essential idea and you can see that simply by adding more data the program can be extended.

```

10 CLS:PMODE4,1:PCLS1:COLOR4,1
20 READ S:FOR J=1 TO S
30 READ FS:IF FS=1 THEN READ X$
40 READ N,M:FOR I=1 TO N:READ X(I):NEXTI
50 ON M GOSUB220,230,240,250,260
60 NEXTJ
70 GOTO70
80 DATA13
90 DATA1,SEE DRAGON USE A LINE COMMAND,
  1,5,64
100 DATA0,1,4,1000
110 DATA0,4,1,20,10,60,50
120 DATA0,1,4,2000
130 DATA 1,NOW SEE IT PRODUCE A BOX,
  1,5,128
140 DATA0,1,4,1000
150 DATA0,4,2,70,10,150,50
160 DATA0,1,4,2000
170 DATA1,NOW SEE IT FILL A BOX,1,5,192
180 DATA0,1,4,1000
190 DATA0,4,3,80,90,140,150
200 DATA0,1,4,2000
210 DATA1,THE END,1,5,258
220 SCREEN1,1:LINE(X(1),X(2))-(X(3),
  X(4)),PSET:RETURN
230 SCREEN1,1:LINE(X(1),X(2))-(X(3),
  X(4)),PSET,B:RETURN
240 SCREEN1,1:LINE(X(1),X(2))-(X(3),
  X(4)),PSET,BF:RETURN
250 FOR I=1 TO X(1):NEXTI:RETURN
260 PRINT@X(1),X$:RETURN

```

As you can see from these illustrative programs, DATA statements provide a very effective means of condensing programs into manageable proportions. It is not surprising therefore that you will find them in constant use elsewhere in this magazine.

DRAGON DATA LIMITED APPROVED PRODUCTS

Books

'The Anatomy of The Dragon' by Mike James
Published by Sigma Technical Press.

'Inside The Dragon' by Smeed and Sommerville
Due to be published shortly by Addison Wesley.

Other

Mobile computer stand which has room for
Dragon, TV, disk drive and printer — monitor shelf
also available.

For further details, contact:

Selmore (Engineering) Industries Ltd.,
24 Mulbury Street,
Tower Hamlets,
London E1 1EM.

Tel: 01 247 3344





DRAGON 64 — YOUR PASSPORT TO PROFESSIONAL SOFTWARE

The release of the Dragon 64 opens up whole new areas in home computing and these pages are designed to give you some insight into what is possible with the new Dragon 64.

If one is going to run truly professional integrated applications programs that are of an international standard then a machine having at least 64K of RAM is required. The DRAGON 64 satisfies this criterion. The launch of this machine together with our high quality Disk Drive units marks the beginning of a very significant era of low cost professional computing from Dragon Data Limited.

A most important factor is the choice of Disk Operating System that is BOOTED into the virgin 64k RAM of the machine at startup. The Operating System is the foundation of the computer's software. It is the master control program that interfaces all the applications software, such as Spread Sheets and Word Processors, to the Hardware. The Operating System can be thought of as a machine manager which coordinates the running of the elements of the computer and associated peripherals. The capabilities and efficiency of the operating system are therefore very important to a computer's performance.

As one might expect, since the machine contains the extremely powerful 6809E microprocessor, the operating system written for this also exhibits advanced power. The chosen Operating System is OS9 from MICROWARE. This relatively new Operating System belongs to the future generation of UNIX-like Multitasking, Multiuser, Structured, Modular Operating Systems. One does not necessarily need to understand the intricacies of OS9 to be able to benefit from it. It simply enables advanced application software to be easily run on a Dragon 64. The more advanced the operating System is, the more advanced will be the software that is written to run under it. OS9 is very advanced.

OS9 TECHNICAL FEATURES INCLUDE:

- * Friendly UNIX-like user interface and environment.
- * Multiuser/Multitasking Real Time Operating System
- * Extensive support for structured, modular programming.

- * Multi-level (hierarchical) directory file system.
- * Fast random-access file system.
- * Device-Independent interrupt-driven input/output system.
- * Readily Expandable and adaptable design.
- * Enables high degree of portability with software.
- * Efficient Memory usage through dynamic memory allocation.
- * Supports PASCAL, C, BASIC 09 etc.
- * Industry Standard for 6809 microprocessor.

Also included is a 51 column by 24 row text screen generator. This can be used in association with the applications packages, such as DYNACALC and STYLOGRAPH and has the following features:

- * True Upper and Lower case characters.
- * Reverse Video.
- * Auto repeat on keys.
- * On-screen underline of text.
- * Extended character set.

OS9 SUPPORT PROGRAMS TO BE LAUNCHED EARLY '84

The first of the OS9 support packages will be launched in early 1984. These are listed below:

Art No.	Title	(£Inc Vat)
F11070	OS9 + User Guide	£39.95
J02100	OS9 Programmers Reference Manual	£19.95
D11047	Editor/Assembler/Debugger	£49.95
B11002	BASIC 09 + Manual	£59.95
S11094	C Compiler + Manual	£79.95
S11093	PASCAL + Manual	£79.95
B11001	Dynacalc Spreadsheet + Manual	£59.95
S11095	Stylograph + Spellcheck + Mailmerge + Manual	£79.95
C11024	Record Management System + Manual	£54.95

The above programs are currently running on larger more expensive machines and it is a measure of the power of OS9 that these have been brought across to run on the Dragon 64 with minimal modifications. On the larger machines Dynacalc, for instance, currently sells for approx £230. The same program from Dragon Data costs £59.95. This price difference is enabled simply through the higher volumes associated with Dragon Products and not through a reduction in quality. This portability also means that as your requirements grow and for instance you require a larger machine with more RAM, then providing you select a larger machine that runs OS9 then you can take your software across to it. In this way you will still have access to all your files that have been created during the life of the smaller machine.

Comprehensive manuals are included with each package and these include detailed tutorials to help speed up the learning process.

Details of two of the applications packages, Dynacalc and Stylograph are listed below:

DYNACALC: THE ELECTRONIC SPREADSHEET

DYNACALC is a computer program that simulates a large sheet of paper (a worksheet) arranged as a rectangular array of columns (Vertical) and rows (Horizontal). At each intersection of a row and column a Cell is formed. Each Cell can either contain a preset value, an expression (the result of which can be dependent on values or expressions in other Cells) or a Label such as a title. The interdependence of Cells through expressions means that once a worksheet has been created a change in the value of one cell can be made to reflect through many cells to give a revised result, or total for example, in a final Cell. In this way 'What if' calculations can be executed almost instantly and at will. This feature is very useful in applications where repeated calculations are required, such as cash flow forecasts, budgeting, cost estimates, and statistical calculations. Permanent copies of each worksheet can be obtained using the printer option.

A worksheet can be much larger than that viewed on the display screen. The display can be made to scroll sideways and up and down to accommodate this. The memory space available is the limitation on the size of the worksheet. On the Dragon 64 approx 1750 numeric Cells can be held in the 21k of user space available after Dynacalc is loaded.

The screen format for DYNACALC is 51 characters across by 24 characters down. An extended character set is available including lower case reverse video.

DYNACALC was not specially written for Dragon Data Ltd, it has been brought across from other much more expensive machines also running OS9. It is therefore a well tried professional package that is being used internationally. It fully integrates with other OS9 applications software packages and compares very favourably with the best available spreadsheet programs.

DYNACALC: the truly professional package.

STYLOGRAPH: WORD PROCESSOR

The STYLOGRAPH Word Processing System is a very easy to use but powerful method of creating and printing text. It can be used for preparing letters and reports etc. Text is typed into the computer and thereby displayed on the video screen. This text can be modified and corrected at will using cursor-orientated control with dynamic screen formatting. Cursor based editing simply means that you may work on any portion of the text simply by moving the flashing cursor to that point. Side scroll is provided to accommodate text that is wider than the video display. Dynamic screen formatting means that the screen display appears as it will on the printed copy. The display

is continually updated to show you how the text will appear. Some of the main features of STYLOGRAPH are listed below:

- * Full Feature Text Editing.
- * Operator Convenience.
- * Flexible 51 by 24 character display format.
- * Complete Formatting Control.
- * Powerful Printing Options.
- * OS 9 Operating System Compatibility.
- * Comprehensive Instruction Manual with Detailed Tutorials.

SPELL CHECK

The spelling checker allows even the inexperienced user to eliminate spelling errors from a file of text. A comprehensive standard dictionary is supplied which contains approx 42000 words. The checking process is achieved by simply typing 'SPELL' followed by the name of the file to be checked. Any suspect words are displayed in context. Decision options for each word are then available. These include: a change for the correct spelling or addition to a supplementary dictionary. Following this process the corrected file is automatically created.

MAIL MERGE

MAIL MERGE fulfills three different needs:

- * Input variables such as names and addresses into a printed document.
- * Allows a number of text files to be merged together at printout to enable several small files to be used to create a larger composite document.
- * Can print multiple copies of the same file. This is especially useful coupled to the multitasking whereby this can be run in the background while you are busy doing other tasks.

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