Editorial

Well, how did you all enjoy the show? Thank you all for coming to visit the stand, this may well have been the last Dragon show, but it will not be forgotten for a long time. We have all made many friends over the years and I am sure that we will keep in touch. The Dragon fraternity are well known for their stubborness after all we are still here. The number of regular Dragon users is however declining, and approx 30 per cent of those due to renew membership subscriptions to this and other magazines are falling to do so each month.

If you do sell a Dragon PLEASE let the buyer have details of our magazine, and what about those other people who read your copy, isn't it about time that they took out a subscription, and how about whatisname, surely you could talk him into a subscription as well. It is now three months since we had a NEW subscriber. The writing is on the wall, it says 'Get your fingers out and do something to help.' How about running a small ad in the local paper, or putting a card in your newsagents window.

Every new subscriber will help to ensure that you continue to receive support for your Dragon.

We have had some reviews of software in this issue.

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Page 6. A competition using DGS+. You would get a years subscription and loads of software.


Page 10. OS9 and FLEX. Of course by David Rothery. Further details on SHLEX.

Page 13. Eric Hall comes strong with a TANDY article. This should please our Tandy readers.

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It is important to realise that 6809 User is an amateur magazine. It is not registered anywhere and is purely produced out of interest and affection for the Dragon.

Every effort is made within limits to ensure consistency and readability. Our aim is to keep the readers' interests high in order to get the magazine established among Dragon users. It is therefore essential that articles of general interest and above all articles about the Dragon be included in the magazine. If you want to get your article included, please send a copy of the contents in A4 size format. A good printed copy is also preferred. Sunnydale Publications understands that not all readers have a printer or typewriter so the above rules are not strictly essential.

We will try to publish all material. Please note, that in the interest of all readers, make sure that all software submitted for publication is free of bugs. If you need an advice or indication regarding this please contact the editorial address.

Contributions to 6809 User will ensure our support for the Dragon micro.
The delayed 6809 User

Dear Roger

It was extremely nice to see good friends again at the Hove Computer Show held on the 2nd June. I was so pleased to get the chance to talk to Roland Hewson who is such a great contributor to the Dragon Micro. Also to see Paul Grade and Stephen Wood of the National Dragon User Group who also contribute so much to our beloved Dragon over the years.

I certainly hope that the Show was a success; I know it was for me as we picked up good bargains for so little money. Barston Electronics sold an Okimate colour printer for £20.00!!! It was snatched by another Dragoneer just before I got my hands on it. Epson printers were going for £70 or £90. I just don't know how they can manage it.

I am certainly looking forward to a Show review by one of our readers in the next article.

I would like to take the opportunity to apologise to our readers for having printed this issue of 6809 User so late. As you can see from the edition No the issue is stated as 'May' issue. Let me just remind you that we have started the 6 editions of the magazine since January 1990 and therefore 6809 User readers should expect issues in May, July, September and November for this year and subsequently 6 more editions in 1991. May and June is a very busy period in the computer industry and thus the delay. Now that Roger is at College it does not help either, but rest assured that our readers will not be let down. The good news is that we have added few more readers into our list. This however, does not mean that we have been flooded with subscriptions. It is a common thing that re-subscriptions of the 6809 User are not very successful.

Roger our Editor, told me that he was gone to the expense of sending 6809 User issues to existing readers who have not re-subscribed, but even still he has had very little response. Also Roger mentioned in his Editorial in this issue, if you have a Dragon that you sell, please make sure that the new buyer knows of the existence of the 6809 User and the National Dragon User Group. It is really important that we maintain the Dragon circle.

From the Hove Show, people mentioned that they would like to see some more programming. I think this is quite true. Paul Burgin provided us with a very good programme and a very useful utility in the last issue. We would like to get some more from our readers. It does not matter how small or large a programme may be. It is essential that you send your listings so that we can publish them. 6809 User is an amateur magazine and therefore we will publish all listings. Please note listings must be free of bugs and therefore if your programme is published, make sure that it appears correct in the 6809 User. If errors occur, then we expect that the author will correct them. It is very frustrating to type a very long listing only to find out that it does not work!

The other subject that I would like to mention, is that in the 6809 User team, we have well known people that use the Dragon for years. Roland Hewson and Ken Smith provide very interesting articles in every issue of the magazine and also important software reviews. We have also the well known David Rothery who gives us all the essentials of the popular Operating Systems such as OS9 and Delta DOS.

Robert Cleminson has had very good response in the Adventurer's Lair Column and this is very good news indeed. A large proportion of Dragon owners enjoy Adventures and I pleased that the Column has the appropriate response. Robert is particularly pleased. Let's keep it up!

We have always asked for your comments or any suggestions that you would like to see featured in the 6809 User pages. Please don't hesitate to bring your ideas forward.

Also information about Tandy or CoCo is always welcome. I am pleased to mention that in this issue we have a Tandy article in page 13 by Eric Hall.

We have had very little feedback from the Classified ads. If you need to sell any software or Hardware get in touch with the Editorial address. Remember this service is free to our readers.

In the last issue we printed the new address of COMPUSENSE. In case you haven't got it please make anote of it. Compusense has been supporting the Dragon and of course the FLEX Disk Operating System for a long time, and there are still items to be bought either software or hardware. They are at:

54 Dawlish Avenue, Palmers Green, London, N13 4HT. Telephone 081-882 8752 and Facsimile 081-882 8239.

Computape of Harry Massey sent me a direct mail letter with the latest software on offer. Virtually all Microdeal software is at £1.50. I know that they didn't make it to the Osset or the Hove Show, but I can assure that they are alive and kicking! They are at 27 North End, Southminster, Essex, CM0 7DN. Telephone (0621) 772 589. You can order items with ACCESS or VISA which is very convenient.

Regards to all of you.

Sotos Mandalos, Twyford, Berks.
ADVENTURER'S LAIR

by Robert Cleminson

Some of you great adventurers out there may be wondering why I seem to be concentrating on the older adventures when it comes to solutions. Well the answer is quite simple, if I provided solutions to the more up to date adventures I would be swamped with howls of protest about how I was spoiling any enjoyment derived through solving them all by yourself.

apart from that I haven't had time to solve them myself and I have no intention of breaking into any of them just to find a solution thereby spoiling my own enjoyment. Especially as new adventures are rather thin on the ground. I had thought about trying to write one myself and with that in mind I bought ADVENTURE WRITER, but so far I haven't decoded the instruction sheet. As it is some time since UNDERBEINGS OF CROTH was reviewed and it is getting long in the tooth I will make it this month's solution. Although instead of simply telling you the correct sequence of events I'll leave you this month with clues in the form of short descriptions of the relevant locations, and maybe include the abbreviated sequence next month. So here goes:-

UNDERBEINGS OF CROTH

LOCATIONS:-

1 You are trapped in an iron cage suspended above a dark pit by a chain (pretend you're superman and break the trapdoor).
2 On top of the cage you can see a note:- (AROUSE YE THE PIT BEASTS BELOW) Since they appear to be deaf, try throwing something at them. (You only have two choicces at this point excluding yourself).
3 You are now on a stone path leading north.
4 Still on the path there is a locked door leading east (finding a key would help)
5 At one end of the path are some steps leading down.
6 Halfway neither up nor down.
7 At the bottom of the steps you can see a brass key (guess what it fits).
8 Having opened the door and gone through you will probably find yourself being arrested and confined to a cell.
9 Outside the cell door (the door is locked)
10 Too late you've just walked into the guardroom (go to jail do not pass go etc.)
11 This is the cell (from the inside). The door is locked and barred (naturally). The walls are covered in moss (what's behind the moss).
12 In a storeroom. The fruit and veg are off but the barrel might come in handy.
13 It's a long way to jump.
14 No way through this door.
15 If the door is barred on this side what's holding you back.
16 Might as well follow the passage.
17 If the water's gushing maybe it will wash off the smell of all that rotten veg.
18 Aren't you glad you brought the barrel.
19 Dry land again you're now in the valley.
20 You can't swim back upstream you're not a trout.
21 At the end of the valley you can see some grass huts.
22 Hut no1 where a quick search of the straw should provide a cutting edge.
23 Hut no2. Rather careless of the bear to leave it's skin lying around.
24 Heading along the valley.
25 By a waterfall is a handy place to get some water (if only you had something to put it in).
26 North of the waterfall. Looks like the neighbours don't want to be disturbed.
27 South of the waterfall there's a tall tree with an owl on top. (Felled trees can make good bridges).
28 In a forest of strange trees (does this mean the're growing upside down).
29 Narrow path.
30 At the end of the path is a well with a box at the bottom (remember your nursery rhymes).
31 If you didn't take the hint then your WELL and truly stuck.
32 Don't fall off your halfway across the tree.

continued next page
33 You made it across.
34 By an old oak tree (tie a yellow ribbon might not be a bad idea REMEMBER THIS SPOT).
35 Grassy plain.
36 Plain grass.
37 On the lower slopes of a mountain you can see a timber shack.
38 In the shack you can see a tin bucket.
39 Upper mountain slopes.
40 At the top (going N from here doesn't lead you to X.)
41 Back on the plain you see a short rope.
42 Here you see an old ape woman (being friendly and saying hello will tell you what she wants).
43 Into the labyrinth.
44 An iron ladder leads down (but not until you can see where you are going).
45 At a dead end there is a lump of rock.
46 A crossroads.
47 Another dead end only this time there is a gold ring lying about.
48 Here you see a strange plant who's fruit looks like mushrooms. (food)
49 A narrow ledge above a bubbling lava pool you can see a rickety rope bridge. (Those of a nervous disposition may be inclined to drop things here.)
50 Having crossed you are now on a ledge and faced with a massive stone door having rhymic symbols of SUN MOON and STAR surrounding a small hole in the centre.
51 At the bottom of the iron ladder.
52 In a tunnel you can hear faint breathing.
53 A large toothworm guards a jeweled star (this tooth fairy in reverse wants you for dinner and is prepared to follow you).
54 In tunnel a boulder blocks your way.
55 In an old storeroom you see empty shelves and a dead mouse (this is food for feathered friends).
56 Old coal mine. Here you find a coin (obverse and reverse are your opponents)
57 A narrow crevice can be seen to the East.
58 A cell (shutting the door can help lock nasty things away once they have entered)
59 In the crevice you can't be seen by anything.
60 Freedom at last.
X You are now in a secret mountain grove. Fir trees and silver birches surround a glittering freshwater pool. Here you find a mysterious rod which glows when you hold it. (You cannot find this place until you have given the old woman food and got and read the parchment with the instructions :-)

THEN T'WARD SUNSET ONCE MORE.

Ny:- To retrieve the box from the well you must fill the bucket with water then take it to the well and fill the well (this you must do twice). To get what the owl carries you must feed the owl by dropping the mouse. To open the stone door insert the items corresponding to the symbols.

Now we'll get on to the tips for other adventures.

KEYS OF THE WIZARD
(1) To get the scroll you need the rope, and to get the dragonsword you need the lantern.

GOLDEN BATON
(1) To feed the crab, feed it WITH SLUGS.
(2) To pass the lizard WAVE QUARTZ.

SORCERER OF CLAYMORGUE CASTLE
(1) Don't use the Sesame Seed Spell to get inside the castle. Go for a watery entrance instead.
(2) To get your first star CAST FIRE AT TREES.

WINGS OF WAR
(1) To get past the lurgot toting guard SAY HEIL WHEN CARRYING DICTIONARY.
(2) The bomb is hidden IN THE CELLAR.
(3) Go S S E N then FIX CONTAINER with ALUMINIUM AND WRENCH then GO EAST.

DRAGON MOUNTAIN
(1) To kill a demon USE MAGIC SWORD OR DAGGER
(2) To deal with the elf HE CAN BE BRIEDED WITH ANYTHING GOLDEN.

TIME MACHINE
(1) Generator ? BREAK IT WITH HAMMER.
(2) Police box ? IGNORE IT.

HITCHIKERS GUIDE TO THE GALAXY
BULLDOZER:- Lie down in front of it to stop it advancing. Ignore Prosser's yelling and wait until Ford Prefect arrives.

PUB:- Drink the beer three times, and go out and buy a cheese sandwich. Leave the pub and feed the yapping dog with the sandwich.

O.K folks that's it see you next month.
COMPUTING IN AMATEUR RADIO

by Johnny Brown, G3LPB

The computer is capable of use in all of the amateur modes of transmission, thanks to innovative software writers programs are available to cover all of these modes from morse to fax. They are available in one of three formats, 'Tape, Disc, or cartridge', the latter being the best and most expensive. (unless you have a duel port however you will not be able to save data to disc...Ed) In all cases we need a communications quality receiver the signal of which is fed either directly into the computer or via an interface, depending on the program in use. The computer then translates the received signal into a visible easy to read display.

MORSE CODE

The range of modes of transmission available to amateurs is very wide, and every few years something new turns up. Starting with what is often called the 'GENTLEMANS MODE' CW, this follows the work done by Samuel Morse, adopting his system of dots and dashes. This mode requires a lot of skill in hand and ear, or at least it did until the computer came along, for there are programs available to send or to receive. So if you want to use CW, and are licenced to do so, then shaky hands or deafness can be overcome, with the aid of an appropriate program.

There are many programs available for tutoring purposes; both Grosvenor, and J & P produce excellent programs.

SSTV (Slow Scan TeleVision)

SSTV was for many years done using ex MOD RADAR CATHODE RAY TUBES. These have a long persistance internal phosphor inside the face. This allowed any received information to remain about 8 seconds before it started to fade. It would then receive the next picture and so on. The screen took approx 8 seconds to fill the screen, starting at the top and progressing with a little disturbance to the bottom. It would then restart at the top again. The vertical side was known as the frame whilst the horizontal was known as the line. This is just a continuation of television terms.

Now there as so many systems in use that one would have to buy expensive equipemnt to be 'in the swing'. SSTV appears as an audio tones system. This allowed transmission of pictures which were stationary (stills) over long distances using normal amateur transmitters, and the receive side was audio tone fed into the SSTV monitor. SSTV stands for slow scan television and that is exactly what it is. The tones were generated using VCO's. VOLTAGE CONTROLLED OSCILLATORS. We need various things, one is a sync source, this is the synchronising signal in step with the transmitted side. We also need a video source. The sync pulses were at 1200Hz, and the video between 1500-2300Hz. 1500Hz being the black signal and 2300Hz being the white. If the audio wandered between 1500 and 2300 we would have a display of at least 5 grey scale graduations. This allowed quite acceptable pictures to be seen, transmitted and even recorded, using tape to tape recorders and then the small cassettes.

The Computer is capable of use in all of the amateur modes of transmission.

We need none of this for computed SSTV, just a clever program that would do it all automatically, as far as I am aware there is only one receive - only program available and that is from GROSVENOR SOFTWARE. This program allows us to watch, record, or expand the picture, and print it out. These pictures come from all over the world, mostly on the 20mtr band around 114.300 MHz. Good pictures and text may be seen, the latter probably coming from an SSTV Keyboard. There is rumored to be an SSTV Transceive program that has been developed by a Spanish Amateur but as yet I have not seen it. However a British Amateur G3RLO has developed picture transmission for Dragon to Dragon use which is first class. The pictures are excellent, and the program allows transmit, receive, and save pictures from the receiver or screen and to use the disc drive. It is not really SSTV but another method of transmitting and receiving pictures which is similar.

I am sure that Tony G3RLO would be only to glad to give further information to anyone who is interested. FAXCIMILE is also similar and was covered in the last issue. Next time I will talk about RTTY, AMTOR, and PACKET radio systems. 73's (good wishes).
DGS+ ONE GOOD REASON TO BUY A DISC DRIVE

by Ken Smith

There are few things in life that cannot be improved upon, the Titanic, the Tory economic policy, my wife's cooking, all have had their advocates; yet one by one they have all shown their fallibilities. The trick of course is not to let someone else show up to your shortcomings, but to recognise them yourself and improve on your own performance. This is obviously the motto of Stephen Knight of KNIGHT COMPUTER SERVICES. When he launched Dragon Graphics Studio last December it was hailed as the ultimate, Dragon based art package. Not content with his success, Stephen has gone one stage further and produced an improved version called DGS+. First impressions are that the only differences are in the number of ready made pictures on the disc, and the number of cut-outs available for pasting. However, first impressions can often be misleading, and in this case they certainly are.

... don't let anyone show up your shortcomings, but recognise them yourself and improve your own performance.

Gone is the dreaded speed up poke from the loader program, it still lives in the main system program but you do have the option to dispense with its services. Both of my Dragons will handle the double speed processing though one objects more strongly than the other so I always delete it. With DGS the slower running meant a slightly jerky movement and a joystick response which although better than most, still left room for improvement. Now most people would have resorted to machine code to improve this, however Stephen decided to look more closely at his basic program and, where possible make it more efficient. The result is a faster, smoother cursor control which begs the question 'who needs a speed up poke?' This improvement is deceiving because the increase is not that dramatic you only notice it seems to be much easier to place the cursor exactly where you want it. The other improvements come in the methods of shading the picture. The mode 4 screen only has two colours so shading becomes all important. DGS+ has greatly improved shading offering three different ways of shading the screen. The airbrush facility now has three densities of spray and spray area controled by the character spacing menu. The colours routine, similar to the patterns routine (in DGS) sets a pattern in which all painting or filling is carried out. This not

...dash out and buy one, you may find artistic talents you never knew you had...

only applies to large areas but also to line and freehand drawing. This makes it possible to draw dotted lines, broken circles, etc. The main difference comes with the introduction of the brush/shaded fill routine with which any area of the screen can be painted with a pattern devised by the operator using the text editor.

I believe in my original review of DGS I commented that the only thing missing was a rotate facility, well unfortunately it still is, however the situation has been alleviated a little by making it possible to rotate individual text characters through 90 degrees making it possible to write up or down the side of the screen. To make full use of this it would be best to rotate a complete set of characters and save to disc. Yes I know it is a bit of a chore but if you want to use your machine to produce labelled diagrams then it will be worthwhile. Of course, this still does not replace a proper rotate routine, however it does provide yet another useful feature. In the past I have used DGS and now DGS+ to produce sketches that the uninitiated have thought impossible to achieve on a humble Dragon. I have also found out that a joystick can be a useful tool, and for those without disc drives DGS+ provides an excellent excuse to buy one. DGS+ retails at £5.99 which in my view is little short of charity, if you have not got a copy yet then dash out and buy one, you may find artistic talents you never knew you had.

!!!COMPETITION!!!

Using DGS or DGS+ send in screen dumps, and/or disc containing your master piece and I will print the best of them in the next issue. Everyone can enter and everyone can place the entries in order then send in their votes. The winner will receive a free subscription plus some software. So get drawing - Editor
DRAGON SOFTWARE REVIEWS!

MACHINE CODE TUTORIAL
Published by:- National Dragon Users Group
Author:- R.A. Davis
Price:- £3.50
Are you like me, you have been struggling to learn machine code from books? If you are then put the books back on the shelf because there is now an excellent program available from N.D.U.G. This tutorial program is aimed at making an easy introduction to what many consider is a complicated subject, and has been written by Tony Davis. It consists of 25 tutorials on one disc and is available in DragonDOS. The tutorials cover such items as 'Binary made easy' and 'what the Hex - no problem' to using machine code with Composer and Rainbow Writer. Included are printer dumps of the addresses you need for the ROM routines and their hooks as well as simple exercises to get those lazy fingers pounding. There is something here for nearly everyone whether you are a beginner or improver. You start by running 'MENU' and you are then given the option of doing the first tutorial. If you say yes you are then given a test question and if you get it right you are then told that you may not need to do the current tutorial. You then have the option of doing the tutorial. If you do a tutorial you are given test questions at the end and if you get one wrong it loops back to the beginning of the tutorial. This is an excellent program and it is a lot easier to learn and follow machine code than reading a book. Anyone who wants to teach themselves elementary machine language should take the opportunity by buying this program whilst they can.

MACHINE CODE TUTORIAL (Disc2)
Published by:- N.D.U.G.
Author:- R.A. Davis
Price :- £3.50
Here is another program from our old friend Tony Davis. You need to have completed Disc 1 or have knowledge of machine code that is on disc 1 before using this disc. This disc consists of another 19 tutorials on machine code. Obviously these tutorials are a lot more advanced in nature than disc 1. The tutorials cover a wide range of topics some of which are listed below:-

- High res draw and move
- sound tutorials
- moving text
- changing colour
- Dos exec address
- scrolling
You start by running DISC2 and you are then given a menu and you can then go straight to the tutorial that you want to do. I myself have started on disc 1 and find that using the computer is a lot easier than struggling with a book. ALL proceeds from these programs are for the benefit of N.D.U.G. So support them in a painless way, and buy both of these excellent programs.

LIBRARY UPDATE

by Sotos Mandalos

AMSTRAD brings out a laptop

Amstrad has announced that they are launching a laptop based on an INTEL 386SX processor. No prices have been announced yet. AMSTRAD is hoping to compete against a range of very successful PCs from Compaq and Toshiba

IBM R6000

The IBM Workstation R6000 is hitting hard other successful companies which produce the same kind of computers. This time IBM has produced a very high quality product which is also fairly cheap.

More news in the next issue of 6809 User.
ROLAND'S RAMBLES

By Roland Hewson

During the last two months like most of you I have been having trouble with wind, so taking my Alka Seltser I endeavoured to put my fence back up. The next gale blew away a different section of fence, my next three neighbours' fences and two T.V. aerals. I decided to wait until spring and returned to my computer instead. Well as we all know things go wrong in threes and this time it was my printer-now there's a thing! How many of us really think about our printers; we turn them on, curse when the paper does not feed properly, occasionally change a ribbon, but otherwise we expect them to work each and every time whether it's for ten minutes or two hours. The longer the run the more we expect, but just how much thought do we give to this piece of our kit? What criteria do we use when selecting or buying a printer, and more to the point what happens when the machine goes wrong four years after purchase and never serviced? Is that reasonable or not? How many of us have fallen for a clever advertisement or believed an 'independent' review and purchased an item only to be disappointed?

I have owned (and still do) four very different 'printers', each of which is very useful within its own limitations, the latest acquisition being the best and something that I am quite willing to rave about later. Pick up any commercial computer magazine and look at the advertisements and prices. There are Dot Matrix printers, 9 pin, 18 pin, 24 pin, and 48 pin, ranging in price from $100 to $2000. There are ink jet printers from $300 to $5,500; daisywheel printers, 'portable' printers and of course laser and crystal printers where thousands of pounds rather than hundreds is the rule.

On this basis one has to decide what does the printer have to produce, how quickly, of what standard and at what price. My first printer purchased in 1984 was a Centronics 739, a 9 pin machine. It was a special offer at $250 a quarter of its original price and was first introduced in 1981. The specification at the time was everything I could possibly want, 100 characters/second monospaced, 80 characters per line, graphics 6 dots high 594 dot positions per line, 255 pending line feeds and 12 line feeds per second repeat rate etc. etc. I could have standard, proportional, condensed, elongated print even a combination; the machine seemed perfect. It would take fan-fold, individual sheets, or even rolls of paper. With great alacrity I started to use it, wasting paper merely to get disc directories and printed menus, then came a word processing package and everything appeared perfect. Gradually as I became more embued with the Dragon 'Epson Compatible' programs appeared and trouble free I started on these. Oh calamity! My machine was not 'Epson Compatible', in fact it was not compatible with anything. Having taken the trouble to do a little research before purchase I was somewhat Chagrined! I wrote to the reviewer whose advice I had taken and he responded thus: ".....I was unaware that XXX had reprinted my article on the Centronics 739 which was first published in 1982,..............and if I had been asked for my opinion about the best printer to buy in later 1984 I might have suggested a different model." A further problem developed when a fuse blew in the printer and I discovered it was soldered in (after first establishing which it was). Regrettably my only knowledge of a soldering iron is to know which end gets hot! One of my nephew's friends came up trumps and I was operational again. I also had to fit a replacement ribbon and unlike many others which are contained in a nice neat interchangeable container, mine was supplied in a cardboard box in a cellophone complete with a plastic glove. That speaks for itself!

The redoubtable Mr MacGowen wrote a printer control program for me and things became somewhat easier, but as the reviewer said 'had I known what I know now...... Well as one does one makes the best of what is available and as one's fancy turns to colour in spring (among other things) I decided to purchase the Tandy TRS-80 printer/plotter.

My experiences cannot have been too different from anyone else's with regard to this little machine, it performs when necessary, when the pens haven't dried up-when the rolls of paper are available etc. (Have you tried to buy some pens from Tandy lately-two local branches did not have them, but their head office sorted this out for me after several telephone calls?) My most recent experience was to buy second hand from a certain editor who shall remain nameless, a little Amber 2400 Dot Matrix printer which takes an adding machine roll. The machine had a problem and I contacted the manufacturer to be told

continued next page
6. Can I write or obtain the necessary software for the full operation of the machine I have in mind?

7. If it goes wrong can I get it repaired?

One final thought, having answered the foregoing do any of your friends have the same machine and will they let you try it for a while?

Printers are a bit like cars, one takes them for granted—until they go wrong just when you need them most. They operate at different speeds with different features, you can buy a Rolls-Royce or a Rolls can hardly make your choice and pay your money your printer will be with you for some time!

See you next issue.

Roland.

P.S. If anyone wishes to know about the Star LC 10 Colour Printer please do not hesitate to write c/o 6809 User or contact Pulser Software (this really is not a sales pitch I am utterly independent!).

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**CLASSIFIED ADS**

For Sale, WORDPERFECT v5.0 Brand new Book for £12.00 including postage. Also IBM PC/XT motherboard with 256 KB of RAM for £50. Contact 6809 User for details.

Dragon 32 for sale £45.00 with lots of Microdeal and other software. Phone Mick 081-759 1234.

Wanted Centronics printer lead. Contact 6809 User.
OS9 AND FLEX DISK OPERATING SYSTEMS

by David Rothery

You live and learn. As some of you know I run OS9 from a hard disk, which is very quick and convenient. However, I always save my textfiles to floppy, and a couple of months ago I was glad I did. I tried to save a file to the hard disk and was met by the error message 'write error'. I tried again, only to find the error was now 'Data address mark not found'. From now on it was impossible to write to the disk, but I could still read everything and use the commands.

I decided to reformat (it takes three hours to do this and recopy my files!) and after a few initial complaints, it did this O.K. Next day, I could read everything but got write problems again.

I replaced the 50 way connecting lead, replaced the PIA chip in the Dragon, to no avail, and eventually accepted Gordon Twist's comment - hard disks do have a limited life - chuck it away and get another! - except I couldn't afford to follow his advice, so accepted that my disk would in future be read only. Then I noticed that when I tried to write to disk the operating light went dim. So I checked the voltage on the power supply; the 12 volt side showed 11 volts. Since it is adjustable, I increased it to 12.5 volts and have had no trouble since!

The moral is, don't give up! Apparently it is more tolerant of low voltages during reads than during writes. This may well apply to floppies too, so I pass on the experience.

Two months ago, I mentioned Kshell, which seems to have stirred up some interest. So here is more information. It is part of a package called "Advanced utilities for OS9" by Brian Lanz and distributed by Computerware. The address I have is:

Box 668, Encinitas, CA 92024, USA
Phone no. 619-436-3512

The other utilities include:
UNLOAD, which repeatedly unlinks a module until its memory is recovered.

ARCHIVE, which copies a hard disk on to as many floppies as necessary, prompting when new disks are required.

FLINK, a fascinating utility which enables you to have several different bootfiles on the same floppy, and select the one you will require to boot from next time.

CPY, like the copy command but will copy multiple files, directories etc.

However, the author admits that it is for Kshell that most people will buy the package.

Kshell can be installed two ways: by placing Kshell in your CMDS directory and typing

ex kshell
when kshell will temporarily replace your normal shell, or by using OS9GEN and making a new bootfile, replacing SHELL by KSHELL. This makes kshell permanent.

I explained that kshell uses wildcards. It does this in a clever way, by storing filenames in a buffer. For example, if you type
del *bak
it first searches your DATA directory for any filenames ending in 'bak' and stores them in the buffer. It then feeds these one at a time to the 'del' command so that all these files are deleted. So all backup files created by Stylograph could be deleted at one go. Because the files are looked up BEFORE the command is invoked, this facility will work with all commands, although some will not accept multiple filenames. So if you have a directory called BUSINESS_LETTERS and are feeling lazy, just type

cd BUS*

Note that cd is used instead of chd - it's quicker, and matches the Unix custom. If there is more than one directory beginning with BUS, then an error is thrown up.

The macro facility is another great time saver. Suppose you are copying a load of files, let's call them file1, file2, ... file9, just to be original. Some of them are in the directory /d0/stylo/LETTERS, and others are in the directory /d0/ACCOUNTS. You want to copy some to /d1/stylo/LETTERS and some to /d1/ACCOUNTS. The hard way is to:

copy /d0/stylo/letters/file1 /d1/stylo/letters/file1
copy /d0/letters/file1 /d1/letters/file1
copy /d0/accounts/file2 /d1/accounts/file2

etc, etc.

continued on next page
With Kshell you type

\$1=/d0/letters;$2=/d0/accounts;$3=/d1/letters;$4=/d1/accounts

Now you can proceed:

copy $1/file1 $3/file1
copy $2/file2 $4/file2

and so on. Get the idea? Now, I know that judicious use of the CNTRL key can save a lot of typing, but this method is much more flexible.

Kshell has built-in error messages - printerr is superfluous, although you need the ermsg file in your SYS directory. Just type -e to turn them on, and -ne to turn them off. The 'OS9:' prompt can be changed to anything you want - what about your initials? Or if you include CNTRL G in your string you will hear a bell every time you get a prompt - good if you are away from your Dragon waiting for it to format a disk, say.

I mentioned the multiple working directories last time. Kshell will check as many directories as you want for a file. Just specify which ones you want to check. I didn't mention the Improved redirection facility. With the normal shell you can direct the output, so if you:

List file1 file2

A new file2 will be created and the contents of file1 listed to it. If file2 already exists there will be an error.

With Kshell you can use

List file1 -file2 (deletes existing file2 if present)
List file1 +file2 (APPENDS the contents of file1 on to the end of an existing file2)

Finally, the hardest facility to understand is the embedded command. Suppose you want to change your data directory to your current execution directory. Just type

cd 'pxd'

The output from the command pxd will be fed to the cd, so the data directory is changed to whatever the result of the pxd command gives. Nifty!

As you can see, kshell transforms what is already a very clever operating system into one which is even more flexible and convenient. Now for some technical information on OS9. If you have ever used the DUMP command instead of just LISTing a file, you will have noticed a string of Hex numbers at the beginning which seem extra to the file, and a couple at the end.

It is interesting to know about these, and even more so if the file is not text, but a machine code command.

Let us take each number in turn starting at the first, which is offset zero:

$0 and $1 These are always $87 and $CD respectively, and enable OS9 to recognise the start of the file.

$2 & $3 Together these give the total no. of bytes in the module.

$4 & $5 Together these give the number of bytes to the name of the module. Thus the name of the module can be anywhere in the program provided these point to the beginning of it.

$6 This tells OS9 the type of module and its language.

Thus OS9 can identify a Basic09 program and automatically load in RUNB which is needed to run it, or recognise a PASCAL program, etc. The first figure is the type, the second the language. So 10 means 1-normal program module, 0-contains data, 13 is a normal program in Pascal. F0 - F signifies the file is a device descriptor module.

$7 First figure gives attributes, second the revision level. So a directory file can be recognised from the first figure. By increasing the revision level, OS9 will replace an old module by one of the same name which is a more recent revision.

$8 This is used as a check digit to make sure the header has not been corrupted.

$9 & $A These give the execution offset - i.e. the starting point of any machine code program which has to be entered.

$B & $C These give the storage requirement. Perhaps this is the most interesting part, because you can change these so that the COPY command can, for example be given more memory automatically so it requires fewer disk accesses to copy a program. Remember if you change any bytes in a file to use the VERIFY command afterwards to update the CRC. The very last three bytes of the module are the CRC (Cyclic Redundancy Check) and are a safeguard against corrupt modules being loaded.

I hope this has been interesting - even useful. I intend to pop in a bit of more technical stuff when I get chance for the benefit of those who like digging around.

David Rothery.

*If you have any questions regarding OS9 or FLEX, please write to David c/o 6809 User, Editor.*

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A FORETASTE OF LINES TO COME?

The use of the LINE command in high resolution graphics is
worthy of an article of its own. The following program uses
this command in conjunction with the SIN function.

10 INPUT$ AMPLITUDE(80), PERIOD(4), STEP(1 OR 2); A,P,S
20 B = P/100: PMODE3,1: SCREEN1,1: PCLS1
30 FOR I = 0 TO 250 STEP S: COLOR(I) = A$ S I
40 LINE(i, 90) - (1, 90 + Y), PSET: NEXT I
50 GOTO 30

The figures in brackets are suggested input values but
try others.
If you would like the diagram in one colour only, edit
line 30 and change the second I to 0
THE TANDY COMPUTER
DISK SYSTEM

by Eric Hall

I have been prompted to write this article, having read similar articles from D Rothery (Dragon User, Nov 86) and Paul Dagleish (Dragon User, May 87) and also by the prospect of Dragon User doing a feature on DOS Systems. I intend to compare the Tandy DOS to the Dragon DOS using the previous articles as a basis. It may also be of use to D McQuade of New Zealand who had a problem with 35 and 40 track disks.

Tandy Color Computer DOS users are aware the Tandy Disk is set up differently to most home computers because it has only 35 tracks. Since each Track contains two Granules or 4,608 bytes, one Granule contains 2,304 bytes. There are 68 Granules to a Diskette. The 68 Granules are numbered 0-67 for reference and are located as follows:

- Track 0, sectors 1-9 Granule 0
- Track 0, sectors 10-18 Granule 1
- Track 14, sectors 1-9 Granule 28
- Track 17, sectors 1-18 Directory
- Track 18, sectors 1-9 Granule 34
- Track 24, sectors 10-18 Granule 47
- Track 34, sectors 10-18 Granule 67

The Tandy Co-Co uses these Granules to allocate space for Disk Files in 2,304 byte clusters. Thus, if a File contains 4,700 bytes, the Co-Co allocates 3 Granules (6,912 bytes) of Disk space for it. Each Track on the Co-Co also contains 18 sectors, numbered 1-18. Each sector holds 338 bytes, of which 256 bytes hold data. The remaining bytes are used in the system controls:

- Byte# Contents
  - 0-55 System controls
  - 56-311 Data
  - 312-337 System controls

I would like to mention, just for interest, the Hexadecimal value of the system controls as listed in the Tandy Disk manual (page 58);

<table>
<thead>
<tr>
<th>Byte #</th>
<th>Hexadecimal</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-7</td>
<td>00</td>
</tr>
<tr>
<td>8-10</td>
<td>F5</td>
</tr>
<tr>
<td>11</td>
<td>FE</td>
</tr>
<tr>
<td>12</td>
<td>Track number</td>
</tr>
<tr>
<td>13</td>
<td>00</td>
</tr>
<tr>
<td>14</td>
<td>Sector number</td>
</tr>
</tbody>
</table>

15  01
16-17 Cyclic Redundancy Check (CRC)
18-39 4E
40-51 00
52-54 F5
55 FB
312-313 Cyclic Redundancy Check (CRC)
314-337 4E

The Disk Directory Track

The Tandy DOS Directory is on Track 17. It is here that the Co-Co stores the File Allocation Table and up to 72 Directory Entries. The information is stored on sectors 2-11 as follows:

<table>
<thead>
<tr>
<th>Sector #</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>File allocation table or Granule Map</td>
</tr>
<tr>
<td>3-11</td>
<td>Directory entries</td>
</tr>
<tr>
<td>11-15</td>
<td>Holds system bytes</td>
</tr>
<tr>
<td>16-31</td>
<td>Not used by present system and can be used as disk labels like Mr Rothery suggests in his article November 86</td>
</tr>
</tbody>
</table>

The corresponding granule is free. It is not part of a disk file.

The File Allocation Table or Granule map is the disk's way of knowing where to find the next item of data in a program or file. This information is stored in the first 68 bytes of sector 2, track 17. The 68 bytes of the sector relate directly to the 68 granules the Co-Co uses to allocate space for data. These bytes will either contain a value of &HF, &HOO-43 or &HC0-C9:

<table>
<thead>
<tr>
<th>Byte</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>FF</td>
<td>The corresponding granule is part of a disk file. The value, in Decimal will point to the next granule in the file. ie if byte 16 has the value &amp;H12 in it, the next</td>
</tr>
<tr>
<td>00-43</td>
<td>The corresponding granule is part of a disk file. The value, in Decimal will point to the next granule in the file. ie if byte 16 has the value &amp;H12 in it, the next</td>
</tr>
</tbody>
</table>

continue on page 14
granule in the file will be granule 18 (decimal).

C0-C9
The corresponding granule is the last granule in the file.

The value contained in bits 0-5 of this byte tell how many of the sectors in that granule are used up in the data file. (Bits 7 and 8 are both set).

This is a typical Granule map when dumped to the printer. (Please see Figure 1 next page)

Here I have shown the first 80 Bytes of Track 17 Sector 2. All Values after the first 68 bytes are not used and hence have the value 00 in them.

One way of write protecting the Tandy Disk is to use a short program in Basic or Machine Code that will find the &HFF value in the Allocation Table (unused Granules) then change these values to &HC0. This has the effect of fooling the Disk into believing it is full and so return the error message 'DISK FULL'.

Directory Entries, Format:( Figure 2 next page)

As this format shows, the Directory files are stored differently to Dragon DOS. Also to be noted is Tandy DOS has no file write protection facility in byte 0.

I have listed the details for the Directory file below.

<table>
<thead>
<tr>
<th>byte#</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-7</td>
<td>Filename, is left justified and blank-filled. If byte 0=0, the file has been deleted &amp; the entry is made available again. If byte 0=&amp;HFF, the entry and all following entries have not yet been used.</td>
</tr>
<tr>
<td>8-10</td>
<td>File name extension, left justified, blank filled and may be assigned for users reference</td>
</tr>
<tr>
<td>11</td>
<td>File Type</td>
</tr>
<tr>
<td>0</td>
<td>BASIC program</td>
</tr>
<tr>
<td>1</td>
<td>BASIC data</td>
</tr>
<tr>
<td>2</td>
<td>Machine-code program</td>
</tr>
<tr>
<td>3</td>
<td>Text editor source file</td>
</tr>
<tr>
<td>12</td>
<td>ASCII Flag</td>
</tr>
<tr>
<td>0</td>
<td>Binary format</td>
</tr>
<tr>
<td>FF</td>
<td>ASCII format</td>
</tr>
</tbody>
</table>

13 The number of the first granule in the file (0-67)

14-15 The number of bytes used in the last sector of the file

16-31 These bytes are not used.

Once again we have a dump, Tract 17, Sector 6. This shows a part of the Directory from Tandy DOS. (Figure 3 - next page).

From the table above we can get the File Data.

Bytes 0-7 gives us the filename. If you look at the values you will see these represent the ASCII Code for the filenames listed to the right.

Bytes 8-10 gives us the extension used.

Byte 11 is the file byte, 0=BASIC, 1=Basic Data, 2=Machine Code, 3=text editor source code.

Byte 12 The ASCII Code flag 0=binary, FF=ASCII Code.

Byte 13 The starting Granule on the Disk.

Byte 14 Reports the number of bytes used in the last Sector of the file.

If we look closer at the files, for example, the filename 'SCRNDUMP.CGP' the value of Byte 15 we have is &H4F or 79 (dec). This indicates only 79 Bytes were used on the last sector. If we read right to left the value at Byte 13 is &H42, (66 dec.). Therefore the first Granule used in this file is on Tract 34, Sector 1. (granule 66). Further left the next value is at Byte 12, &HFF, which shows this file was saved in ASCII format as the Flag is set.

Once the Co-Co picks up the first location in a file it will then go to that Granule position on the Allocation May (Tract 17, Sector 2.), to pick up the next Granule and so on until it finds a last Granule marker.

The Co-Co knows the file is completely loaded. Lastly a mention about the command 'DOS'. When DOS is typed in the Tandy Disk goes to tract 34 and checks for the letters 'OS'. If present it then copies the entire track into memory. If OS9 is present then it will boot the system. If anyone wishes to use this idea for this own programs remember to use the letters 'OS' at the start of your program. Also you must allow five bytes space in front of the routine for the Tandy DOS to use for system control bytes.

Tandy DOS system usualy starts loading the first data block at granule 32 on tract 16. It is a good idea to start any 'DOS' booted routines at tract 16 and follow in the system. ****

continue on page 15
This is a Typical Granule map when dumped to the printer:

```
0000 C5 C2 C3 00 C3 02 C2 0C 0C 0C 0B 0A C3 C3
3010 C7 0E 13 10 C4 12 17 14 C9 16 1B 18 C3 C3 1F 04
3020 01 03 33 C5 36 27 05 01 2A 2B 09 2D 2E 2F 06
3030 31 33 B3 36 30 2C 2A 2B 3B 3C 06 C3 C6 00
3040 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Directory Entries, Format:

```
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16-31
```

Once again we have a dump, Track 17, Sector 6. This shows a part of the Directory from Randy Dus.

```
000 4C 45 52 47 47 10 20 20 33 20 54 00 00 00 2B MEMPSETVFLT
010 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ............
020 4D 40 20 00 44 45 52 20 20 42 41 53 00 00 00 00 MCLADDR.BAS
030 03 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .............
040 4D 53 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ORAGRAM.BC
050 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .............
060 4D 40 41 0E 52 40 4F 4D 42 41 53 00 00 00 00 C2 PLANNDUMBAS
070 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .............
080 53 20 48 46 46 45 54 53 43 20 00 00 00 00 00 A3 S-EP-EXTSC
090 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .............
0A0 53 43 52 4E 44 55 50 43 47 50 00 42 02 02 4F SCRNDRM:RGP...
0B0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .............
0C0 53 43 52 52 55 50 42 49 54 02 00 02 02 02 3A SCRPRT.BIN...
0D0 00 00 00 00 3A 00 00 00 00 00 00 00 00 00 00 00 .............
0E0 53 43 52 52 52 51 20 42 49 54 02 00 1D 00 3A SCRPRT1.BIN...
0F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .............
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