

DRAGON USER



September 1986

The independent Dragon magazine

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Some Poke corrections — a left over Lee listing — new user groups — pleas for more C64 — missing perians.

People's Chart

Findout which is the software flavour of the month, and what will win the 125 worth of Microdeal software.

News

FREE to Dragon User readers, a limited of Dragon/32 reference cards — Dragon internal hardware bargains — new software for the Trojan light pen.

Communication

What is the Meaning of Life? Just one of those sticky questions to which somebody just might send as an answer, one of these days.

Dragonsoft

Temple of Doom doomed, Boulder Crash rescues man by the eyeballs again, and Roy Casar is glued to The Curse of Carnage.

Counties Quiz

You can test yourself to distraction with this game of 52 separate counties and districts in the British Isles.

Books And Code

Pam Dikaly has found a thousand questions on machine code and other subjects, so she has rounded up the books where she looks to find the answers.

PUT... EOR

A useful additional command.

Core Wars

In the heart of the Dragon, program hunts program with Red Code, pitting subtlety against stealth.

Machine Code Tutor

Scott Campbell and Jason Orsburn take a step towards the intimidating but not really dangerous subject of Boolean algebra.

Adams Adventures

The first in an occasional series of snippets on the adventures of Scott Adams.

Mini Logo

A specially adapted version of the Logo control language for turtle graphics on the Dragon by Miles Horden.

Dragon Answers

Brian Cadz another page of advice and technical answers from the mailbox.

Arcade Arena

The Dragon takes issue with another lot of arcade games, advice and arguments.

Adventure Trail

The secrets of Juxtaposition unlocked.

Competition

Solutions to last month's riddles, a new prospectus, and this month's winners.

Editorial

Runners get circulating from time to time, like the rumour which said that Dragon User would cease after June (circulated among newsgroups), that so-it-so isn't going to produce any more Dragon software (which has often proved to be true, but not as often as it has been put about), that the Dragon is dead (after Dragon Data closed down in 1984) ... now someone else has started a rumour that our publishers 'don't like' Dragon User, whatever that is supposed to mean.

This concerns us, because it is vague notions like that which cause stress and dependency. Now listen here: the publishers brought in new staff to keep Dragon User going, a new computer to help with the administration, and brought all the subscriptions under their own control to avoid problems. While the demand exists, so will Dragon User: the demand comes from users. So don't be discouraged by rumours — none of us want them to become self-fulfilling.

On a much jollier note, a well known electronics company has some Dragon 32 reference cards to give away. See page 4 for details.

Telephone number
(All departments)
01-437 4343

Editor
HELEN ARMSTRONG

Production Editor
BARBARA HALEK

Associate Editor
JOAN COOK

Editorial Secretary
ANNE MAIR ODWYER

Advertisement Manager
SIMON LAMBERTON

Administration
GERALDINE SMYTH

Managing Editor
PETER WOLLOCK

Publishing Director
JENNY IRELAND

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How to submit articles

The quality of the material we can publish in Dragon User each month will, to a very great extent, depend on the quality of the documents that you can make with your Dragon. The Dragon computer was launched on to the market with a powerful version of Basic, but with very poor documentation.

Articles which are submitted to Dragon User for publication should not be more than 3000 words long. All submissions should be typed. Please leave wide margins and a double space between each line. Paragraphs should, whenever possible, be computer printed on plain white paper and be accompanied by a tape of the program.

We cannot guarantee to return every submitted article or program, so please keep a copy. If you want to have your program returned you must include a stamped, addressed envelope.

Letters

This is the chance to air your views — send your tips, compliments and complaints to Letters Page, *Dragon User*, 12-13 Little Newport Street, London WC2H 7PP.

Lost adventure

CAN you help us with the Dragon adventure? We have received an order from Allos for Colossal Cave with a US postal order unfortunately, no address was included.

So if you live near Thame Road post office and haven't received your cassette, please write or phone 091 225 4874 and identify yourself. Your cassette is waiting.

Malcolm Cowan
Cowan Software
23 Bristol Ave.
Levenshulme
Manchester M9
0919 2947

Caring needed

CAN anyone help with software/hardware/adaptations for use by handicapped children?

S. Boardwood
Weymouth Childrens Home
75 Victoria Rd
Weymouth
W Dorset

Banbury club

I WOULD be grateful if you could place in your letters column a call for other users to join a new Dragon club in Banbury and the surrounding area. They should contact me at my address or on (0595) 53303.

J.H. Paster
47 Exington Rd.
Banbury
Oxon OX19 5HU

Back issues

IN ANSWER to the inquiries about back issues, it's slipped your mind that Peaksoft have acquired Dragon User back-

issue stock. Prior to January 1986, the issues still available are: 1984; Feb/Mar/May/Jul/Aug/Oct; 1985: Jan/Feb/Mar. They are priced at £3 each, post included.

We do try to maintain a complete collection of excellent Dragon periodicals, and I hope you won't mind if I acknowledge that we can offer copies of all editions of Dragon Monthly, and printer dumps of Radio Dragon.

Harry Whitehouse
Peaksoft
49 Queens St.
Bicester
Oxfordshire
North N20 3R3

Correct Pokes

THE POKES listed for Madness and the Minotaur in the July issue are somehow wrong. Here are the correct ones:

POKE \$772,134 (2026 hex)
POKE \$772,264
POKE \$774,191
POKE \$775,5
Machine code:
\$2044 LDA \$BFF
\$2046 STA \$B05

The poke \$728 sets the number of points that need to be scored to win. I would like to thank Mrs. Pauline Hargrave for pointing out the errors to me.

Simon Hargrave
Crawley Hill Farm
Ulley
Dartley
Glos. GL11 5BN

Hyperun error

THANK YOU for publishing my letters "Pokes galore" and "Screen change" in the Feb and July issues of DU. Thank you also to everyone who has bought my Hyperun program, which is still available at £3.50. However, there were unfortunately some errors printing, and I have come up with shorter versions of it, and £2 instead.

Program A:
\$KIPP:POKE 1264:POKE
127,0:EXEC 48941

Program B:
10 POKE \$3000 TO \$3001
READ A:POKE \$JM A:EXEC
\$EXEC -11:DATA 198,195,146,
134,57,863,1,1,3,126,131,113,
\$LN

In "Screen Change", the PRINTG: @ command should be followed by a comma not a fullstop. During the OAS statements, there are some uncrossed semi's so I'll point out that these shouldn't be any letter 'O's. This should clear up any confusion.

Paul Borpin
78 Moorcroft Road
Fulwood
Sheffield
S10 2DZ 0355

Any old OS-9

POSSIBLY it is logical "Back Recording System" of an Dragon 64, as I've decided the product to be an "OS9 Operating System" since you see manual.

Pourriez-vous m'indiquer ou puis-je trouver des données en Grande Bretagne, (je désigne tout d'abord "CompuServe", "Joker Perre" et "CompuServe"), mais malheureusement ces sociétés ne les possèdent plus.

Merci, agitez, Monsieur, l'expression de mes sentiments distingués.

St Patrick Scubumiac
4 Allée de Capitaine Monce
21100 Venary-Job-launier
France

Get Serious

I HAVE enjoyed your magazine during the past two years. When are you going to get smart and start catering to the serious user? The Dragon has the capability with OS-9, which is being used in Israel by businessmen, doctors, and engineers. How about a review of "The Banister" board, which expands RAM to 256k without lugging Flex along like a mother-in-law? As a games machine, the Dragon is last year's toy.

Harry C. Taylor F
Chronic Engineer
Wormsagar 30
Hemel
\$6400 Alsat One
Israel

WE have a problem with OS-9: nobody in the UK is licensed to market it, so, if anybody is, we have yet to hear about it. We would like more contributions and reviews on professional systems, and would be most interested to hear from anyone who can help on either subject.

Printer connector

OVER the last few months there have been several inquiries both to "Letters Page" and "Dragon Answer" concerning the interfacing of the Tandy TR-10 Printer with the Dragon computer.

The Tandy TR-10 is a thermal Printer which is low priced, compact and is ideal for listings.

As the Tandy TR-10 needs a serial input, a Parallel to serial converter is needed. I have constructed a converter to meet this requirement, and if any one would like details to build this converter will supply these at a cost of £5.00.

Alan Johnson
23 Ashmole Road
Abingdon
Oxon OX14 5LH

Puzzle listing

APOLOGIES to Gordon Lee and the gamers for leaving this listing out of the August puzzle page.

12 POKE \$0000 TO \$0005
13 GOTO 10
14 \$DATA \$0000 TO \$0005
15 \$LN 17
16 \$DATA \$0000 TO \$0005
17 POKE \$1 TO \$1
18 \$DATA \$0000 TO \$0005
19 \$LN 17
20 \$DATA \$0000 TO \$0005
21 \$LN 17
22 \$DATA \$0000 TO \$0005
23 \$LN 17
24 \$DATA \$0000 TO \$0005
25 \$LN 17

Dragon User People's Chart

IF THIS goes on, we'll be re-naming Juxtaposition "P juxtaposition". The Barons of Cell V's popularity just continues to warrant itself. See Mike Gerrard's Adventure Trail this month for some hints, if your nerves are about to crack.

Or you could write to Paul Davidson of 202m Drumming Road, Clarnford, Ballyvaughan, Co. Antrim, N. Ireland BT44 6PP. He hasn't sent an anagram, exactly - he just wrote in the space "I have just finished Juxtaposition, and if anybody wants any help, send me an S&S and I will help them". To, Paul. No prizes, though.

A special mention to Keith Farmer, who not only used most of his top three letters, but listed the ones he didn't use, as well. They say (S&S&S) Barons-month's anagram winners T.A. (S&S&S) of Chiswick, London, who not only used all his letters up, but also listed by what the editor is always saying - "The Dragon word should never not light" "We're creating words. Sometimes."

Found another great program? Discovered new depths in an old favourite? Send us your list of five favourite programs - games, applications, facilities, disk or tape - in order of preference, on the form printed here (or make your own - thousands do).

Moreover, if you can devise a witty or apt anagram from the letters of your own favourite three (you need not use all the letters), you may be the winner of £25-worth of Microdeal software.

Results August 1986

- | | |
|-----------------------|--------------------|
| 1 Juxtaposition | (Wintersoft) |
| 2 Shocktrooper | (Microdeal) |
| 3 Bean Stalker | (Micro Vision) |
| 4 Jet Set Willy | (Software Project) |
| 5 Rommel 3D | (Microdeal) |

Chart Eight

Voting for Chart No. 8 closes at 11pm on Friday 10th September 1986. Entries received after that time will not be eligible for inclusion in that month's voting. The editor's decision is final. Only one entry per individual per month will be allowed.

My top 5: Voting Month 7

Name

1 Address

2

3

4

5

My phrase is:

THE DRAGON COMPUTER SHOW

Returns to Wales

Saturday 4th October Cardiff — Wales Airport 10.00 — 4.00

Another sensational show where you can meet the leading retailers of Dragon Software, hardware and peripherals.

Adults £1.00
Children & OAPs 50p

Ample car parking
Refreshments

If you would like to demonstrate how you use your Dragon in an interesting or unusual way please contact John Penn.

Further details available from
John Penn
Bordon (04203) 5970



Non slip mat

TRADITIONALLY, you want to slip, you step on a mat. It's the last best thing to a banana skin. The Slippap mat has put a stop to all that. Slippap is for the table or the worktop and has the answer to all those slippery problems that can occur in the workshop, lab, office and home! Even, who knows? the sticky carpet, if you use it extensively.

Slippap is made of an inherently tacky material which holds objects placed on it, according to our reports, as if

glued, without leaving any residue on the objects or the table. The tackiness can be restored when flagging by washing the mat in warm soapy water to remove dirt and debris. It can be supplied in various sizes, in thickness of 2 or 3mm, and can be cut to size with ordinary scissors.

Call the supplier, Cobanic Ltd., 32, Lardner Road, Guildford, Surrey GU2 5NW on (0462) 592050 for more information and prices.

Free Dragon Cards

Eicon Electronics have been clearing out their granier's special cupboard and have discovered a hoarded bundle of Nanos Systems Corp. reference cards for the Dragon 32. These handsome, fold-out 18-leaf cards, with 1366 each, contain ready reference information for system commands, BASIC characters, statements and special keyboard keys, instructions for simple graphics and music, BASIC internal codes, memory map, hex listings and special tips, printed in black and white and spot colour on white with a red surround.

One of these cards can be yours, if you are among the first 300 Dragon User subscribers to send a large SAE (A5 size is best), enclosing a DU address label with your subscriber number on it as proof of identity

(the number will be just above your name on your address label), to Dragon Card Offer, Eicon Electronics, 71 Bury New Road, Pinner, Middlesex UB2 5LZ.

Trojan disk

PANCOMMS Ltd. has converted the software supplied with the Trojan lightpen, to run from DragonDOS on disk. The conversion is supplied on disk, with an assembler source file, and costs £3.45 inclusive from the company's High Wycombe address.

On special offer from Pancomms are some copies of the Street and Somerville book inside the Dragon, for £3 (plus overseas). This, they tell us, is the publisher's final possible reduction, so if you want inside the Dragon, don't wait any longer.

Pancomms, 31, Wycombe Lane, Wycombe Green, High Wycombe, Bucks HP12 0HG

Bargains for the brave

Procap Distributors Ltd. have a number of working and non-working Dragon 32 units at knock-out prices.

Said Mr Barrow at Procap: 'We have 30 working Dragon 32s, complete with the power pack, which we are offering for £25 each, and 60 non-working units with minor faults and no power pack, which we are offering for £15 each. We have had to remove the top-board from all the machines to avoid copyright problems, because they are all out of warranty — there are no guarantees available. Because of this, we really want to sell them to personal sales only, so that they can see what they're getting and have the situation explained to them.'

If someone is really keen and can't get along to us, they can ring up and enquire. We

also have 10,000 square feet of electronic surplus stuff here, if people want an incentive to come by.'

Procap Distributors Ltd. are at the Haybridge Centre, Castle Road, Camden Town, London NW1 (you can stop up from Euston Station on the Northern Line) and the phone number is (01) 267 9911



July shortage

BECAUSE of the dramatic response to Dragon User's subscription offer, some people will find that their subs are starting in August. The reason is simple: we have run out of July issues, so there won't be any available as back issues.

To help out readers who have been building up a collection of DUs, we will photocopy any back issues from July 1985 to the price we normally charge for ads (2, irrespective of length). We are unable to photocopy whole issues.



The main articles in July's issue were:

Carroz: a long machine code game.

Disk Drives: basic advice on choosing a disk drive.

Jaunty Plaster: holiday merrymaking in BASIC.

Extra graphics: for the Teletexter tablet.

Plus adventure: Isak, Dragonsoft (Agamem) 471, The Victor Factor, Rommel 3-0, Arcade Arena, Dragon Answers Competition (April winners).

The Machine Code series, unfortunately, did not appear in the July issue.

Please allow plenty of time for delivering photocopies, as we have to fit the copying in around everything else — if there is a rush, this could take several weeks.

Missing Persons

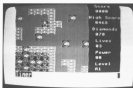
AFTER a disastrous explosion in the Dragon User address file, we have lost touch with writer Geoff Knidge and August Progress Chart winner Jason Lee. Please write and let us know where you are.

Too much play!

Program: Boulder Dash
Supplier: Bally
Price: £3.00
Dear Helen Armstrong
(Dragon User),

I'm afraid I must write in apology for not getting all my copy in on time last month. But, you have to understand, it's not my fault. You see, one of the games you sent me, namely 'Boulder Dash' by Bally is so good that I haven't been able to stop playing it since I got it! It's really quite unfair of you to send me a game which is so good that I spend so much time playing it I can't get around to reviewing it.

For your information it's a multi-screen game which involves running around collecting gems. Yeah, I know what



you're thinking, 'He's looked on another Mario/Miller/Clone, but Helen, believe me, it's much more serious than that. Each screen of this takes up about twelve tiny screens, and it scrolls as you move.

The first few screens seem edgily only just fail to drop the boulders out of the way so that I could get to the gems,

making sure nothing fell on my head, get the gems, and go to the exit, but then later on I came across screens with no gems, and realised that the only way to get them was by dropping boulders on the monsters and that each time I hit a monster it turned into more gems.

Then, there was the master

barrier, and the times, oh God, the times! I have blisters on my fingers from using 'Z', 'X', '<', and '>' to move the superb graphic man around the screen. My eyes are sore from staring at the screen until late. My phone bill has stopped below three figures. I've spent so much time at the keyboard.

So, apologies once more for not getting the review done. Perhaps you can get something from this letter. Who knows eh?

Yours, Jason Orbaum
PS Are we still on for Friday or are you seeing that jerk 'The Expert'?

Forget it, boys. I'm being taken to La Garroche by a tape cassette wholesaler from Decimfract, Clubogather and buy yourselves a sandwich — fit!



Addicted

Program: The Curse of Carnac
Medium: FLEX disc only
Price: TBA
Supplier: K. Hunter, 48
Greenhill Rd., Epsom, Surrey,
Middlesex TW20 2LL.

It is comforting to know that so many what is expected of you, in an adventure, the world you can do is to fall off your chair, although some adventures become so engrossing that your heart rate suffers at moments like these. Something akin to magic separates the good adventures from the bad. Some of them have such an air of mystery and intrigue about them that you hold your breath before telling the final key knowing that it may be the last time you are allowed to do so.

The Curse of Carnac has all of these ingredients and more. There is 27% devoted to dynamic characters, bewildering locations and puzzles for you to explore and exploit. Killing the Bear may have been easy for you as the nightingale is off! Maybe he could have helped you in your quest to save the Kingdom of Balaika against the evil of the Wizard Carnac. That I am afraid is for you alone to find out.

Having spent many hours desperately trying to see as much of this adventure as I could before I reviewed it I must admit to being addicted. My highest score is only 35% and I realise I have spent a lifetime on it already. There are many things which are not obvious at first glance; it plays, as in all adventures, to be meticulously careful in extending your surroundings. Objects which seem to have served their purpose and have been discarded are sadly missed after travelling over mountains and rivers. It pays to know a little about legendary events as some of the more subtlest of mountain places. The program allows a full SAVE/LOAD facility which is useful, especially just before you try something that may or may not seem risky. FLEX commands may also be accessed in mid-game provided that they only occupy the Utility Command Space (SCMD-SCOPY). It is a shame really



that this game is only available from FLEX users, but the sheer size of the program prohibits it from being cassette based.

It is difficult to give a fair appraisal of an adventure game without describing the events which take place in it, but that might spoil the game. Quite

Monster shortage

Program: Temple of Doom
Supplier: Bally
Price: £3.00

He he he! I've got one up on The Expert! He said that Bally had released a game 'similar to Atch-A-Match'. Well, he was referring to Temple of Doom and he was WRONG! The game is nothing like Atch-A-Match. Indeed it's more like Knight Lore!

Right, now that I've had my gloat, onto the game itself. It's a 3-D 'arcade game' which basically involves running round a three dimensional maze collecting food and keys before strength, and thus the very job of life itself, run out.

The graphics are very nice, looking a slight similarity to The Sword and the Sorcerer in terms of iconography (is that a word?). However, it suffers a similar fault to the sword and

simply this is an extremely large and complex program which I found riveting and I don't see why you shouldn't as well.

Roy Coates



the sorcerer — it's boring! The screen jumps whenever something is eaten, or a new room is entered but after a while this becomes almost tedious.

I really have very little else to say. This clone of a game that's only half way there. It's as if the programmers saying 'This is what I've done so far, but I've got to get rid of that really annoying flicker, and I also have to put the monsters in.'

Well, where are the monsters, Bally?

Bally are amongst my favourite Dragon software houses. They're charming, great fun, and they know when they've put in a duff. I think they know what this clone was going to be like. If not, sorry lots, but my mate finished up to level four on his first go!

Jason Orbaum



Counties Quiz

J. Hewitt takes a topographical around the UK and Ireland

THE PROGRAM tests you on your knowledge of the map of the United Kingdom and Ireland. The program has four levels (to congratulate or commiserate), a detailed character set, a true scale map of the British Isles covering more than one FMODS 4 screen, computer-style graphic digits, questions that are not repeated during a game, scoring and percentage facilities, and ratings on your expertise (or otherwise).

First type in the program and then RUN. It will ask for the number of questions you wish to be asked. Enter two digits and press ENTER. If you make a mistake you don't only press the backspace after typing both digits. You must type more than 10.

questions in any one game, to allow an interpretation.

After a short wait the British Isles will be displayed. If the country is questioned it is the United Kingdom (essentially Scotland), you will see the top four Miles of the map. Similarly the same is true for the southern part of the map. This is because the map takes up five graphic pages and only four can be displayed at a time. The program will chase and fill a county, apart from some of the islands which have boxes round them. You then have to name the county.

Each county is represented by a three-letter code, which is normally the first three letters of the name. See accompanying table for complete list of codes. There is

THREE letters and press 'ENTER', and as before, if you make a mistake you can press backspace until you have entered all three characters. The delete flag is:

(Only the registered and qualified are eligible for the award of Fellowship)

Your score, and percentage, will be updated. You will be prompted to press a key, and then another county will be shown until all your questions have been asked. Press "d" for another game.

If all the typing seems too much then an enhanced version, with auto run, can be obtained for £2.50 from Mr J. Hewitt, 25 Hammonds Croft, Church Meadow, Hixon, Staffs. ST18 0PD.

Introduction and Objectives

Table of Counties		23. Dumfries and Galloway	—DAG	46. Leicesters	—LEI	71. Northampton	—NOR
		34. Durham <th>—DUR</th> <td>47. Leicester<th>—LEI</th><td>72. Salop<th>—SAL</th></td></td>	—DUR	47. Leicester <th>—LEI</th> <td>72. Salop<th>—SAL</th></td>	—LEI	72. Salop <th>—SAL</th>	—SAL
1. Angletsey <th>—ANG</th> <td>26. Dyfed<th>—DYF</th><td>48. Leith<th>—LEI</th><td>73. Sharncliffe<th>—SHR</th></td></td></td>	—ANG	26. Dyfed <th>—DYF</th> <td>48. Leith<th>—LEI</th><td>73. Sharncliffe<th>—SHR</th></td></td>	—DYF	48. Leith <th>—LEI</th> <td>73. Sharncliffe<th>—SHR</th></td>	—LEI	73. Sharncliffe <th>—SHR</th>	—SHR
2. Arden <th>—ARO</th> <td>28. East Sussex<th>—EAS</th><td>49. Lincoln<th>—LIN</th><td>74. Sligo<th>—SLI</th></td></td></td>	—ARO	28. East Sussex <th>—EAS</th> <td>49. Lincoln<th>—LIN</th><td>74. Sligo<th>—SLI</th></td></td>	—EAS	49. Lincoln <th>—LIN</th> <td>74. Sligo<th>—SLI</th></td>	—LIN	74. Sligo <th>—SLI</th>	—SLI
3. Bedford <th>—BED</th> <td>27. Essex<th>—ESS</th><td>51. London<th>—LDN</th><td>75. Somerset<th>—SOM</th></td></td></td>	—BED	27. Essex <th>—ESS</th> <td>51. London<th>—LDN</th><td>75. Somerset<th>—SOM</th></td></td>	—ESS	51. London <th>—LDN</th> <td>75. Somerset<th>—SOM</th></td>	—LDN	75. Somerset <th>—SOM</th>	—SOM
4. Bedfordshire <th>—BED</th> <td>25. Fife<th>—FIF</th><td>52. Longford<th>—LOG</th><td>76. South Glamorgan<th>—SGL</th></td></td></td>	—BED	25. Fife <th>—FIF</th> <td>52. Longford<th>—LOG</th><td>76. South Glamorgan<th>—SGL</th></td></td>	—FIF	52. Longford <th>—LOG</th> <td>76. South Glamorgan<th>—SGL</th></td>	—LOG	76. South Glamorgan <th>—SGL</th>	—SGL
5. Borders <th>—BOR</th> <td>30. Galloway<th>—GAL</th><td>53. Louth<th>—LOI</th><td>77. South Yorkshire<th>—SPO</th></td></td></td>	—BOR	30. Galloway <th>—GAL</th> <td>53. Louth<th>—LOI</th><td>77. South Yorkshire<th>—SPO</th></td></td>	—GAL	53. Louth <th>—LOI</th> <td>77. South Yorkshire<th>—SPO</th></td>	—LOI	77. South Yorkshire <th>—SPO</th>	—SPO
6. Buckingham <th>—BUC</th> <td>31. Gloucester<th>—GLO</th><td>54. Louth<th>—LOI</th><td>78. Stafford<th>—STA</th></td></td></td>	—BUC	31. Gloucester <th>—GLO</th> <td>54. Louth<th>—LOI</th><td>78. Stafford<th>—STA</th></td></td>	—GLO	54. Louth <th>—LOI</th> <td>78. Stafford<th>—STA</th></td>	—LOI	78. Stafford <th>—STA</th>	—STA
7. Cambridge <th>—CAM</th> <td>31. Grampian<th>—GRA</th><td>55. Manchester<th>—MAN</th><td>80. Stirling<th>—STU</th></td></td></td>	—CAM	31. Grampian <th>—GRA</th> <td>55. Manchester<th>—MAN</th><td>80. Stirling<th>—STU</th></td></td>	—GRA	55. Manchester <th>—MAN</th> <td>80. Stirling<th>—STU</th></td>	—MAN	80. Stirling <th>—STU</th>	—STU
8. Canter <th>—CAN</th> <td>32. Grant<th>—GWE</th><td>56. Mayo<th>—MAY</th><td>81. Surrey<th>—SUR</th></td></td></td>	—CAN	32. Grant <th>—GWE</th> <td>56. Mayo<th>—MAY</th><td>81. Surrey<th>—SUR</th></td></td>	—GWE	56. Mayo <th>—MAY</th> <td>81. Surrey<th>—SUR</th></td>	—MAY	81. Surrey <th>—SUR</th>	—SUR
9. Canan <th>—CAN</th> <td>33. Gwynedd<th>—GWY</th><td>57. Meath<th>—MEA</th><td>82. Tayside<th>—TAY</th></td></td></td>	—CAN	33. Gwynedd <th>—GWY</th> <td>57. Meath<th>—MEA</th><td>82. Tayside<th>—TAY</th></td></td>	—GWY	57. Meath <th>—MEA</th> <td>82. Tayside<th>—TAY</th></td>	—MEA	82. Tayside <th>—TAY</th>	—TAY
10. Central <th>—CEN</th> <td>34. Hampshire<th>—HAM</th><td>58. Merseyside<th>—MER</th><td>83. Tipperary<th>—TIP</th></td></td></td>	—CEN	34. Hampshire <th>—HAM</th> <td>58. Merseyside<th>—MER</th><td>83. Tipperary<th>—TIP</th></td></td>	—HAM	58. Merseyside <th>—MER</th> <td>83. Tipperary<th>—TIP</th></td>	—MER	83. Tipperary <th>—TIP</th>	—TIP
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12. Clare <th>—CLA</th> <td>36. Highland<th>—HAW</th><td>60. Monaghan<th>—MON</th><td>85. Ulster<th>—ULS</th></td></td></td>	—CLA	36. Highland <th>—HAW</th> <td>60. Monaghan<th>—MON</th><td>85. Ulster<th>—ULS</th></td></td>	—HAW	60. Monaghan <th>—MON</th> <td>85. Ulster<th>—ULS</th></td>	—MON	85. Ulster <th>—ULS</th>	—ULS
13. Cleveland <th>—CLE</th> <td>37. Hertford<th>—HER</th><td>61. Norfolk<th>—NOR</th><td>86. Wainwright<th>—WAN</th></td></td></td>	—CLE	37. Hertford <th>—HER</th> <td>61. Norfolk<th>—NOR</th><td>86. Wainwright<th>—WAN</th></td></td>	—HER	61. Norfolk <th>—NOR</th> <td>86. Wainwright<th>—WAN</th></td>	—NOR	86. Wainwright <th>—WAN</th>	—WAN
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16. Cornwall <th>—COR</th> <td>39. Isle of Man<th>—ICM</th><td>64. Northumberland<th>—NUL</th><td>89. West Lothian<th>—WLO</th></td></td></td>	—COR	39. Isle of Man <th>—ICM</th> <td>64. Northumberland<th>—NUL</th><td>89. West Lothian<th>—WLO</th></td></td>	—ICM	64. Northumberland <th>—NUL</th> <td>89. West Lothian<th>—WLO</th></td>	—NUL	89. West Lothian <th>—WLO</th>	—WLO
17. Cumbria <th>—CUM</th> <td>40. Isle of Wight<th>—IOW</th><td>65. Nottingham<th>—NOT</th><td>90. West Midlands<th>—WML</th></td></td></td>	—CUM	40. Isle of Wight <th>—IOW</th> <td>65. Nottingham<th>—NOT</th><td>90. West Midlands<th>—WML</th></td></td>	—IOW	65. Nottingham <th>—NOT</th> <td>90. West Midlands<th>—WML</th></td>	—NOT	90. West Midlands <th>—WML</th>	—WML
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24. <http://www.chem.mcgill.ca/~chem222/chem222.html>

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1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 26

[illegible]

[illegible]

because of the architecture of the machine and such like.

As for the books...not possessing copies of every machine-code book, I cannot give complete opinions. My opinions are also tempered by my programming background. David Barnes's *6809 Machine Code Programming* received a favourable review in the November 1984 issue. I have never seen it about and, not particularly needing a copy apart from curiosity, have not gone out of my way to get hold of it. Being published later than most machine code books, it would seem a useful prospect.

Fewer mistakes

The books that I work from are inside the Dragon and the *Levelthal* and *Zaks* books. Inside the Dragon was a revelation to me as so many books contain so many errors. It is fairly easy to spot an error in a BASIC program, but how can a beginner possibly spot and put right machine code errors? Even mainly BASIC books with bits and pieces of machine code (including *Sunshine* books!) are notorious for this. I haven't tried all the machine code in inside the Dragon, but the only mistake I have come across in this well-thumbed book is on page 215 where it mentions the cassette gap flag byte being \$08 for 'not-out-of-stream' whereas it is actually \$00 (pointed out on page 248). It was co-written by a Dragon Data employee and contains much useful Dragon hardware and ROM information.

The *Levelthal/6809 Assembly Language Programming* and *Zaks' Programming the 6809* are so helpful to the Dragon programmer as such. I find the strength of the *Levelthal* is the detailed examples it gives when describing each instruction and, even more valuable for patching programs when testing, is the full, numerically sequenced postbyte table in the Appendices. I reckon that that table alone has paid back its £14 cost many times over for me in the past! The *Zaks* is the more recent of the two books and I feel that it contains much more easily assimilated programming examples for beginners than the *Levelthal* and with a page per instruction, the instruction code table is more easily displayed at the head of pages, it is a much easier preparation for the quick check when coding!

Do skip bits of a book and go back over it later if you are struggling — our learning patterns differ so much. So many books seem to be so technical at the beginning that we can get bogged down and give up.

The right tools

I think it essential that would-be machine coders purchase the tools for the job. They are very reasonably priced these days and can only help you get to grips with machine code more quickly. I consider the tools to be a disassembler, an assembler and a monitor.

I believe that a lot can be learnt from others. There is no one way of programming. By possessing a *DISASSEMBLER*,

chunks of machine code can be disassembled (turned into 'look-a-like' source code) and examined even though the source code is not given in articles, etc.)

The *ASSEMBLER* allows you to write source-code and assembles (= translates) it to machine code for you.

MONITOR helps when you cannot test a machine-code program. With it you can TRON (trace on). A monitor will help you trace through the path that your machine code is (no doubt, unpredictably) taking.

There are still too commonly available sets of tools available on the Dragon — *DAGMON* (from Compuserve) and *ALLDREAM* (from Discover). I am a dedicated *CHREAM* user and have never seen *DISASSEMBLER* in use, yet alone tried it so cannot comment upon the differences or use etc. Inside the Dragon uses *CHREAM* for its examples whereas most other books use the earlier available *DAGM*. Both are available on cartridge. I know that *CHREAM* is available on disk when the cartridge port is needed for a disk controller. I do not know about *DAGM*. *DAGMON* was reviewed briefly in the September 1983 issue. *ALLDREAM* more thoroughly in September 1985. Looking over my index, there are further references to *CHREAM* in the July 1984, October 1984 and June 1985 issues.

Perhaps now you can see why asking for recommendation of a machine code book or an Assembler presents such a difficult problem.



DRAGON BOOKS

List compiled
5th July 1985



Title	Publisher	Author	Review (pp)	Other info
25 Programs for the DragonII	Garbus	Hartnell		January 1984 cassette
25 Programs for the DragonII	Fun	Griffin & Hada		July 84 6809 cassette
6809 Assembly Language Programming	Odyssey Publications	Levelthal	Sept 84 (29)	
6809 Machine Code Programming	Granada	Barnes	Nov 84 (29)	
Advanced SoundEffects for the DragonII	Sunshine	Drain xld	July 84 (22)	Sept 85 (contract)
All about FORTH	Mid Software	Horton		June 84 (contract)
History of the Dragon	Giga relay	James		Dec 82 (2) readers
Arcade Games in BASIC (TandyDragon)	Repton	King John	Mar 83 (27)	
Artificial Intelligence on the Dragon	Sunshine	Drain xld		Nov 82 (2) contract
6809 for your Dragon6809 code easy	Arrow Books	Hartnell	Jan 83 (4)	
beginner's Guide to FORTH (The	Inter-Lan Systems	James	Feb 83 (2)	
best of Fun software for your Dragon	Centurion			avail. from 24 June
Books guide to the DragonII	Granada	Stinson	June 84 (27)	
BrainTeasers for the DragonII	Freemantle Pub. House	Lutanski	Dec 84 (24)	July 84 6809 contract
Color Computer Graphics	Radio Shack/Amiga	Jordan		from Tandy store
Color Computer Graphics (The	Arnold	Luars		January 1984 cassette

Creating Adventure Games for your Dragon	Interface Publications	Bedford	Jan 85 (\$4)	
Dr. Watson: Beginner's Guide to the Drag.	Hayward		Jan 85 (\$2) advert	
Dragon Companion (176)	unknown		June85 (\$2) advert	
Dragon Encyclopedia	V&R Comp./Services	Gloucestershire	June85 (\$4) advert	
Dragon Machine Code	Shima	James (Glasgow)	Oct 84 (\$2)	Oct 84 (\$2) advert
Dragon Machine Code/Translate Beginners	Melbourne House	Hayden J V	Mar 84 (\$4) advert	
Dragon Magic	Poulton	Widman	June84 (\$2)	
Dragon Programmer (176)	Brandeis	Lee	June84 (\$2) advert	
Dragon Program	Duckworth	Hayden	Feb 85 (\$2)	
Dragon Trainer (176)	Summers	Lloyd	June84 (\$2)	Nov85/Sept86 advert in
Dragon2: Book of Games (176)	Brandeis	James+C	June85 (\$2) advert	
Dragon2: Games Reader	Summers	Drain G&S	June85 (\$2) advert	
Dragon2: Machine Code for Engineers	Computat	James	Oct 85 (\$4) advert	
Dragon2: Memory Map (96 pages) \$11.95	Wilson Comp./Service	Elgin	email from Milton	
Dragon2: Programmer's Reference Book	Melbourne House	Hayden J V	June84 (\$4)	
Dragon2: Reference Manual: (176)	Elgin Electronics		July85 (\$4) new book	
Dragon2: and how to make the most of it	Brandeis	Stclair	June84 (\$2) advert	
Dragon2000 - a Programmer's Guide	Braymore Software	Larry	Mar 84 (\$9)	
Dynamic Games for the Dragon2	Interface Publications	Young+C	May 85 (\$2) advert	
Easy Programming for the Dragon2	Shima	Stewart-Jones	June85 (\$2) advert	
Enter the Dragon	Melbourne House	Carter	Jan 85 (\$2) advert	
Exploring Adventures on the Dragon	Duckworth	Barnard	May 84 (\$9)	Aug 84 (\$4) advert
FORTRAN for Macros	Womers	Gallier	Mar 85 (\$2)	
Forward 188 (1088)	Viking	Hammond	Mar 85 (\$2)	
Further Programming for the Dragon2	Elgin	Stewart-Jones	June84 (\$2) advert	
Gateway to Computing with the Dragon2	Shima	Stewart	Dec 84 (\$2) advert	
Getting the most from your Dragon2	Penguin	Hammer	June84 (\$2)	Jan 84 (\$2) advert
Glaid Book of Games for your Dragon	Poulton	Widman+C	Dec 84 (\$2)	
Being Bored with Editor BASIC	Radio Shack/Leads		May 84 (\$2) advert in Oct	
Hot Programs to Feed your Dragon	Gigas (Leads)	James	Dec 84 (\$2) May 84 (\$8)	
Inside the Dragon	Melton leads	Hammonds	July84 (\$2)	Mar 84/Sept84/Past issues
Intro. to BASIC programming (176)	Dragon Data	Widman	Avail.	Compuserve-
Introducing Dragon Machine Code	Brandeis	Stclair	Sept84 (\$2)	
Introducing Pascal	Brandeis	Allen	Feb 85 (\$2)	
Introduction: Can you BBS for Dragon2/264	Canova		May 84 (\$2) new book	
Introduction to Dragon2/264 (176)	Dragon Data	Hayer	with Dragon2/264 cart	
Know your Dragon	Day Pub. Company	Moore	July84 (\$4) new book	
Languages of the Dragon (176)	Gigas (Leads)	James	Dec 85 (\$2) advert	
Learning to use the Dragon2	Gower	Knapp	June84 (\$2)	
Learning to use the Dragon2: computer	unknown	Widman	June85 (\$2) advert	
Load and Go with your Dragon	Higgs Associates	Phogor-Jones	May 85 (\$2) advert	
MS-DOS Cookbook (176)	unknown	Barnes	June84 (\$2) advert	
MS-DOS Microprocessor Summary Card	Motorola		email. Compuserve	
Make the most of your Dragon2	Interface Publications	Bedford	May 85 (\$2) advert	
Pocket Handbook for the Dragon (8)	Duckworth	Barnard+Widm	Feb 85 (\$2)	
Power of the Dragon (176)	Microsource	Stacy-Harris	May 85 (\$4) advert	
Programming the 4868	Elgin	John-Lewis	Sept84 (\$2)	
Programming the Dragon for Game/Graphic	McGraw-Hill	Phillips	Oct 85 (\$4) advert	
Programming the Dragon2	Womers	Gafferty	Jan 85 (\$4)	Mar 84 (\$2) advert
Reference Card for the Dragon2	New Systems Corp.		Sept85 (\$2) advert	
RS-88 Color Computer Technical Ref.Man.	Radio Shack/Leads	Chadwick	from leads shops	
The Penguin Book of Personal Computing	Penguin	Griffin	Mar 85 (\$2)	
Training your Dragon2/264	Frederick Hall	Collins-Mar	Nov 84 (\$9)	
Using Pippin Drive/Dragon (Widm) \$5	Canova/Presser	Johnson-Ravi	with 264/268 cart	
Working Dragon2 (176)	Gowdane	Lawrence	June84 (\$8)	May 84 (\$2) advert
(176) book				

PUT ... EOR

C.C.A. Smith adds an exclusive QFT to PLT and shows everyone up.

IT HAS often struck me as strange and frustrating that although the parameters for the PUT command include AND and OR, they do not include the theological function *ex OR* (exclusive OR).

The program shown here corrects that deficiency. There is also a short demonstration program which shows the effect of overlapping columns using FOR.

When a portion of a graphics screen is saved in an array using GET with the `-C` option, there are a number of ways in which the PUT command may be used to display it. The `PUT` parameter displays it incorrectly the same colour as the original, obfuscating whatever it covers. `PRSET` reverses the array colours before displaying; `PGT` does not display the array at all — it reverses the colours in the screen area signified. With the two remaining options — `AND` and `OR` — the array is

each point displayed is determined by a comparison of the corresponding points in the array and the existing screen area. A table showing array colour screen colour and resulting colour for AMD and CM is given in Figures 1 and 2.

So far so good. But take the following situation: a program has been written in which an X-shaped cursor moves across a 40-column-by-60-screen. The X is saved in an array stored in memory, using GSET with the G option. Which PUT parameter to use? Obviously not FEET, which would always show the cross against a green background. In fact the OR option is normally used, but it does have the drawback that the cross disappears when placed on a red background.

The solution is to use EOP. Each point of the cross now shows up clearly against whichever colour it is placed over. It works.

equally well with two-colour graphics. Figure 2 shows the effect of lighting all three colour combinations.

The BASIC program below loads the machine code routine either to the available BASIC RAM and writes a JUMP to the start address in the RAM stack (initially 0). After running the program, the new PUT option will remain available until there is a cold restart — or the machine is turned off — or until the machine code is overwritten. In the last case, which should only happen if a new mc routine is loaded, make sure either to restart the EOI set-up program, or to switch off the utility code **POINT.ABCT**.

For the sake of simplicity, I have used "X" for `exclusive` as the new parameter, but almost any character or BASIC keyword could be used if the CISC type of the data is altered in the relevant value.

**Figure 1 AND
array colour**

4	3	2	1	
4	3	2	1	4
3	3	1	1	3
2	1	2	1	2
1	1	1	1	1

**Figure 2 CH
immune response**

4	3	2	1	
4	4	4	4	4
4	3	4	3	3
4	4	2	2	2
4	3	2	1	1

Figure 3 ECG
arrhythmias

4	3	2	1		
1	2	3	4	4	seems okay
2	1	4	3	3	
3	4	1	2	2	
4	3	2	1	1	

[illegible]

```

00          PUT ..EOR
00          *****
24700      FMS2    CC, 1
          TST     R0R
          BEO     R0R0
          LDC     3, 8
          CMPE    CMMPE
          BEO     R0R0+2
MEM0      FMS3    CC, 8, PC
          LEAR    7, 8
          BNO     [R0, 1]
          JBR     BRP
LBR1       JBR     BR700
          JBR     BR900
          JBR     BR207
          TTS     R, D
          LDR     1, 1
          LEAR    -2, D
          LDR     R, D
          STB     R0R
          JBR     BRP
          STB     R0R
          BEO     LBR2
          JBR     BR900
LBR2       CLR     R0R
          JBR     BR0
          BNO     LBR3
          JBR     BR900
LBR3       CLR     R0R
          JBR     BR900
          CMPE    CMMPE
          BEO     R0R
          JBR     BR200
          LEAR    PUTIT, PC
          LDR     BR0R0
          JBR     BR0R0
00
PUTIT      EDCA    1, 1
          STA     1, 1
          JBR     BR0R0
          *****

```


MOV4:0-5
SUB #11-8
MOV5:0-7
JMP 7
DAT5
JMP @1
JMP0
It works by setting a "packet" and checking if

it changes. The instant the packet changes, SMP is doomed! Capsure will cut SMP's head off and keep it in its last contended (JMP 0).

Most of the programs above have one task, but since many programs can be run at the same time upto 255 but the core size is only 192 so my best suggestion for an

interesting battle is four tasks (programs running at once).

So that's it on my behalf. Remember to plan ahead every move in your programs before sending them forth into reaches of the Core or the results will be disastrous...after all, who wants to be destroyed by a faulty (JMP)?

Listing 1 — BASIC

```

0 IF G0=1 THEN 120
10 CLEAR200,30000:CLS:AB=STR$(G0,"0")
15 PRINT"PROGRAM:" CORE WARS SIMULATI
ON"PRINTAB
20 PRINT"AUTHOR" PROGRAMMED BY A. EDU CLJ
300:"PRINT"PRINT" CORE WARS IDEA = A.W.
DEMENT"
30 FOR I=1 TO 1000:NEXT
40 IF PEEK(127777) < 0 THEN CLONOT"CORE W
ARS:
50 PCLVAR0
60 CLS:DIR L100,L100,AB00,AB15,65),C15
3,514(10):FOR I=0 TO 9:READAB0(1):NEXT
70:G0=1
80:LC=1
90:LI=1
100:PR=0
110:AB=""
120:main loop *****
*****
130:PRINT"CURRENT LINE STATUS"
140:PRINTAB00,STR$(G0)," "):PRINTAB,"
":FOR I=LC TO LC+10:PRINT(AB(PI,I)+AB0
1:PRINTSTR$(AB00," "):
150:G0=""
160:PRINTAB00," PROGRAM"PR:
170:AB=INKEY$:IF AB="" THEN 170 ELSE AB=
AB00
180:IF AB=CHR$(13) OR AB=CHR$(8) THEN B
=LEFT$(AB,LEN(AB)-1)
190:IF AB=CHR$(9) AND LEN(AB)>0 THEN B=
LEFT$(B4,LEN(B4)-1)
200:IF AB="C" THEN 350 ELSE IF AB="S" TH
EN 300 ELSE IF AB="L" THEN 1100 ELSE IF
AB="X" THEN 1120 ELSE IF AB="R" THEN 115
0 ELSE IF AB="U" THEN 1200
210:IF AB="a" THEN 200 ELSE IF AB="i" TH
EN 600 ELSE IF AB="e" THEN 240 ELSE IF A
B="h" THEN 300 ELSE IF AB="P" THEN 1000
220:IF AB=CHR$(84) AND LC=1 THEN LC=LC+1
:GOTO 140 ELSE IF AB=CHR$(8) AND LC=1
THEN LC=LC+1:GOTO 140
230:IF AB=CHR$(13) THEN SOUND 200,1:PRI
NTAB00,B4:GOTO 170
240:AB=VAL(AB):IF AB=4 THEN AB=4 ELSE IF
41) THEN AB=1
250:AB00 PRINT THE LINE AND EDIT
260:LI=8:CPR,A1
270:PRINTAB00,LI:CH$=(20):" "
280:AB=INKEY$:IF AB="" THEN 200
290:IF AB=CHR$(8) AND LEN(L1)>0 THEN L
1=LEFT$(L1,LEN(L1)-1):GOTO 270
300:IF AB=CHR$(13) THEN B4(CPR,A)=L1+" "
:GOTO 140
310:IF AB=CHR$(8) AND LEN(L1)=0 THEN 37
0
320:IF ASC(AB)>32 THEN 300
330:LI=LI+1:AB00
340:GOTO 270
350:CLS:PRINT"COMPILE"INPUT"MEMORY LOC
TION TO START AT..."L:PL=2000:L4=100:PL
360:IF L<0 OR L>191 THEN 370
370:FOR LH=1 TO 64
400:CP=8103+0
410:"FIRST TIME UP THE LINE IN TO
THREE PIECES
420:L4=84(CPR,LH)
430:IF LH="1" OR LH=" " THEN NEXT LH:GOT
O 430
440:AB0
450:FOR C=1 TO LEN(LH)
460:AB=MOD(C*LEN(C),15):IF AB=" " THEN AB=
1(C*0)+C:ROUND 1,1
470:AB00=L4+LEFT$(LH,C)-1+1528+MOD4
(LH,C)-1+5(C)-5(C)-1+1534+8(8)H4(LH,
LEN(LH)+C-1)
480:"AFTER THAT, DEFINE ALL POKES " IN
THIS PASSION:
490:
500:" COMMAND PEEK
510:FOR I=0 TO 9+353+0+50+C-1:THEN NEXT
511:PRINT"COMMAND "500" NOT UNDERSTOOD"
+CHR$(13)+STR$(C),32:"***** LINE
"511:PRINT"PRINT PRESS ANY KEY..." :GOTO 500
10:GOTO 140
520:CP=1
530:FOR LH=LEFT$(B4,1)+504+LEFT$(B4,1)
540:IF POK=LH THEN C2=1+524+RIGHT$(524,
LEN(524)-1)
550:IF POK=LH THEN C2=2+524+RIGHT$(524,
LEN(524)-1)
560:IF POK=LH THEN C3=C2+55+504+RIGHT$(
524,LEN(524)-1)
570:IF POK=LH THEN C3=C2+55+504+RIGHT$(
524,LEN(524)-1)
580:"AND POKES:01
590:G2=VAL(524)+53+VAL(524):IF G2=0 THEN
G2=256+G2
600:IF G2=0 THEN G2=256+G2
610:POKE PL,C1:POKE PL+1,G2:POKE PL+3,G2
:POKE PL+5,G2:PL=PL+4:POKE PL,8103:PL+37
62:THEN PRINT"leave note: YOUR PROGRAM
HAS EXCEEDED LOCATION
380,AND IS PROCEED=
ING TO 8."PL=2000

```


27988	3888338883388833888	=	750	28488	1888384338881888	=	748	28888	28883888338883888	=	784
27988	3888338883388833888	=	750	28488	88883888188888888	=	808	28888	88883888338883888	=	850
27988	3888338883388833888	=	812	28488	38881888888888888	=	848	28888	28883888338883888	=	852
27988	688338883388833888	=	1882	28488	38888888888888888	=	758	28888	88883888338883888	=	758
27992	3888888888888888888	=	832	28488	88888888888888888	=	828	28888	88888888888888888	=	788
28000	8888888888888888888	=	750	28488	28881888888888888	=	888	28888	88883888338883888	=	884
28000	8888888888888888888	=	822	28488	18883888188888888	=	888	28888	28888888888888888	=	788
28016	8888888888888888888	=	884	28488	88888888888888888	=	1882	28888	88888888888888888	=	188
28024	8888888888888888888	=	878	28488	88888888888888888	=	818	28888	88888888888888888	=	818
28032	1188888888888888888	=	752	28488	88888888888888888	=	838	28888	88888888888888888	=	788
28040	2188888888888888888	=	844	28488	88888888888888888	=	814	28888	88888888888888888	=	884
28048	7888888888888888888	=	818	28488	88888888888888888	=	888	28888	88888888888888888	=	782
28056	8188888888888888888	=	844	28488	81888888888888888	=	828	28888	88888888888888888	=	888
28064	8888888888888888888	=	888	28512	78888888888888888	=	812	28888	88888888888888888	=	888
28072	8888888888888888888	=	748	28528	78888888888888888	=	884	28888	88888888888888888	=	1148
28080	8888888888888888888	=	718	28536	81288888888888888	=	752	28888	88888888888888888	=	1824
28088	8888888888888888888	=	578	28544	88888888888888888	=	874	28888	88888888888888888	=	1824
28096	8888888888888888888	=	872	28552	88888888888888888	=	748	28888	88888888888888888	=	1884
28104	8888888888888888888	=	872	28560	88888888888888888	=	852	28888	88888888888888888	=	1884
28112	8888888888888888888	=	752	28568	18888888888888888	=	818	28888	88888888888888888	=	788
28120	8888888888888888888	=	1112	28576	88888888888888888	=	818	28888	88888888888888888	=	1128
28128	8128888888888888888	=	838	28584	88888888888888888	=	884	28888	88888888888888888	=	888
28136	2812888888888888888	=	582	28592	27888888888888888	=	418	28888	88888888888888888	=	888
28144	8888888888888888888	=	782	28592	18888888888888888	=	882	28888	88888888888888888	=	888
28152	8888888888888888888	=	888	28600	88888888888888888	=	818	28888	88888888888888888	=	782
28160	8888888888888888888	=	588	28608	88888888888888888	=	882	28888	88888888888888888	=	1184
28168	8888888888888888888	=	882	28616	38888888888888888	=	888	28888	88888888888888888	=	1182
28176	8888888888888888888	=	882	28624	18888888888888888	=	812	28888	88888888888888888	=	1184
28184	8888888888888888888	=	888	28632	88888888888888888	=	888	28888	88888888888888888	=	1248
28192	8888888888888888888	=	588	28640	88888888888888888	=	752	28888	88888888888888888	=	888
28200	8888888888888888888	=	588	28648	88888888888888888	=	752	28888	88888888888888888	=	888
28208	8888888888888888888	=	782	28656	88888888888888888	=	824	28888	88888888888888888	=	1218
28216	8888888888888888888	=	782	28664	88888888888888888	=	824	28888	88888888888888888	=	878
28224	8888888888888888888	=	1188	28672	88888888888888888	=	812	28888	88888888888888888	=	878
28232	8888888888888888888	=	1888	28680	88888888888888888	=	812	28888	88888888888888888	=	882
28240	8888888888888888888	=	752	28688	88888888888888888	=	1828	28888	88888888888888888	=	888
28248	8888888888888888888	=	888	28696	88888888888888888	=	752	28888	88888888888888888	=	782
28256	8888888888888888888	=	888	28704	88888888888888888	=	788	28888	88888888888888888	=	8824
28264	8888888888888888888	=	888	28712	88888888888888888	=	448	28888	88888888888888888	=	744
28272	8888888888888888888	=	888	28720	88888888888888888	=	544	28888	88888888888888888	=	888
28280	8888888888888888888	=	448	28728	88888888888888888	=	1824	28888	88888888888888888	=	8
28288	8888888888888888888	=	888	28736	88888888888888888	=	544	28888	88888888888888888	=	8
28296	8888888888888888888	=	888	28744	88888888888888888	=	888	28888	88888888888888888	=	8
28304	8888888888888888888	=	888	28752	88888888888888888	=	544	28888	88888888888888888	=	448
28312	8888888888888888888	=	888	28760	88888888888888888	=	448	28888	88888888888888888	=	1152
28320	8888888888888888888	=	888	28768	88888888888888888	=	888	28888	88888888888888888	=	1248
28328	8888888888888888888	=	888	28776	88888888888888888	=	752	28888	88888888888888888	=	1888
28336	8888888888888888888	=	752	28784	88888888888888888	=	448	28888	88888888888888888	=	1218
28344	8888888888888888888	=	888	28792	88888888888888888	=	88	28888	88888888888888888	=	1824
28352	8888888888888888888	=	712	28800	88888888888888888	=	418	28888	88888888888888888	=	1888
28360	8888888888888888888	=	888	28808	88888888888888888	=	8	28888	88888888888888888	=	1184
28368	8888888888888888888	=	812	28816	88888888888888888	=	132	28888	88888888888888888	=	1182
28376	8888888888888888888	=	888	28824	88888888888888888	=	884	28888	88888888888888888	=	1888
28384	8888888888888888888	=	812	28832	88888888888888888	=	788	28888	88888888888888888	=	744
28392	8888888888888888888	=	432	28840	88888888888888888	=	872	28888	88888888888888888	=	248
28400	8888888888888888888	=	448	28848	88888888888888888	=	832	28888	88888888888888888	=	1182

Mini Logo

Mike Hosken presents a compact Dragon version of 'turtle graphics'.

LOGO can mean all sorts of different things to different people. It may provide the means of constructing a 'real turtle' as it goes over to accurately across the floor of the primary school, drawing shapes at the behest of its infant operators.

Or it may be used to provide a model of recursion in advanced courses in computer science.

Dragon owners have long been able to purchase full-bodied versions of the language. And there can be no substitute for the real thing.

But for those whose chief interest lies in turtle graphics on the screen there is no reason when it comes to using Dragon Basic its previous required effect. The inability to combine standard Dragon characters with graphics is a disadvantage, of course, requiring that all letters and numbers should be defined as graphics characters. (So lines 100 to 500 are taken up with a full set plus square brackets).

Now it may well be that you already have such a set of graphics symbols. If that is the case then the sensible thing to do here is to load your set from some other program, delete the unwanted sections, renumber if necessary, and then type in the remainder of the MiniLogo lines. (Conversely, a full set is provided here even though some cannot be recognised by the command structure, in case you find a use for a coherent set elsewhere in your programming.)

But to begin at the beginning...

Users who have not come across turtle graphics (BASICs?) need some guidance, provided here in the opening lines, up to 130, and illustrated as a print-out in Figure 1.

The whole initialisation section, 130 to 500 plus the turtle class B-line subroutine, takes a measurable time to execute. But by filling the screen first (without the use of any

variables) there is no obvious delay at all and yet the first graphics screen is almost ready to be revealed.

So clearing space is reserved, and arrays DIMENSIONED before getting the Dragon to learn its letters. Then at line 510 PENDING can be prepared, with no matching SCREEN command yet, 580 sets the initial position variables, plus R to take account of the Dragon's predilection for writing in radians. The 610 to 640 take us into action.

Characters, even 'illegal' ones, are displayed quite quickly on the graphics screen as a command is built up by successive uses of MOVING. To keep programming life simple, this version insists that with all numbers commands there must be a space after the command, before the number; and only whole numbers are recognised. Backspace delete is allowable, as is shift-backspace for deletion of a whole entry. Completion is signalled with (CHR\$(13)) — 'ENTER' — in line 630.

A certain amount of jiggery-pokery with the 'color' set helps to simplify the PSETTING and PPRINTING of the graphics features, as in the clearing of the workspace and disappearance of the turtle in lines 690 to 990.

Next, in analysing the instruction, the first thing is to discover whether it is a single-word instruction (such as 'PENDOWN') or a numerical expression ('F 60', say). The distinction is made by looking for the mandatory space; the procedure also enables the past which is to be VALUED to be separated out by line 1090.

Then the command is compared with the array of acceptable instructions (DATA of line 100) at the top of lines 1100 to 1160. If the instruction is unrecognised a fall through the loop and, in common with many other 'illegal' commands, causes a 'REDC' signal (line 1040) to be displayed for a few

seconds before inviting a fresh attempt.

At last, three-quarters of the way through the program, comes the easy bit — doing the turtle graphics!

Forward and Back are identical apart from direction; line 1150 decides on that detail. Similarly, Left and Right differ only by the sign in lines 1200 and 1260.

But PC errors would abound if precautions were not taken to avoid trying to draw on the plastic surround of the TV screen. So lines 1180 to 1420 issue 'REDC' instructions rather than attempt any such thing.

Whether the turtle should be visible or not is remembered by the simple index M, one or zero. But there are three mutually exclusive alternatives as regards records of movement: none at all is PENUP with index J set 1 whereas PENDOWN is the default 0 and the obliterating RUBBER has J 3.

So there are few problems in producing the lines and circles. Many a computer could do as well. But how can the turtle be moved on without leaving a gap in the drawn lines where they coincided with the turtle outline? This is where the Dragon's PUT and GET come into their own, allowing the turtle to be treated as a separate entity, stored in a memory array. So it can be put 'on top' of the geometry or antitiny being worked on, and removed without leaving any scars.

Just a couple of points of clarification to conclude. You do have to command PENDOWN again after use of RUBBER. And the difference between CLEAR and START is simply that START returns the turtle to the initial position whereas CLEAR leaves it wherever you left it.

So have fun! If anyone accuses you of wasting time you can always explain that you are peering up on the principles of trigonometry by fitting circles into or round irregular triangles and what-not.

Figure 1

```
10 REM MINILOGO
20 CLS
30 PRINT #36,"A SMALL VERSION OF logo"
40 PRINT "*****": PRINT
50 PRINT "REMEMBER logo COMMANDS:": PRINT
60 PRINT "FORWARD OR BACK (L A DISTANCE)"
70 PRINT "LEFT OR RIGHT (L AN ANGLE)"
80 PRINT "circle (L A RADIUS)"
90 PRINT "penup OR pendown OR rubber"
100 PRINT "hide OR show THE TURTLE"
110 PRINT "clear THE LINES OR start AGAIN"
120 PRINT: PRINT "THE AREA IS 256 UNITS BY 192."
130 REM >>>>>>>>>> Initialisation
140 CLEAR 1000
150 DIM M$(12),H$(16),L$(29),N$(9),S$(20,26)
160 DATA F,B,R,L,PENUP,PENDOWN,RUBBER,HIDE,SHOW,CIRCLE,CLEAR,START
170 FOR L=1 TO 12: READ M$(L): NEXT L
```

```

180 REM >> Character graphics
190 L4(1)="BR1U8R2P20W5D3"
200 L4(2)="BR1U8R4P08L3FDGL3"
210 L4(3)="BR6LAH04BR4"
220 L4(4)="BR1U8R4P2D202L4"
230 L4(5)="BR1U8R6D0J8L2L4D3R6"
240 L4(6)="BR1U8R6D0J8L2L4"
250 L4(7)="BR04R84P8D2NL3D2GL4R"
260 L4(8)="BR1U8R86D6U3L6"
270 L4(9)="BR2R8L2U6L2R4"
280 L4(10)="BRFR3EJ5"
290 L4(11)="BR1U8R84G4EF3"
300 L4(12)="BR1R0U8R5"
310 L4(13)="BR1U6P3EJ06"
320 L4(14)="BR1U6P6U6"
330 L4(15)="BR2R4R4D4GL4R"
340 L4(16)="BR1U6R4PDGL4"
350 L4(17)="BR6LAH04R4P04G0UHF3"
360 L4(18)="BR1U6R4PDGL4R2F3"
370 L4(19)="BRFP3BUHL3HUR3P"
380 L4(20)="BR4U6L3R6"
390 L4(21)="BR1R0U6D5PRAED5"
400 L4(22)="BR1R0U6D1P3EJ03"
410 L4(23)="R06D4P2E2H04P2E204"
420 L4(24)="BR1R6BL6P6"
430 L4(25)="BR0U3E3BL6F3"
440 L4(26)="BR7L4BL6L6"
450 L4(27)="BR5L2U6R3"
460 L4(28)="BR3R2U6L2"
470 M4(1)="BR4U60"
480 M4(2)="BR6L4U2ER2BUHL20"
490 M4(3)="BR2R3EUHML3EUHL3"
500 M4(4)="BR0U6G4R5"
510 M4(5)="BR1P2ED2HL3U2R4"
520 M4(6)="BR2R2PDGL2BU4R2"
530 M4(7)="BR3U3E3L4"
540 M4(8)="BR2R8R2HUR2PDGFDGL2R5"
550 M4(9)="BR3R2UHL2GD0F3"
560 M4(0)="BR2BUHNR2P04P2ED04"
570 PMODE 4,1: PCLS
580 R=120: S=91: A=0: R=57.2957T951
590 LINE(0,185)-(255,191),PSET,BP
400 GOSUB 440
410 PRINT #80,"PRESS ANY KEY TO START....";
420 IF INKEY$="" THEN 620
430 SCREEN 1,1
440 GOTO 760
450 REM >>>>>>>> Turtle-draw subroutine
460 IF R=1 THEN RETURN ELSE COLOR 5,0
470 R0=R+8*SIN(A): R8=R-8*COS(A)
480 L0=R-4*COS(A): L8=R-4*SIN(A)
490 R0=R+8*COS(A): R8=R+8*SIN(A)
500 LINE(R0,R8)-(L0,L8),PSET
510 LINE-(R0,R8),PSET
520 LINE-(R0,R8),PSET
530 CIRCLE(R0,R8),2
540 RETURN
550 REM >>>>>>>> Compile an instruction
560 DRAW "M03,186;D08R2P02ED2C"
570 C=0: D4=""
580 LINE(9+C*9,185)-(18+C*9,191),PSET,BP
590 C4=INKEY$: IF C4="" THEN 790
600 D=ASC(C4)
610 E4="BM"+STR$(9+C*9)+"",191,C0"
620 IF D=21 THEN LINE(9,185)-(18+C*9,191),PSET,BP: GOTO 770
630 IF D=13 THEN GOTO 930
640 COLOR 5,0: LINE(9+C*9,185)-(18+C*9,191),PSET,BP: COLOR 0,5
650 IF D=8 AND C=0 THEN C=C+1
660 IF D=8 THEN D4=LEFT$(D4,C): GOTO 780
670 IF D=32 THEN 910
680 IF D=47 AND D<58 THEN DRAW E4+M$(D-48): GOTO 910
690 IF D=64 AND D<94 THEN DRAW E4+L$(D-64): GOTO 910
700 GOTO 780
710 D4=D4+C4: C=C+1
720 GOTO 780
730 LINE(0,185)-(255,191),PSET,BP
740 IF R=1 THEN 1000 ELSE COLOR 0,5
750 LINE(R0,R8)-(L0,L8),PSET
760 LINE-(R0,R8),PSET
770 LINE-(R0,R8),PSET
780 CIRCLE(R0,R8),2
790 PUT(10,5-10)-((R+10,5+10),5,PSET
1000 REM >>>>>>>> Analyse an instruction

```

```

1010 DA1="": P=0: Q=0
1020 P=INSTR(1,DA," ")
1030 IF P<>1 THEN 1090
1040 DRAW "BR210,191:GO"+L4(18)+"BR2"+L4(5)+"BR2"+L4(4)+"BR8"+L4(15)
1050 FOR L=1 TO 900: NEXT L
1060 COLOR 5,0: LINE(210,185)-(255,191),PSET,BF
1070 GOSUB 660
1080 GOTO 760
1090 IF P=0 THEN DA1=DA ELSE DA1=LEFT$(DA,P-1): Q=VAL(RIGHT$(DA,LEN(DA)-L
EN(DA1)-1))
1100 FOR L=1 TO 12
1110 IF DA1=BB(L) THEN ON L GOTO 1150,1150,1260,1280,1300,1320,1340,1360,
1380,1400,1480,1540
1120 NEXT L
1130 GOTO 1040
1140 REM >>>>>>>> Forward and Back
1150 IF L=2 THEN G=-G
1160 EE=INT(E+0*SIN(A)+.5)
1170 SS=INT(S-0*COS(A)+.5)
1180 IF EE<10 OR EE>245 OR SS<10 OR SS>173 THEN 1040
1190 IF J=0 THEN LINE(E,S)-(EE,SS),PSET
1200 IF J=2 THEN LINE(E,S)-(EE,SS),PSET
1210 E=EE: S=SS
1220 GET(E-10,S-10)-(E+10,S+10),S,G
1230 GOSUB 660
1240 GOTO 760
1250 REM >>>>>>>> Right
1260 A=A+0/R: GOTO 1220
1270 REM >>>>>>>> Left
1280 A=A-0/R: GOTO 1220
1290 REM >>>>>>>> PENUP
1300 J=1: GOTO 1220
1310 REM >>>>>>>> PENDOWN
1320 J=0: GOTO 1220
1330 REM >>>>>>>> RUBBER
1340 J=2: GOTO 1220
1350 REM >>>>>>>> HIDE the turtle
1360 M=1: GOTO 760
1370 REM >>>>>>>> SHOW the turtle
1380 M=0: GOTO 1220
1390 REM >>>>>>>> CIRCLE
1400 IF Q=0 THEN 1040
1410 EE=0*SIN(A): SS=0*COS(A)
1420 IF E+0*EE<0 OR E+0*EE>255 OR S-0*SS<0 OR S-0*SS>183 THEN 1040
1430 PMODE 4,1
1440 IF J=2 THEN COLOR 0,5
1450 CIRCLE(E+0*EE,S-0*SS),Q
1460 COLOR 5,0
1470 GOTO 1220
1480 REM >>>>>>>> CLEAR the lines
1490 PCLS0
1500 GET(E-10,S-18)-(E+10,S+18),S,G
1510 LINE(0,184)-(255,191),PSET,BF
1520 GOSUB 660
1530 GOTO 760
1540 REM >>>>>>>> START again
1550 E=128: S=91: A=0: GOTO 1490
1560 REM MIKE MOSKEM.

```


Expert's Arcade Arena

OOOORRYE

Well, here about that for a wacky beginning eh? I don't think any of you expected me to start like that did you? You said? Okay then you cocky bastards I'm going to start again. Be there! Right, pretend you haven't read this bit. Ready? There let's go.

Backtrack.
Ha, even better huh? So to business. A letter from someone who signed off 'Games Ah-hoedoo'. Before I get down to this letter, I'd like to say something, and that is I'm not prepared to receive letters from people writing under clever/obscure pen names. I'm the pretentious one here. Not you. Out it! Good.

So, Mr Games Cretin, thanks for your note, and here's your bar Palace for all my readers.

BEASTALKER: Code is REGISTER
RUBY ROSSA: POKE 211/2,25 for infinite lives.

ESCAPE: Code is '9999' but Poke 194/133 allows anything.

BEAM RIDER: Crash with RESET button, then POKE 179/2 lives via POKE 1184/13 for infinite lives. EXEC 1983.

CAVEYNS OF CHADS: Type POLE7 on file page. E moves on to the next screen.
DEATH RIVES OF SIRUS: Codes are G8UH and TLL (Can anyone help me with the adventure parts — The Expert.)

Mr Games Pretentious Name goes on to present the long-awaited program 'C' which breaks into any new Microdeal, Tom Mix, or Pooled Money game.

PROOFMAN G:
10 PCLEAM CLEAR 10 FOR 1-1808 to 1551
PEACAM POKE 1610 EXEC 1808
30 EXEC PEER (1540) 2556 + P888 (1840)
40 DATA 124,126,160,1 142,48,142,28,191,1, 143,145,31, 141,24, 124,218,10,142,84,134, 8,102,38,247,190,44, 12,189,8,129,160,34, 194,141,7,145,2,43,144,142,60,169,126, 128,168,81

Simply put a POKE on line 20 contain line 30 from EXEC to PRINT and the Program will print up the EXEC address.

This should help with the POKEs from earlier columns, and here's a few more that will work with it, all of which give infinite lives!

PENDON POKE 1823,125
JET ROOF GOLF POKE 6794,77 POKE 9099,77
TEA TIME POKE 1990,109
SHOCK TIMOPOPER repeated by popular demand! POKE 1325,135

For those interested, the Games Ah-hoedoo is really Paul G. Buegin, who promises to reply to all those who write to him at the following address, as long as they send him an size-16 (you know what you're acti-

Write to 'The Expert' at Dragon User 12-12 Little Newport St, London WC2H 7PP, with all your arcade tips and hints.

ally letting yourself in for Paul?!

Paul G. Buegin, 18 Moorcroft Road, Fulwood, Sheffield, Yorkshire, S10 4QS.

Finally, Paul has won an award. The award goes to Paul for 'Most Cautious' 'I Want To Win An Award' Type Letter Ever Sent To An Arcade Column in A Publication Called Dragon User! Congratulations Paul.

Now, to Robert Coombes's letter. May I be so bold as to register a complaint (I don't think you can't) — The Expert? It is concerning Shogun Master by Quickbeam (Good job too — The Expert). What I find very annoying is the poor detecting when fighting. For example, the opponent may attempt to hit you even if you are some way off. This also happens with the ring sweeps and the high kick. Could you use your influence at Quickbeam and let them know of my complaint. (She heads may rot)

Well, your complaint is now in print and knowing Dave at Quickbeam, he'll make a lot of notice of your complaint (because they're very keen to please) and I should think something will get done about it. I'll keep you posted.

The Total Colosseum savegame editor WILL work on the DRAGON 32 now. Just type Clear 28021919 before running. Many thanks to Pam Olney for saving the day. See you next month.

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I'LL BEGIN with a long letter from regular reader Matthew Lodge, full of plots, clues and news, probably enough to fill the whole column by itself — maybe this is a take-over bid? Get out, Lodge! Clues include how to get the elusive emerald in Juxtaposition, for which you must have the sender unit and the transmit receiver, then from outside the door where the emerald is you. **REDNES (S)UNSHADE TEGW QIWEVECH POPO**, Matthew's wondering where to get a videotape; **AREMAC EHT EBU**. (And watch for a full solution to this game next month.) On the same game, Matthew comes up with some possible sources for Ceti VI, firstly in Robert Heinlein's book *Satanstoe*, where a Ceti VI is mentioned as a planet, and in *Star Trek* II where there was a Ceti Alpha VI planet with unbearable atmosphere.

Watery entrance

In *Wizard of Azkay* Matthew suggests you try lighting in the dark when in the cave, and you should trust the fox and be prepared to follow him. In *Sarcenarol* Claymorgue Castle, don't use the Sesame Seed spell to get you inside the castle — go for *treasure entrance* instead, you'll need Sesame later. To get your first star: **SEENT TA ERIF TSAC**.

This busy reader has also been writing his own 64K2M screen driver and integrated it into Dragoon BASIC, and tells me that there's a chance that Roy Cooper's Marowoon will be using it in an adventure. They're thinking of releasing. Finally Matthew has finished lots of adventures, from *Mysterious Adventures* to *Scott Adams*, and would like to swap them for new challenges if anyone's interested. Write to: Matthew Lodge, 'Maen Meiri', Holmes Chapel Road, Lich, Denia, Northwich, Cheshire CW9 7SZ. And remember to spell his first name with only one 't' as he doesn't half get cross if you get it wrong!

Also on the look-out for adventures is Greg Southenden, 21 Courfield Avenue, Lordswood, Kent ME5 8QR, and specifically for the graphics version of *Callisto Island* and *Alloch Sarcenarol*, which he's having difficulty tracking down. If you've solved them and want to sell them, contact Greg, who claims to be the worst adventure player in the world, which is why he has no finished adventures of his own to swap in return: he's currently stuck in about

30 different ones, he reckons!

A rocket from reader Ian Rockett, not aimed at me but at a French reader, Daniel Merlot, who has sent 18 programs in a swap they'd arranged, but the return programs never arrived and nor have replies to Ian's several letters asking what's going on. So a warning there for everyone, Ian's letter goes on to list a routine that will let you inspect the data statements in many BASIC adventures, enabling you to look at verbs, nouns, responses and anything else held as data. Type the routine as one complete line, but without a line number: **POW A = 1 TO 23456: CLS: POW B = 1 to 15: READ RS: PRINT RS: NEXT EXEC 41594: NEXT B** The 'B' loop makes the routine print out just 15 blocks at a time, so presumably key to get the next block of 15. If you want it to run in edit mode, change the EXEC to EXEC 57570. Anyone interested in routines like this and in programming generally can contact Ian at 2 Knowle Road, Surley, Leeds LS4 2PJ.

Bob Bernason of 16 Woodland View, Lurville, Bodmin, Cornwall, is stuck in various places and would like to hear from anyone offering help on *Caverns of Doom* (how to get the maushrooms and avoid starvation), *Wizard of Azkay* (how to get through the hen-house (kiddo)), *Arrow of Death II* (how to get anywhere!) and *Operation Saker* (any help on Part Two).

Also suffering in *Saker* is Mark Brocklehurst of 1 Park Avenue, Mansfield, Leics, LE6 0BA, who wants to know the code that is asked for after answering Rhythm's questions, which he'll now know if he's read the last couple of columns. Mark offers help on *Castle Adventure*, *Ring of Darkness*, *Mystery of the Java Star* and *El Diablos*, and also asks if anyone out there wants an adventure game break as a pen-friend. He doesn't say quite how freakish he is, but he seems quite normal from his letter. Mind yes, how normal is an adventure player anyway?

Ray Thomas lives in a place called Solva, a good home for an adventurer, and what's more he's just solved *El Diablos*. Having breathed a sigh of relief for that, he's straight into *Wings of War*, where he asks what to do when confronted by the Kommandant, how to get a pass to get past the Luger-toting guard, and how to open the toolbox. The second is solved by the first, which requires a simple: **TRANSDICED**

QIMYTRA, NEHW UEH YAS. Can anyone help on the toolbox? Write to Raymond at 48 Bra Canal, Soth, Haverfordwest, Dyfed SA62 0TZ.

David Bird of Newport wants to know how to get into the castle in *Castle Adventure* — not that this has stopped him playing the game as he's fiddled with the program so he can begin the adventure inside the castle, but he wants to do it legitimately. As far as I remember, David, that's a simple matter of getting the right command, either **GO DOOR** or **GO CASTLE**, but if that doesn't work contact Mark 'Freak' Brocklehurst from two paragraphs ago.

Help needed on *Grove*, *Arrow of Death II*, *An Little Indians* and *Perseus and Andromeda* for Neil Huggins, 6 Monmouth Court, Henthedowns, Caerphilly, Mid Glamorgan CF8 2TG, and help offered in return on *Knobber*, *Time Machine* and *Juxtaposition*. And with Neil's letter I've just noticed something that could be incredibly significant. These last three letters are the only ones this month without stamped addressed envelopes enclosed, which is why they're dealt with in the column rather than with personal replies. The significance? All three of them come from Wales! So it's not true what they say about the Scots being lightfingered, it's the Welsh all along! (Rudely address letters of complaint to the Place Holdings Board.)

Closed Gates

Colin in Cornwall is also from Wales, so those hillside must really be ringing with the sound of keyboard bashing and frustrated adventures. Colin's stuck in *Jerusalem Adventure*, being unable to open the Golden Gate, so keys or clues please to 153 Bodelvaun, Greenmeadow, Cernibon, Gwent NP44 4LG. He should contact A.D. Gore of 43 The Downs, Harlow, Essex CM20 3RE, who's solved *Jerusalem* as well as *El Diablos* and *Franklin's Bomb*. He (or she) is completely baffled on *Lost in Space* and *Pinky Business*, but so am I, so... meen, wouldn't you just know it, someone writes in to ask about adventures I can actually answer problems on, and they forget to tell me what the problems are!

Poul Cooper asks how to get back onto transported on *Syrryng*, and how to enter the command to get down the dark pit on the upper floor. He's been

told to hold the blanket and the string, but **HOLD STRING, HOLD BLANKET** and **HOLD BLANKET AND STRING** don't work. So what will? Paul is perplexed at 192 Redhouse Road, Melbourne, Derbyshire DE7 1SC.

Anyone perplexed by Dragon Mountain should contact Steve Driver, 93 Valley View, Lexington, Fife, Scotland UP10 5BG, as Steve has solved that one, but needs help on The Air Trilogy and Juxtaposition. See next month's column for clues, gales, Steve.

There's been a lack of help so far this time, but let me finish with some more info on Madness and the Mincrow from Steve Barritt, who provided some details about the spells that I gave in an earlier column. Steve says he's happy to try to answer specific questions on the adventure, if anyone wants to ring him on 0827 706670, and he's there most evenings from about eight to ten o'clock. The following details on Madness aren't going to be printed backwards, there are too many of them for that, but as so many people are stuck all over the place in this one I hope no-one will mind.

1st Floor: all items dropped in the mushroom will remain safe & unneeded, but dropped elsewhere they may be relocated by the spirits. There is always one spell room on this floor, to which you must take the mushroom and the food. To discover the items needed to get the spellbook, LOOK POOL. The

Jewel box, tablet, scabbard and scroll are pseudo-treasures as they are found in the same locations as normal treasures but they don't score points, though some do have other uses. You can refill bottles with water from any pool on this floor, and drinking water adds 32 points to your condition. Eating food adds 30 points, and as you eat more food is relocated on floors one and two only.

Second Floor: at the start of each game this contains the sun, fate and skull, and also has three rooms to get these spells you'll need the parchment, talisman and rope from the fourth floor.

Third Floor: this always has the axe, mace, basket, mushroom and pen-

dant, and is the most difficult level to map, being split into two different areas. Use the BACK command frequently as there are many one-way movements possible.

4th Floor: always contains at start of each game the parchment, talisman, rope, sceptre, goblet, glowing rocks, music room and a second pit. In the music room you'll need the flute, rope and parchment to play the flute and climb the ledge. For the glowing rocks use Oskan. The LOOK PIT command works at random times, so keep trying.

I also tend to work at random times, but with any luck the next time will be next month.

Adventure Contact

To help puzzled adventurers further, we are instituting an Adventure Helpline — simply fill in the coupon below, stating the name of the adventure, your problem and your name and address, and send it to Dragon User Adventure Helpline, 12/13 Little Newport Street, London WC2H 7PP. As soon as enough responses have arrived, we will start printing them in the magazine.

Don't worry — you'll still have Adventure Trail to write to as well!

Name
Address
Problem
Name
Address

Adventure Contact

Adventure: 1) Wings of War 2) Syzygy 3) Calisto Island **Problem:** How to get past the guard? 2) Where to find the huge Ugly Alien? 3) Where to get the can? **Name:** Alastair Scanlan **Address:** 10 Lynton Road, Hainault, Pinner, Middlesex HA5 1PH. Tel. 01-426 1713.

Adventure: Frankensteins **Tomb Problem:** I am stuck and I cannot find the wine cellar or get out of the pit. **Name:** Jonathan Miller **Address:** 130 North Dry Road, Sidcup, Kent DA14 5HL.

Adventure: Syzygy **Problem:** Fighting radar and using the transporter **Name:** A. Storen **Address:** 30 Cannon Park Road, Coventry CV4 1AV.

Adventure: Juxtaposition **Problem:** How do I get the emerald and the diamond bar? **Name:** Gary Coaling **Address:** 379 Redfern Lane, 3rd and 4th floors, Chesham, Bucks.

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Adventure: The Emperor Must Die **Problem:** What is the code name and the code action game? **Name:** Edward Brown **Address:** The Drive, Barwell, Leicester LE19 8LA.

Adventure: see question **Problem:** How many levels in Chuckie Egg? How many treasures in Cuthbert in the Jungle, how to get POKE in DU. March 1984 to work for Cuthbert in Space? **Name:** Paul Palmer **Address:** 15 Underhill Road, Macclesfield, Cheshire GU1 8HL.

Adventure: Juxtaposition **Problem:** How to fit the jewelled inner tube and could someone send a map? **Name:** Alan Stoneman **Address:** 30 Cannon Park Road, Cannon Park, Coventry CV4 3W.

Adventure: Syzygy — Mission of Doom **Problem:** Everything, can't get very far please help. **Name:** Neil Kendall **Address:** Redoubt, Starnpool, Thro, Cornwall.

Adventure: Madness and The Mincrow **Problem:** Could I have the help please? **Name:** Steve, Fleet, Hants GU14 4SB.

Name: Nicholas Payne **Address:** 47 Reading Road **Problem:** How do I get the white key card from the old caretaker? Where is the mass? **Name:** Wayne Robstad **Address:** Starlauga No 35, 6500 Winnipeg, Norway.

Adventure: Juxtaposition **Problem:** How to get the diamond Emerald off the pedestal without getting gassed? **Name:** Dominic Leary **Address:** 27, Fishers Lane, Penrith, Winst. Merseyside L21 8HT.

Adventure: The MET Trilogy **Problem:** How to get the diamond Emerald off the pedestal without getting gassed? **Name:** Dominic Leary **Address:** 27, Fishers Lane, Penrith, Winst. Merseyside L21 8HT.

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Prime Examples

Gordon Lee sends a Dragon to catch a wild goose or two.

LAST MONTH on this page, we printed a number of short puzzles which might amuse the reader. The solution to question 1 was given last month. Here are the solutions to numbers 2, 3, and 4.

2. For this problem we were required to rearrange the nine digits (1 to 9) to form the lowest possible, and highest possible, primes. Now, a prime number is one which does not have any whole-number factors apart from itself and one. Unfortunately, there is no easy way of determining if a given number is prime or not, apart from trial divisions. Theoretically, if a given number is divided by all primes smaller than, or equal to, the square root of that number, and an exact division is not found, then that number is prime. Consequently, the testing of nine-digit numbers is not quite a lengthy procedure. Consider to this is the fact that the nine digits can be arranged in over a third of a million different ways, and so the task seems quite formidable.

However, at the beginning of last month's article was a word of caution to the effect that not too much reliance should be placed on using a computer method of solution. A simple mathematical rule states that if the sum of the digits of a number is divisible by 3, then that number is also divisible by 3. Now, the digital sum of the digits 1 to 9 is 45, and, as 45 is divisible by 3, any arrangement of the same digits in any order will always give a number which itself is divisible by 3. Consequently, that number cannot be prime! My apologies to any readers whose 'Dragons' are still ticking over on that one, looking for an answer which does not exist!

3. By contrast, this problem is an excellent example in which the computer is an invaluable tool in its solution. Indeed, there is no way of solving it by conventional mathematical means by 'trial and error'; this is the method that the computer uses, but the computer's ability to perform rapid and repetitious calculations makes it a task ideally suited to this method of approach.



The diagram shows the field, with centre O. It has been bisected by the diameter PQ. For convenience, only half of the field will

be considered, and the radius of the field will be taken as unity. In the diagram:

OS = OP = 1 (the radius of the field)
P is the point of attachment of the rope to the fence, and PR = PS (the length of the rope, L).

In the semi-circle, the area reached by the goat is that bounded by the two arcs PS and RS, and the line PR. This is equal to the area of the sector of the circle centre O and radii OS and OP, plus the area of the sector of the circle centre P and radii PR and PS, minus the area common to both — that is the triangle OSP. With a correct value for L, this should equal one quarter of the area of the field. In the listing given, the length is initially set at a value of 1.5, and this value is constantly amended depending on the result of the calculations. Unfortunately, the mathematics used in this listing are complicated because of having to convert all angular measures to radians, and, because of the lack of an inverse cosine command on the 'Dragon', I wanted to use a circuitous method of calculation using the arctangent command.

```
10 P=3.14159265
20 L=1.5
30 D=L+L*(PI/2-ATN(L/SQR
  (4-L*L)/2)
40 B=ATN(L/SQR(4-L*L))
50 S=(PI+L/2)
60 T=SQR(8*(S-1)*(S-1)*
  (PI-L))
70 A=D+T-B-1
80 PRINT A, PI/4
90 IF ABS(A-PI/4)>1E-5 THEN
  GOTO 30
100 L=L/A*(PI/4)
110 GOTO 30
120 PRINT "THE LENGTH OF ROPE
  IS",100*L," FEET"
```

This gives a final value of 119.87285 feet.

Readers who are interested will, no doubt, be able to recognise the various geometrical formulae used in this program. A more detailed account of this 're-derivative' method of solution can be found in the March '88 issue.

4. The solution to this problem, like that of problem 2, is one for which your computer will search in vain! For any square (n), such that $n=n^2$ the following equation also applies:

$$(n-1) = (n-5)(n+5)$$

Thus, one less than a perfect square is always non-prime (except where $n=2$ and so $n-1$ becomes 1). To demonstrate this graphically, lay out 16 coins in a 4 by 4 arrangement. Now remove the bottom right-hand coin. Note how the remaining three coins in the bottom row can now be placed alongside the top three rows to produce a 3 by 3 arrangement. The general principle will apply to any square, however large.

Now for this month's competition. Consider the following series of words, starting, starting, starting, string, string, string, and so on. Each word is formed from the preceding word by simply deleting a single letter at each step. This month, you have to find a similar series, but using numbers instead of letters:

```
----- (a perfect cube)
----- (a prime number)
----- (a multiple of 9)
----- (a prime number)
----- (a perfect square)
----- (a prime number)
```

Note that you are not allowed to have leading zeros in any step, so, for instance, the cube 30080031 could not be converted to the prime 30031. How many solutions can you find?

Prize

After departing a little from our usual custom this month by offering prizes to the winner instead of a name game, Gordon Lee's ever-expanding, and you could win one of 20 vouchers giving you £5 off any program in John Fern Discworld Software's current stock. JFDS's range includes a wide selection of disk utilities as well as old and new games, so the choice is yours.

Rules

When you have solved (you believe!) the puzzle on the page above send us a printout of your program (in cassette) and any explanation you want to include on how you arrived at your conclusion. Please mark the envelope 'SEPTEMBER COMPETITION', and don't forget your name and address.

To give us a fair chance, complete the phrase 'Oh, little flower upon the ground...' using your old and skill.

June winners

The winners of Smithson Computing's Gordon Bennett are: Colin Maryon-Smith of Northampton, John Miles of Radstock, G. Hickson of Rochester, P.J. Taylor of Aylesbury, D. Mounie of Rainham, M. French of Goswells, Chris Montague of Gosney, Neil Michaelson of Swanton, Chris Jolly of Grove Park, Hank Bender of Massena, Nigel Davies of Chesham, M. Gassman of Bangor, P.A. Jamieson of Stockton-on-Tees, Ray Woods of Wood, Keith Davis of Cussey, S.P. Greenfield of Ingatstone, Robin Spenser of Sale, R. Christian of Thame, and P. Elworthy of Ganges-to-Ganges, who takes us to task for finding his last entry too subtle. No problems this time: 'Bathrooms can be dangerous because... (rum rum) (Rat) A.H.H. HOOOoo... (sigh)'

Solution

A great many people calculated correctly that the number which only repeats after four operations is 2895.

