

DRAGON



USER

The independent Dragon magazine

April 1987

Contents

Letters

Contributors and user groups ... A message from Buzz Software ... Epson update ... get recent Fire-Drive ... About Analyser ... and many more.

News Desk

Dragonair wins big size game ... Puber Software list ... London 8808 Show ... Computer change address ... Direct mail schemes.

Dragon Soft

Ringwood is the best arcade/adventure game for ages ... Readers and writers bring us lots with Fire-Drive.

CoCo/Dragon Basic Converter

Rudy Duick describes how to alter Tandy Colour Computer Basic for the Dragon, with a machine code program.

Dragon Answers

Inverting the screen in 80x80 ... incorporating time and date in a database ... Text compression for your game writing ... Converting the joystick port to a keypad.

Expert's Arcade Arena 16

Maps for Ringwood's Castle Scharf and Dwarf Drive, the first part of Total Eclipse and the last part of Dragon-Games round-up.

High Noon

Jonathan McGowan presents a high speed machine code shootout for two players, complete with cactus cover and background.

Winners and Losers

Gordon Lee gives our solutions to the November competition, which involved simulation.

Adventure Trail

Hints and help and an exchange of addresses on many titles, map for Ring of Darkness, and an announcement soon to be. Demand will not be exactly as we have always known him. Read on.

Competition

Go round and round a dashboard to make a set of cubes, and win Ringwood. And the final installment of the Recreational Mathematics Glossary.

Editorial

SO! A Dragon owner wins Incentive Software's second Moon Crests competition, in the face of massed Spec-ty and Amstrad owners as well as fellow Dragoners. That'll tell 'em the Dragon's still here. Well done Andrew Hill of Gwent.

I hope to be seeing some of you (all of you would be just fine, but DUG has readers as far away as Australia and the USA, so I'll settle for 'some' this time) at the London 8808 Show on the morning of March 28th, acts of God permitting. But, like any other nightmarer, I wish in spite of amok at noon, so come early if you want to nag me about anything.

Those who are too far north to make the London show should remember the Ossen Show on 15th April. Details of both shows inside.

Thanks to other contributors and editors, including Philip Seed of NDUG, who wrote to me about last month's editorial.

And who also spotted the deliberate mistake in the March Letters Page? Well, I suggest you go back and read it again then. See you at the Show.

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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 5000 words long. All submissions should be typed. Please leave wide margins and a double space between each line. Programs should, wherever 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 intend to use your program returned you must include a stamped addressed envelope.

Letters

Beat the jungle

FOR those of us who own The Falcon by Commodore, and find that they are getting frustrated by the fact that they cannot get past the 'crack track' infested jungle, I have found a way to go on to the next phase and miss out the jungle.

1) Make sure that there is only one joystick plugged in.
2) Once the game has loaded, press the fire button so that the computer shows the selected colour screen. This gives 'K'.
3) This gets into the authorisation code screen. Then press 'G'.

4) This will give you the pass code screen. Using the joystick to move around type out "MFTC" with no spaces. Then go on to the vertical arrow.

5) This then catapults you past the jungle.

Your reader might like to note that if the Break key is pressed during a normal game, before they cut out of men, they will be sent back to the beginning with eight men but with their old score to recontinue where they left off last time -- and so to build up their score.

And a note of appreciation if it weren't for people like the Expert, the country would go into a halt. Well, Dragon owners would, anyway.

Conor
4 Ravston Down Road
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Conor
D97N 8AG

Buzz discounts

DUJ is lack of support, and admittedly through our own lack of organisation, we have decided to use the months up to July 1987 to re-organise. We will however be attending the computer show at Oxted, West Yorkshire on 18th April. We will be demonstrating all our software, including our new Tandy range. We hope to improve our services to the Dragon market in the future. Buzz Software are offering a 10 per cent reduction in our soft-

Every month we will be shelling out a game or two, courtesy of Microdeal, to the readers who send the most interesting or entertaining letters. So send us your hints and your opinions, send us your hi-scores and suggestions. Send us your best Dragon stories. What if you think we are, indeed readers?!

EXTRA
PUFF

Beware the hunting Dragon!

I read with interest the March edition of Dragon User, and particularly the Editorial.

One serious problem within the 'amateur' publications as I myself know is a lack of articles. Newsletterers such as Dragon Monthly, Dragon's Tail etc. even even myself with the Drag Mag (P.O. Box: 102702521... curk pluk) depend heavily on readers' articles, etc. It would appear from your editorial that you wish all articles, etc. to be sent on Dragon User.

Surely, these smaller publications have a place. Suppose DU eventually comes

comes to an end, then user groups and newsletterers will be all the Dragon has on offer.

On the brighter side, I don't doubt that DU requires a great extent of articles, but surely there are enough Dragon users to feed any publication with articles. The time has come when we ALL must participate with our beloved mag, helping every magazine/newsletter to continue its work... keeping the Dragon alive!

Simon Jones
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Essex MK14 4DN

and knowledge in the Dragon world which is often not offered to DU, either because those who have it haven't got the time to organise and write it up, or because it has unfortunately to them that DU might want to see these ideas developed.

What I am suggesting is not that users should stop contributing to other newsletters, but that they should consider whether their ideas can be developed for Dragon User's readership before consigning them in brief to their own user groups, etc. I don't see this as a threat to user groups. On the contrary, the more that separate groups are able to exchange ideas on common ground, the more ideas will be in turn give rise to further ideas for readers to contribute to their own groups or newsletters.

The more active Dragon users are, the more response they will get from other users; this is just as true for newsletterers as it is for Dragon Users.

same to anyone who writes to us telling us what they would like to see for the Dragon and Tandy.

I would also like to hear from anybody from America wishing to swap games, information, etc. for the Dragon-32 and Tandy-64 computers.

S. J. Davidson
Barr Software
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Penketh, Nr. Warrington
Cheshire, WA9 3AH

Boost morale

In the January 1987 edition of Dragon User the Expert said "and so the new year starts, bringing with it new hopes (unless you own a Dragon, in which case you've probably completely given up hope)". This is damaging to the morale of the Dragon community. I certainly have not given up hope and feel very optimistic provided damaging and needless suggestions are kept out of the view of Dragon users. I would like to see an apology printed by the Expert.

Anyone who regularly watches BBC 2's *More Life* will notice that the Dragon is always left out of the reports. I have written to them complaining about this several times! I have never received a reply. There must be thousands of Dragon Users who watch this, and if the majority of them wrote to the BBC and complained about it then I think it would make them involved that the Dragon is alive and kicking.

Finally, for the benefit of the Editor, Mike Gerrard and all those at Microdeal who can't read my address, it is below.

David Morrison
72 Conington Road
Inverness
Scotland IV2 3DF

PS I'm having trouble trying to generate user token properly. Can anyone help? Also does anyone have any codes for Commodore or the code to activate the cheat function in *Dark Avenger*?

WE asked The Expert for his comments, and he says that

News desk

Index interest

MAGBASE is a menu-driven database from Pulver Software, specially designed for indexing articles and letters, etc. from magazines. Records can be saved on tape or disc for future reference, and a single saved disc could contain 2000 records in a single file or combination of files. The program can also ALTER, DELETE, SORT in alphabetical order, VIEW, PRINT and MERGE. A complete disc file can be VIEWed as a check on the records contained within it.

The LOAD option allows loading either of a full file (if the memory permits) or a MARKed block. The latter is useful if it is possible to load records by numbers (eg 1 to 100), characters (eg from A to C) or pattern search (using any keyword). For example, in the keyword 'free' is entered in a pattern search, Magbase will access any records with that word, within seconds, and display them on the screen.

The PRINT option caters for the Seikosha and Tandy printers of 80 characters a line, but other printers can be used by defining alternative print codes. Records can be double spaced for less than 80 characters a line or for easier reading.

Dragon User files

DU contains 600 records of all letters, articles and listings since Dragon User began in May 1983. Each record contains information on the subject area, date, and page of each item.

The DU file cannot be loaded into the Dragon's memory all at once, as it has over 500 records; it can be viewed (C — DragonDOS) or loaded in marked blocks. Records have been sorted and saved in alphabetical order, and, in addition, it has been saved in small blocks (A-C, D-E, F-L, etc.) for access to all of a file.

DU hard copy

The hard copy consists of a photocopy of the printed off-line records from May to the present. If the tape or disc are purchased with the records it is possible to produce your own copy by using the PRINT option. If you purchase the hard

copy you will receive a twelve page booklet.

Contact Pulver Software of 36 Foxhill, High-Compton, Shaw, Colham, Lancs OL2 7WD for details of prices.

Other utilities, mostly disc based, from Pulver include Group, £199, which moves workspace from the first graphic page further into memory and moves the page to location 1506. Machine-code programs can be run with the DOS attached (84s or upgraded 32s only); Zapper, £599, which can explore and alter data in memory and on disc, move and copy sections of memory, copy and repair sections of a disc and investigate discs from other machines. Some printer and display utilities, and an extensive manual, are included and Copy Cat, which simplifies disc-to-disc copying, from double to single and vice versa, and to partially filled discs without overwriting. Pulver will also reprogram DragonDOS sports with updates for £3.00. Add 50p post and packing for each item ordered.

6809 show

The next 6809 show at the Royal Horticultural Halls in London on 28th March already has Compusense, Compupipe, Harris Software, John Penn Diskout Software, Microdeal, Occul Software, Peasoft, Paramotors, Quickbeam Software, Zone 4, the OS-9 User Group, National Dragon User Group and Dragon User itself booked to take part.

The best thing about missing the November show was finding out that we were missed — at this time there will be a DU presence, so if you have any friends who aren't subscribers and should be, bring them with you.

Information about the show itself can be had from Jerry Pope at JPPH Ltd., on 29, Auster 0755 6185.



Dragon wins yet another Moon Cresta

INCENTIVE Software's second Moon Cresta arcade machine has been won by a Dragon user. Andrew Hilt of Gwent, Wales (the original Dragon owner) was the lucky winner drawn from a blue plastic component bin by Christine Drake, whom many of you will recognise, even from this hasty snapshot, as the Editor of Popular Computing Monthly.

Andrew scored over 30000 points and lost three ships to discover the words. Play another game on the screen at the end. "He phoned us up, and he was pleased and delighted to have won!" said Incentive's Ian Andrews. "We were please when a Dragon owner won, as well, because the second Moon-Cresta competition was open to Amstrad, BBC and Dragon owners so, although only people who scored over 20,000 points were eligible, there was a lot of competition." Moon Cresta was one of Incentive's biggest games of 1984, and is still selling well — although they are producing no new Dragon software, the Dragon Moon Cresta is still available.

Congratulations from all at Dragon User to Andrew! But tell us, just where is he going to put a full sized arcade game? We considered the lot, but someone pointed out that you wouldn't be able to reach the

controls. Oh well, back to the stars.

MoonCresta has been much seen in the land just lately. The winners of Dragon User's October competition each received a copy of Moon Cresta. All well and good, except that they were all expecting a copy of Boulder Cresta. Indeed, some of them already had copies of Moon Cresta. What went wrong? We still don't know. Baby sent us a box of Boulder Crestas which never reached its destination. Can we get any more Boulder Crestas right now? I can not. Not for love nor money.

We will be putting the situation right as soon as we can. In the meantime, if anybody wants to swap their copy of Boulder Cresta for a Moon Cresta or even a Planet, drop us a line.

Compusense new address

COMPUSENSE have moved from their old premises in Paternoster Green to a new address. They can be reached at the same box number, P O Box 108, but now at 81a Wroughton Lane, London N17. Their new telephone number will be 01 885 3300.

Money for something

TWO nineteen year old twin brothers from Tombridge, Wiltshire, have started their own software publishing business with a £40 000 grant from the Manpower Services Commission's Enterprise Allowance Scheme.

Philip and Andrew Oliver started buying computers five years ago, and quickly hit on the idea of trying to make money from their hobby. When they left school in 1986 they already had a fund of programming experience, and started to develop their games in earnest. Their first game, Super Robin Hood, earned them enough to join the ESA, for which they needed £1000 to invest in their business. Super Robin Hood has now sold over 11,000 copies and their next game, Great Hunters is already selling well.

Anyone who has been unemployed for more than

eight weeks, who can prove that they have a new business idea and access to £1000, can apply to join the ESA at their local Jobcentre. The allowance pays £40 a week for one year, as long as the business continues, to help new business ventures get off the ground.

Unfortunately, nobody has yet opted to convert these games for the Dragon.

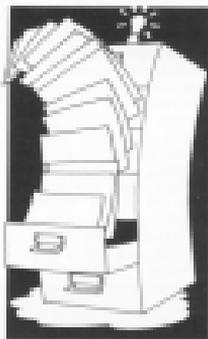
Horse help

CAH we have a volunteer to review Predictor, a program which claims to help you work out how to win on the horses? A hardened gambler, preferably. No, we won't reimburse your losses. Our regular reviewers say its enough of a gamble waiting for their cheques every month. Ed.

Reader notice

WE publish readers' addresses on our letters pages, unless requested otherwise, to allow users to contact each other directly. These addresses are sometimes added to the mailing lists of Dragon

suppliers. While this can be to the advantage of all concerned, the commercial use of addresses taken from Dragon User does not imply that Dragon User has any connection with the businesses concerned, and normal caution should be exercised when dealing with any unfamiliar company from whom direct mail is received.



Missing persons

Please would contributors D. King and R. Andrews get in touch.

The editor would also like to hear from the gentleman who contacted her about shared use of a retroboard before Christmas.



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Program: Fire Force
Supplier: Quickbeam
Price: £8.95

QUICKBEAM's new all-action arcade game *Fire Force* held my attention as soon as it started loading, thanks to the somewhat strange loading system employed, which loads the title page as a series of two diagonal stripes. Although this is a little reminiscent of some of the Spectrum loading routines, it does seem to be slightly quicker than the normal method.

Having loaded the game, the next thing that strikes you is the music. This has been implemented using the Advanced Music System (AMS) from Chris Jolly, who also composed the music itself (very fine, I'd say).

The object of the game is to lead your crack team of commandos across enemy held territory to retrieve the 'spirit' fighter plane that has been stolen by the enemy. If you can't see yourself away from the music long enough to attempt the perilous task you will find that the enemy troops that occupy the jungle you must traverse are every bit as quick as you are. However, the track through the jungle is possible, and requires quick thinking and a very quick joystick and fire-button. Unlike a lot of arcade games, simply blasting away indiscriminately will not allow you an easy way through; careful selection of each shot seems to be the order of the day.

Having managed to get to the captured fighter, you are faced with the perilous flight home. Enemy planes will do

A quick round of Fire



your best to prevent you from doing this. The enemy planes are represented by what must be the largest 'sprites' I have ever seen on the Dragon, and despite their annoying tendency to fire air-to-air missiles at you, they can be beaten, so that you can return to base for a hero's welcome.

The game is entertaining and a lot of care has obviously gone into the writing. There is little financial reward to be had for writing Dragon programs these days, and so most programs are written out of enthusiasm. Gave 'Gibbo' Gibbo is obviously a real Dragon enthusiast. I hope this program gets the recognition it deserves.

The game deserves £8 although I think the price is too steep at £9.95. The current trend is to lower prices, not raise them!

Ray Coates



THIS title is the follow-up to the immensely popular *Shuttle Master*, which took the art of joystick competition to new extremes and therefore this game obviously has a lot to live up to — even more so with a price tag on it of just under a tenner.

After a rather odd loading process and a detailed screen at the end of the loading, a crescendo of music bursts forth from the normally restrained Dragon. The music is good throughout, not just a collection of loops acquired from the play command, but a specially written piece.

Enough of the music, and on to the game itself, which is a development of the well-trodden art of abused 'shoot-em-up' theme. Here you must locate and then fly a prototype plane in a three stage game, which allows up to three little commandos for you to get blown into numerous small fragments.

Stage one has you all alone in a rain forest with only your trusty gun to keep you company.

All alone, that is, apart from a few friendly alien enemy troops, all with the intent to do you serious damage.

You have to blast them with your gun, which is the first tradition of films and computer games — has an eternally limitless arsenal. Scattered about the landscape are large, neat graphic palms, barbed wire and walls to hide behind or dodge past.

Dodging indeed could be the operative word in this game as the detection mechanism is to put it simply not very accurate, and to take a life when a bullet is still well in front of you is disappointing, especially when one has just passed

through your entire body without feeling as much as a scratch on your clunky graphic uniform.

If you complete this stage, then you progress to a similar second stage where you again shoot all and sundry, now along a causeway.

Finally, having found the plane in stage three, you fly it over the well drawn landscape adjusting height to get under bridges and collect power, and ultimately get back to base.

When you do get back I suppose you start all over again, although I can't verify this as I've never managed to get there — the game is simple if theory, but many men are lost in death.

When it comes down to it this is simply a hit and run game with a nice tone and aesthetic graphics, but it does have that 'One more go' addictive quality and is a difficult challenge to arcade fans with an itchy trigger finger.

Philip Dool



THE year 1995 and the prototype IMFTC X18 'Spirit' attack plane has been stolen and hidden in Africa. Your mission is to find it and fly it home. Eight soldiers including you have been assigned to the job.

Phase 1

THIS phase is similar to the arcade game *Commando*: you begin just in front of a bridgeway with enemy soldiers all around. On this phase you have to find a certain place. When you find the place a message on the screen comes up which says you have completed that phase.

Phase 2

ON this phase you have to run along a bridgeway in search of a runway. Along the bridgeway are enemy soldiers running and firing at anything that moves. The soldiers on this phase make this phase quite hard.

Phase 3

ON this phase you have to fly the Spirit X18 home. This is not as easy as it sounds. At the

start of this phase you see a plane, which is quite large, but the enemy's is much larger but less visible.

You have to fly under bridges, over buildings, avoid palm trees and the ground, while collecting power modules, and to stay airborne. An altimeter at the side of the screen is lifesaving in this game. This is probably the fastest phase of the game.

The game has excellent sound and quite good graphics. The sprites are unusually large for a Dragon computer game.

All praise go to the programmer for producing a brilliant sequel to *Shuttle Master*. Phases also go to Chris Jolly for the sound track. The only thing I hate about the game is on the first phases, where you can get stuck in the palm trees. Overall recommended, go out and buy it!

David Linsley



Tandy/Dragon Basic Converter

Rudy Dwyck converts CoCo Basic tokens to their Dragon equivalent

In the December 1984 Dragon User John Buckley presented a BASIC program to convert Dragon User programs into CoCo BASIC programs and vice versa. He also explained that the difference between these two BASICs lies not in their actual commands or syntax but in the way they are coded internally. This is correct if you do not take into account the disc operating system commands, as we shall see. Basic commands are not stored as a string of letters in the computer's memory, but as a one-byte or two-byte "token". The two-byte tokens are needed because there are too many Basic commands for all the values that one byte can contain, which are moreover even more restricted because the value of the token byte should be higher than 127, since it would otherwise be recognized as an alphanumeric or graphics character by the Basic interpreter.

A two-byte token consists of a byte with value 255 and another with a value higher than 127. For more detailed information I refer you to John Buckley's article and to any good book on the Dragon, especially of course, Duncan Steele and Ian Sumner-Viville's inside the Dragon. The Dragon and the CoCo use different tokens for most commands, which explains why you cannot run CoCo BASIC programs on the Dragon as they are and vice versa. You get two lists of both the Dragon and the CoCo tokens, one sorted alphabetically on the Basic commands, one sorted numerically on the tokens.

Flexible conversion

One solution to the problem of exchanging programs is to save a Basic program written on one machine in ASCII ("COLOAD" program "A") and load it in this format on the other machine. Sadly this soon becomes rather cumbersome if you want to exchange large numbers of programs, since I am a member of a large COCO users' group which has far more COCO members than Dragon owners, this problem soon became evident, so I was rather happy to discover John Buckley's program in one of my old Dragon User issues. Unfortunately his approach has some major drawbacks, first though his program may be Basic it is written in Basic the user has to go through the whole procedure of loading the converter and merge programs, changing the program to be converted, etc. each time he wants to make a conversion. Secondly, because you need RAM to store the Basic converter program in this job restrictions on the length of the program you can convert. Thirdly, the author had no information on Dragon DOS and his program cannot convert Disc Basic tokens. This is why I decided to write a more flexible and more complete program in machine code. Nevertheless, I must emphasize that without

John Buckley's program and without my program would never have been written. I also consider this a noble effort to promote collaboration between CoCo users and Dragon users and it is a result of reading the increasing number of letters by CoCo users to Dragon User. Although "COLOAD" is primarily intended for Dragon users I feel that CoCo owners can also profit from the program and the information provided here. At the end of this article you will find suggestions for adapting the converter so that it will convert Dragon Basic programs into CoCo Basic programs.

The "COLOAD" converter as you find it here (in both an assembler listing and a Basic program which takes in the object code) translates CoCo-Basic programs into Dragon Basic programs and resides in the first graphics page if you use Dragon DOS, in the second graphics page if you use a cassette user. This means that there are no restrictions on the length of the Basic program you want to convert and that there is no need to re-load "COLOAD" after each conversion. Do not test the resulting program though, it should contain a PCLOS instruction you would, of course, use "COLOAD"!! However, the converter is written in position independent code, so it can be placed anywhere in available RAM, and if you prefer a different location for the converter or if you are a cassette user who needs to issue a PCLEARN to be able to load a really long Basic program, you can relocate "COLOAD" by loading it with an offset. The converter will not work in 84K mode since it uses a number of ROM routines, the addresses of which you find in the beginning of the assembler listing (thank you Brian Cadogan!).

Another problem which my program tries to answer is that Basic programmers may hate machine code routines or graphic characters to be poked into the screen memory area in a string within a Basic program. In this case it is the only thing a converter program does is tick at each byte and see whether its value is higher than 127 and, if so, change it, then the converter will alter these hidden graphics or machine code routines, which may naturally contain codes which the converter would interpret as tokens. "COLOAD" will skip strings and will thus leave them original and untouched. Doing this proved to be less simple than I thought at first sight. An earlier version of the program ran wild while converting some programs because the programmers had not closed their strings with quotation marks (this is not absolutely necessary at the end of a Basic line), I could then test to see whether the end of the Basic line had been reached by checking for the Cbyte signaling this, but this was impossible because the string contained machine code in some instances, and this could con-

tain Cbytes. I solved this by using the information contained in the "header" of each Basic line: the first two bytes of each line contain the address of the beginning of the next line. In this way I could quite simply compare addresses.

Expanding the converter to enable it to handle also Basic programs proved to be complicated too. Most non-Basic handling commands translate in a fairly straightforward manner, but the differences in file handling between the Dragon DOS and the CoCo DOS are enormous. Moreover, the syntax of quite a number of commands is different. Identical in use, though not necessarily in name, are: MACHIN, COPY, DIR, DSHR/DPRINT, DERRLOAD, DSHR/DWRITE, DRIVE, RIL, RENAME and VDIR#. These tokens are converted by the program.

Differences

Minor though, actually important differences are:

- Tandy drives are numbered 0:123; Dragon drives 12:04 (although Dragon DOS V4.0 and V4.1 will accept 0 for the first drive), you will have to change the drive numbers in the program yourself!
- "FREE" (drive) in CoCo Basic equals "FREE" (drive) in Dragon Basic (the "FREE" will be converted but you will have to delete the brackets manually).
- CoCo "SAVE" (program), load, end, end+ equals Dragon "SAVE" (program), load, end, end+ ("COLOAD" converts the "SAVE" token but the "W" will need to be deleted manually), CoCo "SAVE" (Basic)" equals Dragon "SAVE" (Basic)" but the CoCo version has the "A" (SAVE in ASCII mode) option as does SAVE in both Basic; the "A" option, if present, will have to be deleted manually.
- CoCo "LOAD" (Basic)" equals Dragon "LOAD" (Basic)", but the CoCo version has the "W" option, which will cause the Basic program to run immediately after loading but Dragon would quite simply "W" (Basic)". CoCo "LOAD" (program, BIN)" equals Dragon "LOAD" (program, BIN)", but whereas the CoCo user can specify an offset which will be added to the load address of the binary file, the Dragon user can specify the absolute address at which the file must be loaded (the token will be replaced with the CoCo "W" in "LOAD" and will have to be deleted and the Dragon "BIN" added, and the option will have to be adapted).
- CoCo "CLOSE" (buffer) operates on disk buffers or on all open files, whereas Dragon "CLOSE" (drive) operates on all open files on a specified drive or on the default drive; CoCo "UNLOAD" drive has the same function as Dragon "CLOSE" (drive)" ("COLOAD" will replace both CoCo "CLOSE" and "UNLOAD" with Dragon "CLOSE", the rest of the syntax will have to be adapted by hand).

■ **Coco "EOF"buffer** operates as buffers and returns 0 if there is no more data to be read into buffer and -1 if there is no more data in it; Dragon "EOF" (or "r") works on files and returns 0 if there is no more data, -1 if there is (the EOF token will be replaced, but the system not)

■ **Coco "LOC"buffer** and **"LOG"buffer** again work with buffers and refer to record numbers (current and highest respectively), whereas Dragon "LOC" (or "l") and "LOF" (or "f") work on files and refer to the address of a byte; additionally the Dragon "LOF" works on any file, not just a data file (the tokens are replaced, the system is not adapted)

■ **Coco "MERGE"Basic** equates Dragon "MERGE"Basic but the Coco version has the same "R" option as "LOAD" has; moreover, in Coco DOS the program on a disc has been changed but has been saved in ASCII (the token is changed, the option must still be dealt with if present)

■ **Coco "RUN"Basic** equates Dragon "RUN"Basic but has an option, "R", which will keep all open files open; the Dragon "RUN" also works with machine code programs, I am not sure if this is the case of the Coco; Dragon "CHAIN" is related to the "R" option, but retains the values of variables (token replaced, option not changed if present)

■ **Coco "WRITE" buffer, data** and **"PRINT" buffer, data** write data to a buffer but find a relatively close equivalent in Dragon "WRITE" (or "w"), data (notice the semi-colon instead of the comma before the data file); Coco "PRINT" can also print data with the USING format, the data must be separated by a comma or a semi-colon; Coco "WRITE" data need to be separated by a comma and can be written FROM a specific place in the file, FOR a specific length ("WRITE" file, FROM a, FOR a variable list); "COCCORRAS" replaces the Coco "WRITE" token with the Dragon "WRITE" token (could still do so in the case of the Coco "PRINT" token, which will appear as Dragon "PRINT", since all "PRINT" tokens would have become "WRITE" tokens, including the non-disc ones, the real needs to be adapted manually)

Commands

Although you may get the impression that "COCCORRAS" leaves more unchanged, if you look carefully you will see that most disc Basic programs that do not work with data files can be readily transformed with a very limited amount of editing by hand. Coco programs that deal with data files, however, are more difficult to convert.

The Coco handles both direct access and serial files, like the Dragon, but works with buffers which are opened and allocated and allows the user to refer to a record by its number. It is impractical to convert the tokens of the commands not mentioned above for various reasons, as we shall see. Nevertheless, for the patient and diligent converters among you, I shall briefly present all the non-compatible and unconverted Coco and Dragon commands:

■ **Coco "MKRE"number** converts a number to a five-byte string for storage in a formatted disc file; Coco "Cmpstring variable" converts a five-byte string produced by "MKRE" back to the number it represents, neither has seen a remote Dragon equivalent; the tokens are not converted; "MKRE" will show as Dragon "MKRE" and "Cn" as "LOF", as you can see in the numerically sorted table of tokens

■ **Coco "LSET" field name = data** left justifies the data within the field name and truncates the right characters if the data is too long; Coco "RSET" field name = data" right justifies and truncates the data the reverse way; neither has a Dragon equivalent and both are left unconverted; "LSET" will show as Dragon "CREATE" and "RSET" as "DISKINT"

■ **Coco "FIELD" buffer, field size: n1, field name, ...** organizes the space within a direct access buffer into fields, no Dragon equivalent; not converted; you would have to work with the "FROM" and "FOR" options of "WRITE"; "FIELD" will appear as Dragon "SAVE"

■ **Coco "FILES" buffer, buffer size** reserves the specified number of buffers and the total number of bytes specified in "buffer size"; no Dragon equivalent; not converted; you would probably have to work with "CREATE"; "FILES" will show as Dragon "BOOT"

■ **Coco "OPEN" mode**, if buffer filename, record length opens a buffer (0 = screen, 1 = tape recorder, 2 = printer, 3 = disk drive) in the mode specified ("I" = input of data from a sequential file, "O" = output of data to a sequential file, "D" = input or output of data from or to a direct access file; the record length needs to be mentioned only if the file is direct access; Dragon data files need not be opened; for that matter, created; the system automatically opens a data file is accessed; "OPEN" will remain "OPEN" in the converted listing

■ **Coco "GET" buffer, record number** gets the next record or the record with the number specified and puts it in the buffer; each direct access is less simple on the Dragon; you would need to use the "FROM" and "FOR" options of the "READ" command; "COCCORRAS" does not convert this token since this would entail the changing of all non-disc GETs as well; "GET" will remain "GET"

■ **Coco "INPUT" buffer, variable, ...** inputs data from the specified buffer, on the Dragon this would become "READ" but "COCCORRAS" could not convert this without converting all non-disc INPUTs; "INPUT" will remain "INPUT"

■ **Coco "LINEINPUT" buffer, variable** inputs all the data up to an ENTER character from the specified buffer; on Dragon Basic this would become "FREAD"; but again this could not be converted without converting all the non-disc LINEINPUTs; "LINEINPUT" will remain "LINEINPUT"

■ **Coco "PUT" buffer, record number** assigns a record number to the data in the buffer; no Dragon equivalent; "PUT" will remain "PUT"

■ **Dragon commands without a Coco equivalent are:** AUTO, BREAK, CHAIN,

CREATE, EPL, EPP, EPPCR, FRES, FROM, HERRM, PREDICT, SAMP, SMT, PFRAD and PLFRAD

All the non-compatible tokens and indeed any token ever spotted by "COCCORRAS" will be signalled to the user by the ERROR routine, and the screen will show both the line and the address in which the error occurred. However, the PRINT, GETs, PUTs and similar cases will be converted to their non-disc Basic equivalents and will naturally not be signalled to the user as errors, so watch out! The program does not actually change the tokens, with values below M2, since these have the same meaning in both Coco and Dragon Basic. This saves some processing time.

How do you use "COCCORRAS"? You can type in the Basic loader and use this to paste in the raw values of the object code line by line. The loader will check whether the data entered are correct. If you have an assembler you can type in the source code listing written with Diskbase. The assembled or pre-assembled code can be saved to tape with "SAVE" "COCCORRAS", SHCOO, SHCOA, SHCOO, or to disc with "SAVE" "COCCORRAS", SHCOO, SHCOA, SHCOO if you have DOS V1.0, or with "SAVE" "COCCORRAS", SHCOO, SHCOA, SHCOO if you have DOS V1.0 or V1.1.

Assembler listing

You can load your Basic program to be converted and "COCCORRAS" in any order you like, and there is no need to reserve space for "COCCORRAS", since it resides in a graphics page. When both have been loaded you simply EXEC the converter and "COCCORRAS" will keep you informed of which line number it is converting. This of course slows down the conversion process, but if that is not a bother at all sitting at a blank and unworking screen, so, you get the counter to skip away the seconds! After the "CONVERSION COMPLETE" message you can SAVE the converted listing if no errors have occurred, or edit out the errors or unconverted Coco commands as necessary.

The assembler listing can be adapted to convert Dragon Basic programs into Coco Basic program. To do this you will need to change six lines in the assembler listing: the two lines under "YES DOUBLE-BYTE TOKEN FOUND" should become "COCCORRAS" and "YES TOKOVM" and "LPCR" should become "TKOVM" and "PCMP".

The fourth line after that becomes "CCTT ASB LDA -37"
The line after "YES DOUBLE-BYTE TOKEN FOUND" is changed into:
CCTO SHCOO SHCOA SHCOA LEAY TOKEND -1, PCR
and the second and sixth lines after that become:

```
COG SHCOO SHCOA TKOVM CMPY  
TKEND -1, PCR  
COG ASB LDA -37
```

Of course, the Dragon commands that have no equivalent in Coco Basic will not be converted, and some of the Dragon disc commands will be converted into the wrong Coco command for the reasons explained above. The people who have re-assembled


```

0000
0001
0002
0003
0004
0005
0006
0007
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0014
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0017
0018
0019
0020
0021
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0070
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0090
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0098
0099

```

```

10 *header RUDY BLYCK 15.3.88 100 FORK 1-INT(1/2),H
20 G10 100 NEXT J
30 FOR I=1:10000 TO 10000 STEP 10 100 INPUT "HEI(DU)M":T2;T3=VAL
40 T1=0 ("M"+T2)
50 PRINTHEX(T1);T1 100 IF T1<T2 THEN PRINT"ERROR:
60 INPUT "HE 100 HEI":T2=T1
70 FOR J=1 TO LEN(T1) STEP 2 140 NEXT J
80 HEX=HEX("M"+HEX(T1),J,2) 100 PRINT:PRINT"CONVERTER READY TO BE SAVED"
90 T=T1+HEX

```

```

000: 000000000000000000000000 = 000
001: 000000000000000000000000 = 001
002: 000000000000000000000000 = 002
003: 000000000000000000000000 = 003
004: 000000000000000000000000 = 004
005: 000000000000000000000000 = 005
006: 000000000000000000000000 = 006
007: 000000000000000000000000 = 007
008: 000000000000000000000000 = 008
009: 000000000000000000000000 = 009
010: 000000000000000000000000 = 010
011: 000000000000000000000000 = 011
012: 000000000000000000000000 = 012
013: 000000000000000000000000 = 013
014: 000000000000000000000000 = 014
015: 000000000000000000000000 = 015
016: 000000000000000000000000 = 016
017: 000000000000000000000000 = 017
018: 000000000000000000000000 = 018
019: 000000000000000000000000 = 019
020: 000000000000000000000000 = 020
021: 000000000000000000000000 = 021
022: 000000000000000000000000 = 022
023: 000000000000000000000000 = 023
024: 000000000000000000000000 = 024
025: 000000000000000000000000 = 025
026: 000000000000000000000000 = 026
027: 000000000000000000000000 = 027
028: 000000000000000000000000 = 028
029: 000000000000000000000000 = 029
030: 000000000000000000000000 = 030
031: 000000000000000000000000 = 031
032: 000000000000000000000000 = 032
033: 000000000000000000000000 = 033
034: 000000000000000000000000 = 034
035: 000000000000000000000000 = 035
036: 000000000000000000000000 = 036
037: 000000000000000000000000 = 037
038: 000000000000000000000000 = 038
039: 000000000000000000000000 = 039
040: 000000000000000000000000 = 040
041: 000000000000000000000000 = 041
042: 000000000000000000000000 = 042
043: 000000000000000000000000 = 043
044: 000000000000000000000000 = 044
045: 000000000000000000000000 = 045
046: 000000000000000000000000 = 046
047: 000000000000000000000000 = 047
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077: 000000000000000000000000 = 077
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081: 000000000000000000000000 = 081
082: 000000000000000000000000 = 082
083: 000000000000000000000000 = 083
084: 000000000000000000000000 = 084
085: 000000000000000000000000 = 085
086: 000000000000000000000000 = 086
087: 000000000000000000000000 = 087
088: 000000000000000000000000 = 088
089: 000000000000000000000000 = 089
090: 000000000000000000000000 = 090
091: 000000000000000000000000 = 091
092: 000000000000000000000000 = 092
093: 000000000000000000000000 = 093
094: 000000000000000000000000 = 094
095: 000000000000000000000000 = 095
096: 000000000000000000000000 = 096
097: 000000000000000000000000 = 097
098: 000000000000000000000000 = 098
099: 000000000000000000000000 = 099
100: 000000000000000000000000 = 100

```

Token	Command		Token	Command		Token	Command	
	Coco	Dragon		Coco	Dragon		Coco	Dragon
128	FOR	FOR	177	OR	CIRCLE	224		SPREAD
129	GO	GO	178	?	PRINT	225		WRITE
130	REM	REM	179	=	GET	226		VERIFY
131	"	"	180	^	PUT	227		FROM
132	BLINK	BLINK	181	%	FROM	228		FLINK
133	IF	IF	182	EXIT	FROM	229		SNAP
134	DATA	DATA	183	TRON	PROBE	230	END	END
135	PRINT	PRINT	184	TRON	PLAY	231	END	END
136	ON	ON	185	OFF	BLOAD	232	AND	AND
137	INPUT	INPUT	186	LIST	FROM	233	OFF	OFF
138	END	END	187	LINE	END	234	AND	AND
139	NEXT	NEXT	188	POLY	TO	235	END	END
140	DO	DO	189	POST	END	236	AND	AND
141	READ	READ	190	PROBE	ON	237	END	END
142	RUN	LIST	191	SCREEN	TRON	238	END	END
143	RESTORE	RUN	192	RELEASE	END	239	END	END
144	RETURN	RESTORE	193	COLOR	STEP	240	AND	TAN
145	STOP	RETURN	194	CIRCLE	OFF	241	END	END
146	STOP	STOP	195	RADIX	+	242	END	END
147	CONT	POKE	196	SET	-	243	END	END
148	LIST	CONT	197	OUT	#	244	END	END
149	CLEAR	LIST	198	DESI	/	245	END	END
150	REM	CLEAR	199	POOPY	"	246	END	END
151	LOAD	NEW	200	PHODE	AND	247	END	END
152	SAVE	DEF	201	PLAY	OR	248	END	END
153	OPEN	CLOAD	202	BLOAD	?	249	END	END
154	CLOSE	SAVE	203	REMOVE	-	250	END	END
155	ALLIST	OPEN	204	FN	?	251	END	END
156	SET	CLOSE	205	LINE	USING	252	END	END
157	RESET	LLIST	206	DIR	AUTO	253	END	END
158	CLS	SET	207	DELETE	BACKUP	254	END	END
159	REMOVE	RESET	208	FIELD	KEEP	255	END	END
160	REMOVE	CLS	209	FIELD	EDIT	256	END	END
161	DELETE	REMOVE	210	KILL	CHAIN	257	END	END
162	DELETE	REMOVE	211	LOAD	COPY	258	END	END
163	DELETE	DELETE	212	LIST	CREATE	259	END	END
164	TAB	EXEC	213	HERE	DIR	260	END	END
165	TO	SKIP	214	RENAME	DRIVE	261	END	END
166	TOP	DEL	215	POST	DELETE	262	END	END
167	TRON	EXIT	216	SAVE	BLOAD	263	END	END
168	OFF	TRON	217	WRITE	WRITE	264	END	END
169	OFF	TRON	218	VERIFY	ERROR	265	END	END
170	OFF	LINE	219	UNLOAD	KILL	266	END	END
171	+	POLY	220	DELETE	LOAD	267	END	END
172	-	POST	221	BACKUP	HERE	268	END	END
173	#	PROBE	222	COPY	PROTECT	269	END	END
174	/	SCREEN	223	PROBE	WAIT	270	END	END
175	^	RELEASE	224	DELETE	RENAME			
176	=	COLOR	225	+	SAVE			

Command	Token		Command	Token		Command	Token	
	Coco	Dragon		Coco	Dragon		Coco	Dragon
?	131	123	FIELD	208		POKE	146	147
@	132	127	FILED	209		POS	205 154	205 131
A	131	128	FIN	205 152	205 140	PPPOINT	205 160	205 159
-	132	136	FLREAD		200	PPSET	190	173
~	134	120	FN	204	190	PRINT	135	138
^	180	204	FOR	120	120	PROTECT		222
^	179	203	FORM		205 160	PSBT	189	172
^	178	202	FORMB			PUT	197	190
^	175	199	FORMS	205 163	205 163	READ	141	141
ABS	205 130	205 130	FORMA		207	REN	130	130
ABS	176	200	FORMTE		217	RENAME	214	224
ACC	205 139	205 144	GET	176	177	REHM	200	188
ATH	205 140	205 139	GO	129	129	RESET	187	187
AUTO	161	162	HEXA	205 156	205 148	RESTORE	143	144
AUTO		206	HEXH		205 166	SETUP	144	145
BACKUP	221	207	IF	133	133	SHOWT	205 140	205 161
BEEP		208	IMPLY	205 146	205 154	RND	205 132	205 132
BOOT		209	INPUT	137	137	RSET	215	
CHAIN		210	INPUT	205 150	205 157	RUN	142	143
CHG	205 139	205 148	INT	205 129	205 129	SAVE	216	225
CIRCLE	194	177	JOYTK	205 141	205 142	SCREEN	191	174
CLAR	149	185	KILL	210	219	SET	126	122
CLDAB	151	172	LEPTE	205 142	205 150	SH	205 128	205 128
CLOSE	154	164	LEN	205 135	205 141	SH	205 135	205 134
CLS	200	160	LET	186	142	SHIPP	163	163
COLOR	193	174	LINE	187	170	SOUND	160	162
COPY	147	172	LIST	149	149	SPR	205 135	205 135
COPY	200	211	LIST	189	187	SPREAD		226
COE	205 148	205 127	LOAD	211	220	STEP	169	170
CREATE		212	LOC	205 164	205 167	STOP	145	146
CREATE	182	154	LOC	205 165	205 162	STR	205 136	205 142
CVT	205 162	-	LOC	205 183	205 134	STRING	205 161	205 160
DATA	134	134	LOST	212		SUB	166	189
DEF	185	192	MEM	205 147	205 155	SUBP		221
DF	181	166	MEMO	212	221	WRITE		227
DIV	140	140	HIDE	205 144	205 152	TAB	164	167
DIV	206	212	MOVE	205 166		TAN	205 150	205 130
DLOAD	202	188	NOTICE	139	141	THEN	167	191
DRAM	198	181	NEW	190	191	TIMER	205 139	205 138
DRIVE	207	219	NEXT	139	139	TO	162	188
DWRITE	202		NOT	168	182	TRAP	184	189
DWRITE	220		OFF	170	184	TRM	182	188
DWRITE		218	ON	136	136	UNLOAD	218	
DWRITE	224		OPEN	191	185	UNTIME	205	205
EDIT	192	167	OR	177	201	USE	205 131	205 141
ELSE	122	132	PACHT	175	178	VAL	205 137	205 143
END	178	178	POLEAP	192	175	WRITE	205 157	205 156
EOF	205 140	205 146	POL	198	171	WRITE	205 157	205 156
EM		205 164	POOPY	199	193	WAIT	210	220
ERR		205 165	POOPY	205 154	205 140	WRITE	217	
ERROR		219	PLAY	201	184			
EXEC	162	164	PROBE	200	182			
EXP	205 151	205 138	POINT	205 148	205 152			

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If you've got a technical question write to Brian Cudge. Please do not send a SASE as Brian cannot guarantee to answer individual inquiries.

Dragon Answers

Invert the 64

I HAVE had a Dragon 64 computer for a number of years and use it to control my large record collection among other things. In the 32K mode I use a program published in *Popular Computing Weekly* some years ago which makes the computer print in inverse (greenish black) which is much easier on the eye.

Unfortunately, this same program does not operate in 64K mode. Can you suggest why and perhaps provide a similar program for the 64?

John Garner
Wooly Castle
West Midlands

The program you are using probably makes some ROM calls and this is the reason it will not operate in 64 mode. As the Basic is in RAM in this mode it is possible to 'patch' it to print green on black which has the advantage of not using any resources.

Enter 64K mode and run the following Basic program which will patch the screen printing routine, as well as the CLS and checksum routines (as that pressing SELECT does not reload the Basic from ROM). If you prefer orange on black, then just enter SCREEN 6.1 as the Basic is also patched to allow this.

```
10 FORK 58720,15
20 FORK 62650,30
30 FORK 62997,30
40 FORK 64473,32
50 FORK 64447,32
60 FORK 64476,8
70 FORK 64474,2
80 FORK 64475,158
90 FORK 64476,90
100 FORK 283,98
110 FORK 294,150
```



machine code as I don't think the Dragon has a built-in ROM?

Paul Butcher
Westcott, Essex

The Dragon does not have a built-in hardware clock, but the interrupt driver timer function can be used from Basic. If you incorporate the following routine in your program

```
60 INPUT "ENTER TIME OF DAY IN, MM, SS:"
70 TIME$=0
80 REM YOUR PROGRAM STARTS HERE...
90 G=INT(TIME$/58)TIME$=TIME$-G*58
100 IF G<58 THEN IN=MM+1:SS=SS-1:GOTO 1000
110 IF MM<58 THEN IN=MM+1:SS=SS-1:GOTO 1000
120 IF MM<58 THEN IN=MM+1:SS=SS-1:GOTO 1000
1300 RETURN
```

and call it with GOSUB 6000 (or wherever you put it) then it will return the current time of day in the variables IN, MM and SS. These are initialized by the user at the start of the program.

The routine works by updating the variables from the TIME\$, which is incremented by 1 every 1/50th second.

Brief words

All throughout, having filed my own 'test' game for my Dragon with disc drive. To get so many questions as possible on the one disc I want to use some text compression techniques. Do you know of a commercially available text compressor? If not, or could you explain in simple terms how to write one (in Basic) if this is possible?

Marion Hayes

I DO not know of a text compression program that is commercially available for the Dragon disc system. For trivia questions it should be fairly simple to write your own effective compressor.

Almost all questions start with words such as WHICH, WHAT, WHERE, WHO etc., and other words such as IS, ON, TO, AND etc. will come up regularly. If we substitute codes for these words in

your strings then most questions and answers will fit into, for example, 128 characters.

A simple outline of a text compressor is given below. I have not filled up the data statements to save space, but all you need to do is think of 128 commonly used words and enter them in the DATA lines from 548 onwards.

The routine takes the string

```
500 REM Set up array of words — this routine is only called
510 REM once at the start of the program.
520 CLEAR 5000
530 DIM IN$(127):FOR L=0 TO 127:IN$(L)=NEXT:RETURN
540 DATA WHICH, WHAT, WHERE, WHO, WHY, WHEN, YEAR
550 REM END OF DATA STATEMENTS HERE
560 REM Compression routine takes AS and returns it with
570 REM common words replaced by codes 128-255
580 CH=0
590 FOR L=0 TO 127
600 IF INSTR(IN$(L),C)=0 THEN 660
610 X=INSTR(IN$(L),C)
620 AS=LEFT$(AS,X)+CHR$(128+C)+MID$(AS,L+1)
630 CH=CH+1:GOTO 590
640 NEXT I
650 IF CH=0 THEN 600
660 RETURN
```

Keypad input

COULD you tell me if it is possible to use the joystick or printer port to connect up to a numerical keypad (of my own design) to be used as an input device in a sophisticated game I am currently working on.

Alan Rowland
Bathurst
West Midlands

The printer port cannot be used as this is set up as an output port in the Dragon's hardware configuration. The joystick ports are 80 channels to digital devices, so you could wirrup a keypad using a different resistance between 0 - 100K for each switch. For example, the first six switches on port 0, and the rest six on port 1, the resistances going up in units of 10K each. You'll need to calibrate the keyboard by reading the joystick values as you press each key but so long as you don't need to read more than one key at a time this method should be quite successful.

The connections to the joystick ports are as follows:

- Pin 1 — Input line (resistorless) for port 0
- Pin 2 — Input line (resistorless) for port 1
- Pin 3 — Ground (0 volts)
- Pin 4 — Trigger input line
- Pin 5 — +5 volts output.

The right time

I AM writing my own database system in Basic and have come across the following problem. What I would like to do is to tell the exact time of day so that may be saved at the head of filing down with the data. Is this possible from Basic or

Expert's Arcade Arena

Write to "The Expert" at Dragon User
12-13 Little Newport St., London WC2R 1PP.
with all your arcade tips and hints.

HELLO again, and just when you thought the special columns were over you find that we finish off the table we started last month. Now then, several of you I know will be wondering why we split it into two parts. There have been several theories

expounded on to the reason for this but the most popular one here expounded for you to make a choice from:

Was it... A) only one half of it last month and the other half this month.

B) Last month's edition of Dragon User was so packed with information that there simply wasn't room for all of it.

C) The magazine couldn't bear to pay me for three pages in the same month!

Name	Graphics	Speed	Type	Comment	Rating
The Dark Pit	3	3	Adventure	Vastly under-rated game by Gordon. Well, this one really should be provided with a free packet of aspirin!	4
Wizard's Quest	4	3	Adventure	It's a shame that this game was a little late when it came out. It's quite a challenge, if you like the kind of thing.	3
Shocktrooper	5	3	Adventure	The most popular arcade game of 1988 beyond a doubt, it's as good in 1987 as it was when it came out.	5
Cuthbert in the Mines	4	4	Strategy	Neither interestingly disguised Frogger clone.	3
Crocman	5	2	Shoot-em-up/Collection	This is a game where it's actually fun to be killed. Graphically outstanding.	5
Robin Hood	3	3	Collection	A really jolly good pocket money thingy.	3
Jet Power Coin	2	1-0	Collection	Another jolly-good pocket money thingy.	2
Fearless Freddy	2	3	Collection	Yet another really jolly good pocket money thingy.	3
Revenge 3-D	3	3	Shoot-em-up	Remme's Revenge for all mankind!	4
Laser Zone	3	3	Strategy	You've gotta be fast, but you've also got to have a degree in maths!	3
Fantasy Fight	3	3	Adventure	This was the game that inspired The Dark Pit and it's a very good strategy game. It's slightly easier if you use the map if a few hours back.	3
Jet Set Willy	5	3	Collection	Can anyone else tows get back across the dander's right to left? I've only done it once, and I don't know how I did it then.	5
Moore Crests	4	3	Shoot-em-up	It was never as easy as this in the arcade!	3
Dark Star	3	4	Shoot-em-up	Well, the problem with this one is when you've destroyed one planet, you've destroyed them all.	3
Pable Steady-Go!	3	3	Collection	Has anyone got stuck to allow you to start an any screen yet?	4
Samurai Master	4	3	Kung Fu	I've got a really great system for this one last month.	2
Cherlie Egg	3	4	Collection	Well, never ancestor of classic Miner, great fun, and all solutions to my address please.	4
Garçon Bennett	5	2	Collection	This one really is very, very difficult. For experts only.	4
Ninja Master	2	3	Kung Fu	I appear to be one of the few people in the world who actually likes this game!	3

Well, answers on a postcard is the usual address, and while we're on the subject of writing and people who write in I have a sad announcement to make. Yes, Mick the Brave is dead. M.R. Vince passed away this month quietly, a noble man, if a bit of a scandal at times, he will be sorely missed. "How do you know he has died, oh great one?" I hear you spontaneously exclaim. Well, the fact is, at the time of writing I haven't had a letter from him for over a month so I can only assume that he really has passed away.

However Mick, if you're out there and feel like responding to my little hints that maybe you need to buy a new pen perhaps you'd like to write, and also enter the following competition which, unlike previous competitions actually has a prize which is worth something! Yes, the winner of this competition gets two games from the Editor's Magic Bottomless Box (so called because whenever we look in it to see what's arrived for us, we look straight through — Z).

However, state your preferences if you win and send 'em your games for you.) but remember, as far as winners are concerned, as Colner McLeod might say, there can be only one.

So here is the competition, and be warned, it's a toughie. To get the prize you must send in as many of the following things as possible. They can be acquired through the use of hacking, skilful games playing, general knowledge, and copying off each other's exam papers... yes... and the Telemaster requires a certain creativity, or at least the ability to bluff. Because the competition is hard the deadline for entries is set quite late. All entries must reach me by the end of May, although entries can be sent in as late as on this. The winner will be announced in the July edition and fireworks, so much to drink, and all the other things that usually accompany winners!

Right then, what are the things I want in no particular order:

1) The SIMPLEST way of getting infinite

lives on Kung Fu — The Master.

2) The code which allowed you to enter the PRIZE draw in Main Crests.

3) What happens after the last screen in Casanova of Chains.

4) A way of moving to any screen in Eddie Steady-Go!

5) A system or pattern for Croaker.

6) The names of the (programmable) of EITHER Casanova's truly original Casanova Slot Master's coin's equally original Hugs Jackson (The Dragon version, obviously).

The tie breaker which will be used if more than one person sends in all six answers or if more than one person sends in the most answers, because for all I know, no-one knows all six, and it might be between everyone who knows three of them — so don't be discouraged! is as follows, all I ask you to do is complete this statement in a way which you think will appeal to me the most, from your knowledge of my deep and beautiful personality (I want to be that — Z). You may send three entries for the tie

breaker but none may consist of more than three words. The sentence I would like you to complete is "The Expert is . . .". Remember please when entering that there are lines against labels and asterisks!

So on to your letters, and of course your maps, starting with the "Dear" Dave map from Philip Skitt, and if that isn't a last tamarisk I don't know what is! Cheers, Phil.

Turning secondly to my friend in Malta, Joe Binca, who, if you'll remember, sent me the really incomprehensible "Real Eclipse" map. Well here's sent as a rather better one, one of the essential bits in Universe One, and has offered to draw the whole thing in the same way. Please do Joe, and also map

the Universe Two, which you should have received by now.

Back then to Tanglewood and the Castle Schark maps by R.J. Williams, very accurate, and drawn with a style that I find rather pleasant but irritates the parts of my brain.

A few notes that might interest you before I go . . . On Stone Raider's POKE 17ND, 189 POKE 17A4, 72 - POKE 17ND, 129 POKE 17A5, 126 - POKE 17ND, 48 - POKE 17ND, 28 and pressing 'R' will get you into the cheat mode (that's the nice Phil idea who suggests that "Making Movies" by Dave Skitt is a good album to Zap to - yes I know, I'm mad, the appalling album of the moment, and "Get Close" by the Pretenders and "Speaking in Tongues" by Talking Heads -

and wants any suggestions as to the use of a Dangle, send him to me, and the furnished ones get published!) . . . In FireFlix press 'R' to select colour at start, then 'C' for the code, then use the joystick to enter the four keywords: TECHNIX to start at stage one, SMPFC for stage two, UDSLY for stage three (or is it VOLTY?) or ENDLESS for unlimited lives. . . for Frank's ARPTS goes to cheat menu and PARTY CHILDREN goes to a screen editor/designer (those are the last words from M.R. Van B.L.P. who profusely apologises the seconds for "Longest letter to someone called the Expert" AND "Most loyal supporter of the Expert's take over the entire world campaign.") That's all for this month. See ya!

CASTLE SCHARK

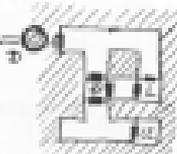


1st FLOOR

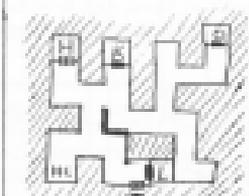
- TANGLEWOOD -



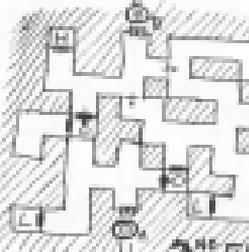
2nd FLOOR



3rd FLOOR

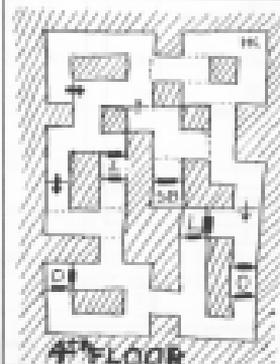


1st FLOOR (PART ONLY)



2nd FLOOR

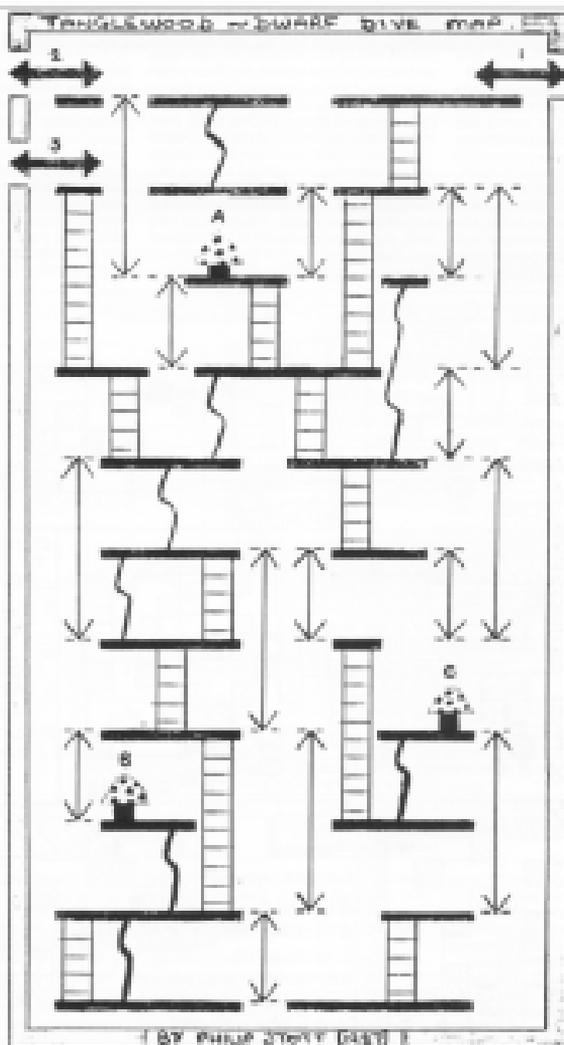
ENTRANCES TO CASTLE SCHARK A = BOTTOM ENTRANCE B = TOP ENTRANCE C = RIGHT ENTRANCE D = LEFT ENTRANCE



3rd FLOOR

KEY L = LIFT TURRET O = OFFICE H = LABOUR HALL K = KITCHENS SB = SCHARK'S BEDROOM HC = HIDDEN CAVE CC = COAL CELLAR DB = DOUBLE DOOR S = SINGLE DOOR + = ONE WAY DOOR (PROBABLY IN DIRECTION OF ARROW) † = ONE WAY SWIVEL - - - = BRUSH or SECRET WAY	 <p>3rd FLOOR © R.J. Williams</p>
--	---

TIPS - There is a key in an office on the 4th floor, and a powder in the kitchens (1st floor). Both hold combinations of numbers, with different rules on their maps.



- KEY -

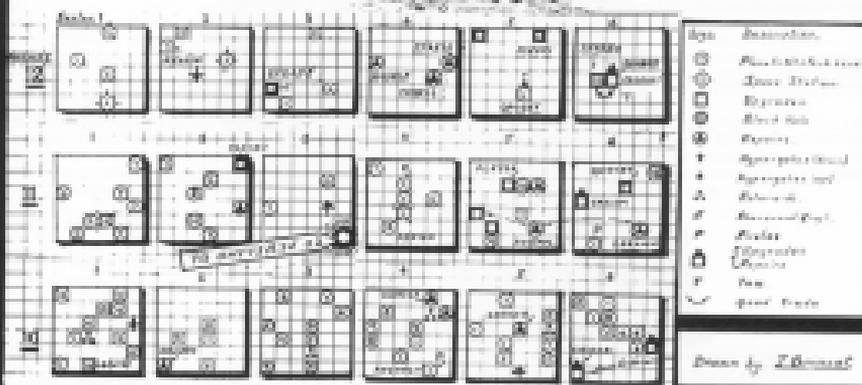


Dragon 32/64

TOTAL ECLIPSE

DRAG 32

UNIVERSE 1



This map was found in the pocket of an old probe who travelled all Universe 1. (1)

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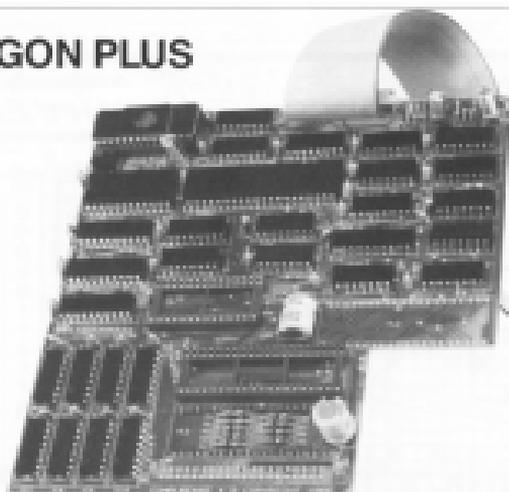
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High Noon

Jonathan McGowan ducks behind the cacti

HIGH NOON is an addictive high speed machine-code game for telegames, featuring smooth moving hi-res graphics. Each player controls a cowboy using the joystick to move up and down, and the fire buttons to shoot. The simple object of the game is to shoot your opponent before he gets you by dodging his bullets and taking cover behind the moving cart and the cacti. The joystick in the right socket controls the cowboy on the left of the screen and vice versa!

Use your bullets wisely — you only have

sixteen spaces at each duel. The each player is out of bullets before either of them is shot, each will gain another sixteen. When the game is first run, you must enter the speed level by typing a key from one to eight (one is the fastest). This affects the speed of the bullets and the cart — the speed with which the cowboys move is the same at all levels. The scores are kept by the computer and can be reset to zero by pressing 'R' during the pause after each 'death'.

To enter the program, type in the BASIC

program that contains the machine code in DATA statements. When finished, save this on tape. Then run the program — it will POKE the machine code into memory, and when this is done, save the code on tape by COMMAND "HIGHNOON",AH7700,AH77FF,AH7C00

It can then be run by EXEC AH7C00. When loaded from tape, EXEC only will do the job. If you find the program crashes, load back the BASIC program so that you can find and correct any errors.

```
2000 REM ** "HIGH NOON" **
2010 REM ** (C) J. MCGOWAN '85 **
2120
2130
2040 REM * ONCE LOADED INTO
2050 REM * MEMORY, THE PROGRAM
2060 REM * IS STARTED BY:
2070 REM * EXEC AH7C00
2080
2090
2000 DATA 7600,87,7F,04,06,90,3D,C3,70,00,1F,02,F6,7F,04,4F,1F
2010 DATA 01,86,69,7F,00,00,20,30,C3,00,01,1F,03,86,7F,04
2020 DATA C6,1B,30,3A,C6,20,46,60,47,64,46,40,47,01,46,40
2030 DATA A7,02,30,69,20,5A,26,1E,39,12,12,00,00,00,00,00
2040 DATA 7500,CC,FF,FF,8E,06,00,8D,81,0C,1E,00,3A,69,8D,7C,8D
2050 DATA 8D,7B,8D,14,12,12,8D,8D,8D,8D,8D,8D,8D,8D,8D,8D
2060 DATA 7520,8E,1E,07,8D,7B,2E,8F,0E,16,8D,7B,2E,39,12,10,8E
2070 DATA 71,3D,C9,38,46,40,47,64,46,40,47,01,46,40,47,02
2080 DATA 30,8D,20,5A,26,8E,24,12,12,00,00,00,00,00,00,00
2090 DATA 7580,8E,7F,02,C6,20,3A,C6,0E,1F,01,10,8E,7B,46,C6
2100 DATA 3A,8C,07,6F,3D,04,8E,43,8F,03,8E,43,8F,84,30,8E
2110 DATA 60,5A,26,8D,39,12,12,00,00,00,00,00,00,00,00,00
2120 DATA 7600,8D,8D,52,8D,01,5B,81,0F,24,0D,F6,7F,00,C1,0B,27
2130 DATA 15,5A,F7,7F,00,20,0F,61,30,2D,0B,F6,7F,00,C1,8A
2140 DATA 27,04,5C,87,7F,00,8E,01,5D,81,0F,24,0C,F6,7F,01
2150 DATA C1,0B,27,04,5A,F7,7F,01,39,81,30,2D,F6,F6,7F,01
2160 DATA C1,8A,27,F4,5C,F7,7F,01,39,12,12,00,00,00,00,00
2170 DATA 7700,7D,7F,06,26,1C,7D,7F,04,27,17,86,FF,00,84,01,26
2180 DATA 10,7A,7F,04,86,7F,00,8B,14,87,7F,07,86,04,87,7F
2190 DATA 05,7D,7F,00,26,1C,7D,7F,05,27,17,86,FF,00,84,02
2200 DATA 26,10,7A,7F,05,86,7F,01,8B,14,87,7F,08,86,18,87
2210 DATA 7F,08,38,12,12,00,00,00,00,00,00,00,00,00,00,00
2220 DATA 7780,7D,7F,04,27,82,86,7F,07,C8,20,3D,C3,00,00,1F,01
2230 DATA F6,7F,08,3A,86,FF,47,80,46,84,81,FF,26,18,86,4B
2240 DATA A7,84,86,7F,06,4C,81,1F,26,05,06,FF,47,54,4F,87
2250 DATA 7F,06,20,3A,86,FF,47,84,47,00,20,47,80,80,06,6A
2260 DATA A4,85,C0,47,85,C0,86,38,AA,85,40,47,80,40,86,14
2270 DATA A4,85,60,47,85,6D,8D,7B,57,86,7F,06,81,58,20,04
2280 DATA 4F,7E,7B,8D,7F,7F,06,12,7D,7F,06,27,60,86,7F,09
2290 DATA C6,20,3D,C3,00,00,1F,01,F6,7F,06,5A,86,FF,47,84
2300 DATA 30,1F,46,54,81,FF,26,16,86,12,47,84,86,7F,08,4A
2310 DATA 81,00,26,05,86,FF,47,84,4F,87,7F,08,20,3A,86,FF
2320 DATA A7,84,47,88,2D,A7,88,6D,86,8A,AA,88,C0,47,88,00
```

2330 DATA 88,38,4A,88,40,47,88,40,88,14,AA,88,60,47,88,60
 2340 DATA 8D,70,57,88,7F,00,81,03,24,05,85,01,7E,78,60,7F
 2350 DATA 7F,08,39,12,12,12,12,88,3F,87,FF,23,8E,84,00,C8
 2360 DATA 14,48,80,87,8F,20,8D,78,7A,7F,FF,20,8D,78,7A,5A
 2370 DATA 26,EF,86,37,87,FF,23,39,12,12,88,54,4A,26,FD,39
 2380 DATA 7880,43,84,03,87,7F,08,12,12,12,12,12,12,88,0F,87
 2390 DATA 8F,33,78,7F,08,88,7F,00,3A,48,84,08,20,3D,C3,08
 2400 DATA 01,1F,01,88,7F,08,C8,18,3D,3A,3D,88,08,00,8F,7F
 2410 DATA 0C,C8,01,34,04,88,20,3D,FD,7F,0E,FC,7F,0C,83,7F
 2420 DATA 0E,1F,01,10,8E,72,48,48,40,47,84,87,FF,2D,48,40
 2430 DATA 47,01,87,FF,2D,48,40,47,02,87,FF,2D,3D,88,2D,8C
 2440 DATA 7F,0C,28,83,3E,04,5C,8E,18,00,3D,1F,0C,00,00,26
 2450 DATA 8F,C1,3D,37,83,78,78,83,3E,10,88,37,87,FF,23,39
 2460 DATA 7900,88,7F,0A,8D,79,2D,FD,08,88,FD,08,88,FD,08,88
 2470 DATA 7F,08,8D,79,2D,FD,08,7D,FD,08,88,FD,08,88,FD,08,88
 2480 DATA 87,7F,12,CC,8F,8F,7D,7F,12,27,08,1C,FE,48,56,7A
 2490 DATA 7F,12,28,87,89,12,12,28,88,88,01,87,7F,FF,8D,77
 2500 DATA 80,20,81,12,00,00,00,00,00,00,00,00,00,00,00,00
 2510 DATA 7F,00,00,00,87,7F,08,88,2D,8D,7F,01,88,01,87,7F,08,87
 2520 DATA 7F,00,88,10,87,7F,08,87,7F,08,7F,7F,08,7F,7F,00
 2530 DATA 8D,78,80,88,8A,87,7F,3D,12,12,8D,78,00,12,12,12
 2540 DATA 8A,78,0A,8D,7A,88,8A,7A,00,4F,8D,7A,00,88,01,8D
 2550 DATA 7A,00,8D,77,00,4F,88,7F,0A,88,7F,0E,88,7F,0E,88
 2560 DATA 7F,08,81,00,3E,08,88,02,87,7F,08,38,7A,7F,FF,26
 2570 DATA 82,88,02,87,7F,8F,8D,77,8D,88,7F,03,81,8E,27,C3
 2580 DATA 88,7F,02,88,7F,00,87,7F,02,8D,78,8D,7A,7F,2D,26
 2590 DATA 82,88,FA,87,7F,2D,7A,7F,00,2D,48,12,12,00,00,00
 2600 DATA 7800,88,7F,8F,8E,04,00,8F,88,8E,7F,FF,4F,8D,95,7A,39
 2610 DATA 7820,4F,8E,7F,24,8E,04,00,8F,88,8D,7C,4D,88,04,00,8E
 2620 DATA 08,48,8D,78,88,88,04,01,81,8D,27,0E,8E,0C,4D,8D
 2630 DATA 78,88,8E,04,00,8F,88,8E,7F,28,4F,8D,7C,4D,88,04
 2640 DATA 00,8E,08,53,8D,78,88,88,04,01,81,8D,27,0E,8E,08
 2650 DATA 84,8D,78,88,38,12,8D,7D,C8,08,3D,C3,78,4D,1F,02
 2660 DATA 08,88,48,4D,47,84,3D,88,2D,8A,28,8A,38,12,12,04
 2670 DATA 8D,78,2D,2F,8F,C3,7F,8F,C8,7F,8F,C7,88,8F,87,8F
 2680 DATA 22,8D,8A,77,38,12,00,00,00,00,00,00,00,00,00,00
 2690 DATA 7C00,8D,8A,77,88,00,8D,88,4A,8D,88,4A,8E,78,8D,8D,8D
 2700 DATA 88,8D,8D,08,27,88,81,31,2D,87,81,38,24,83,8D,3D
 2710 DATA 87,7A,82,7F,7F,24,7F,7F,28,8D,7A,00,88,7F,08,81
 2720 DATA 02,27,0C,81,01,27,05,7C,7F,28,2D,03,7C,7F,24,8D
 2730 DATA 78,8D,8E,4D,00,34,1D,8D,8D,08,81,52,28,08,7F,8E
 2740 DATA 24,7F,7F,28,8D,78,8D,3E,1D,3D,1F,8C,00,00,28,8E
 2750 DATA 2D,C7,12,12,00,00,00,00,00,00,00,00,00,00,00,00
 2760 DATA 7C80,8E,08,00,10,8E,7D,00,8C,41,8D,88,8C,07,2D,26,87
 2770 DATA 38,12,12,00,00,00,00,00,00,00,00,00,00,00,00,00
 2780 DATA 7C80,88,8D,8D,8F,0A,00,8D,88,7A,38,00,00,00,00,00,00
 2790 DATA 7E00,8D,00,00,00,00,00,00,00,00,00,00,00,00,00,00
 2800 DATA 00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00
 2810 DATA 7F,FF,FF,FF,FF,FF,FF,FF,7F,FF,FF,00,00,FF,FF,FF
 2820 DATA 8F,FF,FF,00,00,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF
 2830 DATA 83,88,88,43,8F,FE,FF,FF,7F,FF,FF,38,00,FF,88,38
 2840 DATA C3,07,FF,38,00,FF,FF,C8,07,7D,83,1F,FE,FF,FF,87
 2850 DATA 6D,88,88,87,7D,FE,FF,FF,7F,FF,FF,44,00,FF,7D,07
 2860 DATA 5D,7F,FF,44,00,FF,FF,04,07,77,8E,88,FE,FF,FF,7E
 2870 DATA 83,88,88,87,8F,FE,FF,FF,7F,FF,FF,44,00,FF,88,87
 2880 DATA 43,1F,FF,44,00,FF,FF,C8,07,71,8F,3F,FE,FF,FF,7E
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 2900 DATA 5D,7F,FF,44,00,FF,FF,04,07,77,8E,88,FE,FF,FF,7E
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 2920 DATA 09,07,FF,38,00,FF,FF,C7,31,1D,8E,3F,FE,FF,FF,7E

2830 DATA 7F,FF,FF,FF,FF,FF,FE,FF,FF,7E,FF,FF,00,00,FF,FF,FF
 2840 DATA FF,FF,FF,00,00,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,7E
 2850 DATA 00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00
 2860 DATA 00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00
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 2880 DATA 7F00,13,20,01,FE,0E,00,1C,4F,00,49,01,01,11,BC,0E,60
 2890 DATA 1F,00,00,00,FF,A1,FD,07,91,0E,94,E1,00,99,32,00
 2900 DATA FA,03,00,00,01,00,00,00,8B,00,00,00,00,00,00,00
 2910 DATA 7000,FF,FF,FF,FF,FF,FF,FF,03,FF,FE,03,FF,FE,03,FF,60
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 2990 DATA FF,FF,C7,FF,FF,C0,FC,FF,FF,FF,FF,FF,FF,FF,FF,FF
 3100 DATA FF,FF,FF,FF,FF,FF,FC,6D,7F,FF,8D,3F,FF,C0,3F,FE
 3110 DATA 00,00,FF,00,3F,FF,84,3F,FF,88,3F,FF,8E,3F,FF,DE
 3120 DATA 7F,FF,DE,FF,FF,8D,FF,FF,F1,FF,FF,8E,7F,FF,C0,3F
 3130 DATA FF,C0,3F,FF,C0,3F,FF,82,3F,FF,82,3F,FF,82,3F,FF,82
 3140 DATA 84,5F,FD,3E,5F,FE,00,9F,FE,00,9F,FF,FE,00,FC,67
 3150 DATA 1F,FF,8D,1F,FF,C0,3F,FF,C0,3F,FF,C0,3F,FF,FF,C0,3F
 3160 DATA FF,C0,7F,FF,C0,7F,FF,C0,7F,FF,C0,7F,FF,8D,7F,FF
 3170 DATA 8D,7F,FF,8D,7F,FF,8D,FF,FF,8D,FF,FF,8D,FF,FF,8D
 3180 DATA FF,FF,F1,FF,FF,81,FF,FF,00,FF,FF,FF,FF,FF,FF,FF
 3190 DATA FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF
 3200 DATA FF,3F,87,FF,7F,87,70,FF,E7,31,FF,87,3F,FF,88,33
 3210 DATA FF,C8,33,FF,C4,73,FF,C0,F1,FF,C1,FD,FF,C8,FD,FF
 3220 DATA C3,FD,FF,C3,FD,FF,C3,FD,FF,C3,FD,FF,C8,FD,FF,C0,FD
 3230 DATA F0,FF,C3,FD,FF,C3,FD,FF,C1,FD,FF,C1,FD,FF,C1,FD,70
 3240 DATA 03,8D,00,03,8D,00,07,FF,00,0F,FC,00,1F,FE,00,1F
 3250 DATA FF,00,1F,FF,C0,1F,FF,00,1F,FF,00,1F,FF,00,1F,FF
 3260 DATA F0,1F,FF,F0,1F,FF,F0,1F,FF,F0,1F,FF,F0,1F,FF,F0
 3270 DATA 1F,FF,F0,1F,FF,F0,1F,FF,F0,1F,FF,F0,1F,FF,F0,1F
 3280 DATA FF,F0,1F,FF,F0,1F,FF,F0,1F,FF,F0,1F,FF,F0,1F,FF
 3290 DATA FF,3F,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF
 3300 DATA FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF
 3310 DATA FE,00,00,7F,FC,00,00,1F,FF,00,00,0F,FD,00,00,0F
 3320 DATA 8D,0F,F0,07,C0,3F,FC,07,C0,3F,FE,03,C0,7F,FE,03
 3330 DATA C0,7F,FE,03,C0,7F,FF,03,C0,7F,FF,03,C0,7F,FF,03
 3340 DATA 8D,7F,FF,07,8D,7F,FE,07,8D,7F,FE,07,8D,7F,FE,07
 3350 DATA F0,3F,FC,0F,FD,1F,C0,1F,FF,1F,FF,1F,FF,1F,FF,2F
 3360 DATA FC,0F,FF,3F,FC,0F,FD,FE,07,FE,07,C0,7F,FE,00,0F,FF
 3370 DATA FE,00,00,FF,FF,00,01,87,87,00,01,87,87,00,00,87
 3380 DATA E7,8D,03,E7,8D,00,00,CF,83,00,00,CF,82,00,00,CF
 3390 DATA F3,00,01,CF,F3,00,04,CF,F3,00,01,FF,00,00,00,FF
 3400 DATA FF,00,00,1F,FF,00,01,8F,FF,00,01,8F,FF,00,01,8F
 3410 DATA FC,00,01,1F,FF,FF,3F,1F,FF,FF,3F,FF,FF,3F,FF,FF
 3420 DATA FC,FF,FF,3F,FC,FF,FF,3F,FF,FF,FF,FF,FF,FF,FF,FF
 3430 DATA FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF
 3440 DATA FF,FC,00,3F,FF,00,1F,FF,00,1F,FC,00,0F,FD,00,0F
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 3500 DATA 3F,FC,00,3F,FC,00,3F,FC,00,3F,FC,00,3F,FC,00,3F
 3510 DATA FE,00,7F,FE,00,7F,FE,00,7F,FF,00,FF,FF,00,FF,FF
 3520 DATA 00,FF,FF,FF,FF,FF,FF,FF,00,00,00,00,00,00,00,00

```

3630 DATA 7340,38,44,44,44,38,10,30,10,10,7C,38,44,18,20,7C,38
3640 DATA 44,18,44,38,18,28,45,7C,08,7C,40,78,04,78,3C,40
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3710 DATA 20,20,20,20,20,20,20,20,20,20,20,20,20,20,20,20
3720 DATA 20,20,20,20,20,20,20,20,20,20,20,20,20,20,20,20
3730 DATA 20,46,48,54,46,52,20,53,50,45,45,44,20,28,31,2D
3740 DATA 38,28,34,00,FF,00,FF,12,FF,00,FF,00,FF,00,FF,00
3750 DATA 7340,20,28,43,28,20,44,4F,4E,43,54,48,41,4E,20,4D,43
3760 DATA 20,20,20,20,20,20,20,20,20,20,20,20,20,20,20,20
3770 DATA 20,20,20,20,20,20,20,20,20,20,20,20,20,20,20,20
3780 DATA 20,48,4E,54,46,52,20,53,50,46,46,44,20,28,31,2D
3790 DATA 38,28,34,00,FF,00,FF,12,00,00,00,00,00,00,00,00
3700 DATA XL
3720
3730
4000 CLSG:PRINTCR33,"PLEASE WAIT";:SCREEN0,1
4010 CLEAR 300,5H7000:1
4020 READ A$
4030 IF A$="X" THEN CLS:PRINT "CODE NOW READY":END
4040 IF L$=A$+4 THEN P=VAL("5H"+A$):GOTO 4020
4050 POKE P,VAL("5H"+A$)
4060 P=P+1
4070 GOTO 4020

```

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(30)

Winners and Losers

Every month, Gordon Lee will look at some prize programming points from a previous month's competition.

PROBLEM solving by simulation was the name of the game in the November edition of *Dragon User*. First of all though, I'd like to correct an error which crept in to the article on the Buffon's needle experiment which provided the competition question. Due to the ambiguity of my presenter, the 'Y' and the 'T' look very similar. Consequently, in the first paragraph, the length of the needle should have been 1 unit in length, and not $\sqrt{1}$. From this, the probability formula should now read as $2/\pi$ (pi). Now to return to the competition!

The question involved ending up with six dice showing identical faces, when thrown a maximum of six times. At each subsequent throw, after the first, only selected dice need be thrown. Because of the large number of permutations that may occur during the playing of the game, it was impossible for a program to check every possible one of them in order to assess the chances of success. Such a task would probably take a lifetime — even for the computer — and would certainly not be possible within the closing date of the competition!

The task, therefore, was to devise a program which actually 'played' the game a sufficiently large number of times, while counting the number of winning throws as they occurred. From the data so obtained, an estimate of the probability could be made.

The competition question was to determine how many wins you could expect out of every thousand games played. By using the program listed on page 20 of February's issue, I predicted a result of between 160 and 164 winning games per thousand. This proved to be pretty near the mark, with most entrants coming up with figures within this range.

A number of entrants (double-checked) their results by running several trials, each of a thousand games, in order to test their programs. My thanks, in particular, to Pui Sapiro and Brian Holmes for including the results of these tests with their entries.

I have included these results, together with all others submitted, on a bar chart in Figure 1. This shows the distribution of your results in the range of 160 to 200 wins per thousand games. The higher the bar on the chart, the more answers of this figure were received.

Rolf Michelsen of Norway also produced a graph into his listing which plots each result as it was computed. As each game was played, the graph plotted the probability, and assessed on the results obtained whether. I have adapted this idea of a gain in Figure 2, which is a screen-dump of a typical trial. This plots the estimated probability calculated during a run of one thousand games. As Rolf states, the graph looks very ragged with only a few games played, but after 100 games it tends to flatten out, ending at about 160 win games per thousand.

The method of approach adopted by nearly all competitors was to imitate the

Figure 1

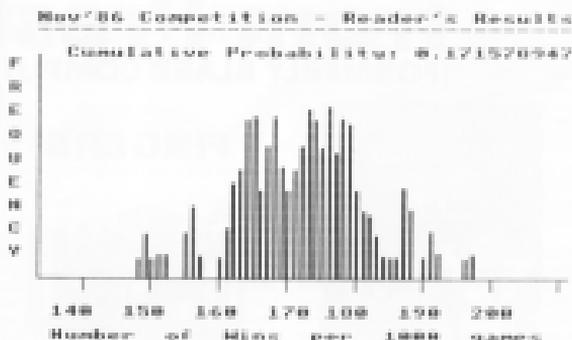
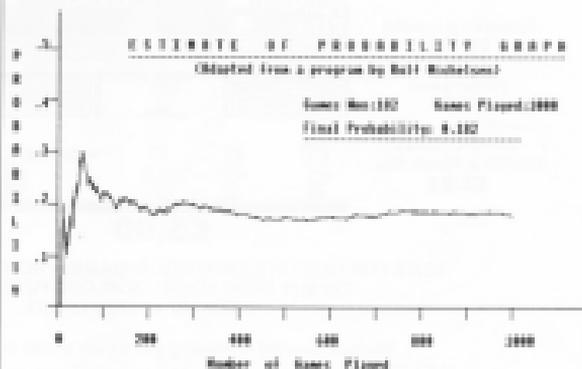


Figure 2



may in which the game would be played using actual dice — the true object of problem solving by simulation.

A number of surprisingly compact programs were received. Examination of these revealed that most did not keep a record of each individual die thrown during a game, and so that once a target number for the dice was decided on in the first or second throw, it was not possible to change this 'target' value.

This device did not appear to materially affect the final totals, but it would not account for the remote possibility that it may be advantageous to aim for a different target on a subsequent throw (see the 'rules' of the game on November's competition page).

Finally, Brian Holmes asks about how to turn off the high speed jocks 05-055:0 (SHFFFD0hex). This is done by using jocks 05-050:0 (SHFFD00 hex).

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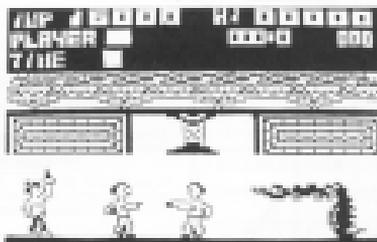
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01/84



IT'S ALWAYS nice when readers come to each other's rescue, on this occasion using me as a glorified postman, which is fair enough as I forgot to put Keith Marshall's address in the December issue. Keith was struggling with Pyramids of Doom, amongst other things, and Esther Duncan of 5 Millstone Drive, Garthdee, Aberdeen AB1 7DA has kindly sent in some information on that one for me to pass on to Keith. Before I do, though, I'll pass it on to you, too, as it's not an adventure that comes up very often.

Pyramid entrance

To get into the pyramid you need a large key, and it's the key you must find, in the desert. LDCP DDG, then you just YCK TED and then RQOD NEPO at the pyramid. Esther says that she searched for months for that: "YCK" key (and those are her very words. Such language from a lady!)

In the same game there's also a tiny key, which is to be found northeast from the pool in the desert. Before that, though, you need to SLCP TEG, then go north-east, then YCK TEG DNR GD. Another piece of advice is to DMARYP EDRSS GD, though Esther hasn't yet managed to enter what she thinks that, or find a use for the tiny key, is it a cherishing? After all, it was found near a pool.

Esther herself admits to being a novice adventurer, and is looking for help on Sir Little-Indians, Don't Panic, Operation Safari, Fitzgrew's Glory, Frankler's Tomb (how to escape the cave) and Mystery of the Java Star — the mystery being how to get the game to load.

Mysterles, too, for Paul Smith in trying to use Cowen Software's Adventure Writer. Can any fellow users come to the rescue and contact Paul, whose address is 29 Sunridge Park, Midsomer Norton, Bath, Avon BA2 3NZ? If you need help on Callote Island (the person to send your SABLE to is another Smith), just this time, his address being 22 Mountbatten Road, Bungay, Suffolk IP20B 5PP.

Now back folks, someone out there must have completed Operation Safari, and yet my otherwise pretty extensive database of solved adventures contains not a single name with this game to its credit. Anyone who's just being modest about it, contact the column, and also contact Margaret Fletcher, 21 Acacia Avenue, Chisleholme, Sheffield S30 4PD. Margaret can find

agents One and Two, but needs help with the others.

As I'm writing this while suffering from a cold in the nose, it seems appropriate I should bring you some code cards. Oh, the agony and pain these words are causing — and that is only the jokes. Anyway, I'll not be responsible for the codes, but a kind-hearted chap named Mr K. Hunt, and if you hunt for him at 11 Demerlane Close, West Bromwich, West Midlands B70 8PL, you stand a good chance of finding him. Now taken carefully, I shall say its only once, but the various codes you need in the Phoenix arcade-adventure games are as follows: Death Mines of Sius, loading code for first adventure is CBUL, and for the second is TUL; The Emperor Must Go, first loading code TDRE, second BHEC, name of Emperor's planet is TIWEN, and secret fo-

mule for getting TIWEN is 12S2B105, the loading codes in J11 had a Million are KRRS for the first adventure and EMPZ for the second, and the loading code in Mission Moonbase is JH-EG9.

The man responsible for all these is also looking for people to swap adventures with, and I hope he means legitimate swaps and not rampant piracy. He says he has some rare and unusual adventures in his collection, too. Finally he gives some info on where the various discs can be found that are Lost in Space. These are only the general areas for you to look in, so I won't print them backwards. The blue disc is in the cafeteria, the red one in the library and engineering section, the white one in the biology and the black one in the captain's cabin. Happy hunting!

Joe Brincat of Malta has been hunting for



KEY

1. Zondra's Quest
2. Barrows of Bran
3. Ethwood Castle
4. Dragon's Sign
5. Northern Sign
6. Hammer Pit
7. Willian
8. Death's Reach
9. Solomon's Throne
10. Maze of Mines
11. Ocean Tower
12. Bristcom Harbour
13. City of Eagles
14. Port Stillwater
15. Gonster's Monument
16. Bordenan
17. Miasa Bony
18. Castle Pepper Quest
19. Tower of Asheron
20. Doom Labyrinth
21. Southern Sign
22. Howler Hollow

the amulet in *Shadow*, which he knows will get him through the tunnelled — but where is it? HEROIC (SMILC) Josselyn is a map for *Total Eclipse*, which is a bit too tricky to publish, but what he's really hoping for is someone to tell him how to get through to the abandoned coast on this one. He says normally the game stops in space, but on one occasion he got in some poles before he loaded and this got him through to the abandoned coast.

New *World's Law* brings what this, he didn't note the numbers and hasn't been able to find them since — despite a year of looking and hoping? If anyone can stop this adventure going into the abandoned coast, write to Joe at 13 Annunciation Street, Hamrun, Malta.

About to enter a total eclipse on *Mystery of the Java Star* is Paul Smith, 17 Balham Close, Ruston, Northants NN16 9JL, and that's because he can't get the Java Star itself up to the surface without being launched. In other words, Smith is getting cramped. He also wants to know how to get off the first floor in *Madness and the Minotaur*. Any ideas?

An offer comes from Andrew Logan, and Paul's to help anyone struggling in *Aquanaut 471*. Andrew's address is 18 Denmark Avenue, Fallow PK1 5HZ, while *Jerusalem Adventure* and *Devil's Island* files are available from John Smallwood, 51 King's Drive, Fallow, Preston, Lancs PR2 5HQ.

Another kind-hearted reader is Craig Graham, 21 Alnwickhill Drive, Edinburgh EH10 5HE, who's solved *Shadow*, *Six Quest*, *Vortex Factor* and *Ring of Darkness*, but is struggling in *Return of the King*. Can anyone stop him struggling? And tell him how to get past the conical mountains of *Rat*?

Jerrin is the discoverer of an possible source of inspiration for *Judicopolis* in *Damen Castle*, 80 Clos Gosset, Langueville St Vincent, 103 Jersey, Channel Islands. Damen says that while at a friend's house he spotted a book called *Judicopolis* by Peter Anthony, the third volume in a trilogy called *Spell Intensity*, and the storyline of that contains some similarities with the adventure game. To much, Damen.

Eaten Eclipse

And the same goes to Donald Morrison, 72 Delebaugh Road, Inverness IV2 3GT, who offers help on *Ultimate Adventure*, *Calico Island*, *El Diablo* and parts of *Syrry* and *Shadow* on which he wants to know what use is the steel staircase, where is the ice and how do you get back out of the cavern after getting the *Servant* plant?

Graham Naylor of 30 Haugh Lane, Newby, Yorkshire, Lancs CH6 3RB would like to get hold of a copy of *Britannia by Reptiles*, a strategy game which I reviewed in the September 1985 issue. Graham obviously takes his time getting round to buying things, and he's also looking for a copy of *Total Eclipse*, as he says that his own copy was eaten by his dog. What? Dog eat copy cassette tape? Or does he just mean the instructions? I'm baffled, but if anyone's got either to spare maybe they could contact

Graham, provided the dog doesn't eat his postman too.

Simon Jones of Eye in Suffolk asks for help on *Golden Stone*, namely how to feed the crab (SGLUS HTTP) and how to pass the lizard (ZTRAUO ERW), while Christopher Haynes from Birmingham is having problems getting the flask from Princess Xenia in *Return of the King*. PPO3 6147 RH4/465. Don't worry if he disappears for a while, as he will reappear later.

And that, my friends, is the last bit of backstairs writing you're going to get from me. Yes, this is to be my last *Adventure* file for *Dragon User* magazine, as I've decided that after almost three years of *Dragon* adventuring, the time has come for a change.

One reason is that I think a fresh face will bring fresh life to the column, but the main reason is that I've been getting more and more letters every month asking for information on how to write and program adventure games, and as a non-programmer I can't offer any help in that direction. All I've been able to do is point readers in the direction of my brother Peter's book, *Exploring Adventures on the Dragon*. As of next month, however, you'll be pointed permanently in his direction — he is your new adventure writer. And he will be providing a new regular series on how to program your own adventures.

Writing your own material is becoming increasingly necessary as the commercial releases dwindle and more and more

people want to put out their own titles in the hope of selling a few copies to fellow *Dragon* users.

That's the way the *Dragon* world is going, and as has been stated in *Dragon User* time and again, it's your own enthusiasm for your own machine that will keep everything alive.

I've been very fond of my *Dragon*, as it was the first computer I ever owned, but to be honest I get less and less opportunity to use it as I have to work on newer machines.

Brotherly take-over

One reason I bought my *Dragon* initially was to discover what adventure games were all about, as my brother was heavily into them even then, constantly raving about this game called *Colossal Cave* that he'd played on a Commodore PET at work. So it seems appropriate that I should hand over to him.

You'll be going hands, too, as in addition to his *Dragon* book and three *Dragon* adventures for *Dunworth*, he's written his adventures that Romik published for the Commodore 64, and we've written a few adventures together, too, me doing the planning and him doing the programming. So he knows what he's talking about, and from next month you'll be able to listen to him. I'm sure you'll be interested in what he has to say, and I hope he makes as many friends among *Dragon User* readers as I have.

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*.

1213 Little Newport Street, London WC2H 9PH. As soon as enough copies have arrived, we will start printing them in the magazine.

Don't worry — you'll still have *Adventure*! Try to write to us well!

Adventure

Problem

.....

Name

Address

.....

Adventure Contact

Adventure: *Syrry*
Problem: How to take and how to take *Vader*, but how do I kill him?
Name: Steve Potts
Address: 1 Danbury Road, Westingborough, Lincoln LN41 1AQ

Adventure: *Syrry*
Problem: How to use the time machine (open safe and north door) *2) Help!* *3) Can't use 10-00000000.*
Name: Patsy Davis
Address: 85 Preston New Road, Southport, Merseyside PR8 6PH

Adventure: *Engelwood*
Problem: How do I get past the grants? What should I do in *Shark Castle*?
Name: The Excerpt
Address: 25 Pitts St., Dufftown, Keith, Banffshire, AB5 4AL

Adventure: *Total Eclipse*
Problem: How many credits are needed to get to a higher technical level?
Name: N. I. Clark
Address: 254 Babbin's Lane, Croxley Green, Herts WD3 3JG

Adventure: *1) The Vortex Factor 2) Ringlo*

Multiple missiles

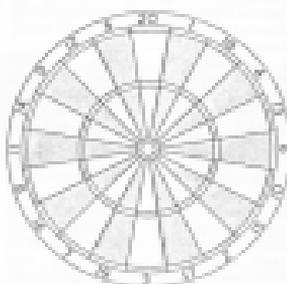
Wizard Gordon Lee turns a dartboard into a table

Three months ago, the competition is related to the numbers on a standard dartboard. Take a single dart and aim for any single on the board. If you score either a double, treble, or bull, then throw again. Taking the score from the single dart, move around the dartboard in a clockwise direction, adding at each step the score in that sector of the board. Continue in this way until your running total equals a perfect cube.

For example, if the dart lands on 10, your score would run:

$$10 + 10 = 20; 20 + 2 = 22$$

As 27 is the cube of three, the game would end on this score. Of course, three's 1 and 8 would end immediately as they are themselves perfect cubes, but for other starting scores you may need to make more than one circuit of the board.



Can you produce a table showing the final score obtainable from each of the twenty sectors of the board?

Prize

I won the last game of Clari I played — but only because my opponents kept driving under the table. Only half an hour to get from 800 (or was it 100?) down to the double 3, with four minutes out to retrieve one of my missiles from Mr. Higgins' newly installed rustic cream beam. These modern ceilings are much too low.

My arithmetic is so bad that they won't even let me keep the scores, so I won't be staking my chances on this month's competition, either. But if you do take up the challenge (and there isn't any excuse now — Christmas is over, it's time to pay the bills) we have a box full of ace Microtest game Bangladesh, which the Expert is going bananas on this month (well, it makes a change from us throwing him bananas). What if you mean, you don't watch *Wills* the stage? It's never too late to start getting culture.

Rules

When you have cubed the circle to your satisfaction or before 15th July, whichever happens sooner, send us a listing of your

January winners

We were sore disappointed in the paucity of entries for the January competition, so we had hoped it would bring the Artisan you cut into the gaps. Well, it did, and we've put him over there in the corner with the post ... The entries we did get were of a high quality, though. Congratulations.

The best entry came from G. R. Barber of Sutton Coldfield, and we're awarding him an extra mystery game for effort. The other winners are S. A. Sabinqui of Chawick, P. J. Taylor of Huppleshrough, John Smallwood of Preston, Darryl Gove of Rensbury-on-Thames, Colonel Bishop of DFFO 20 and David Gosman of Marthall. Best take-away from Mr. Smallwood. If 17 is the random number, then EPHE is a 2X 6!

Could well be, John. He's been about as much use as a 2X 6 to me so far.

These folk will all be receiving their copies of Cascazo's Crisis from Microtest, just as soon as we get them. Just when I thought I'd got this monthly miss mailing bit well and truly sorted out ...

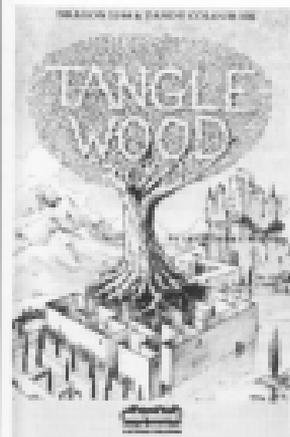
Solution

There are solutions. How can you have a solution to a pattern? The Answer does not appear on its usual page. But we will be looking at some of the best entries at a future date, when Gordon has worked out how they did it.

solution, and any notes you want to include (no cassettes, please) in an envelope marked APRIL COMPETITION is large-red (well, OK, they don't have to be red letters).

Just to keep us happy, we insist that you write a TIC BREAKER incorporating the experience of your years as a Dragon user. This month I'm in one of my poetic moods again (it must be the crocuses, causing their way up through the patio (tee) and all I want is a short verse or tercet incorporating at least one rhyme for 'tangle'.

Nice, aren't? That's why they call me Butcher Armstrong.



The final instalment of the mathematical glossary

Magic squares. Popular type of puzzle in which square array of n^2 positive integers, such that the sums of each vertical, horizontal, or main diagonal line of numbers is always the same. The simplest magic square is:

8 16
3 5 7
4 9 2

Generally, magic squares are formed from

an ascending series of integers from 1 upwards. Some squares can be 'multiple magic squares', in which other combinations of component integers also total the magic constant, or in which the square of the integers also total a second constant.

Mersenne Prime. A number in the form $(2^n - 1)$ where n is a prime number and the resulting number is itself prime. Mersenne

primes are closely related to 'perfect numbers' (p. 2).

Deltahedron. One of the Platonic solids having eight triangular faces.

Palindromic number. A number which reads the same backwards as forwards eg 1234321. Certain palindromic numbers have unusual properties.

Pascal. No, not the programming language! Blaise Pascal was a 17th-century French mathematician now best known for his Pascal's Triangle. He also carries out much research in probability theory.

Perfect cube. A number in the series 1, 8, 27, 64, ... That is, a number whose cube root is an integer.

Perfect number. A number whose aliquot divisors add up to the number itself. The smallest is 6 ($1 + 2 + 3$), and next comes 28 ($1 + 2 + 4 + 7 + 14$). To date only thirty perfect numbers are known. They are directly related to Mersenne primes. For each Mersenne prime there is a corresponding perfect number which can be found from the following formula:

$$\text{Perfect number} = (2^{n-1}) \cdot (2^n - 1)$$

The first five perfect numbers are formed by using the values 2, 3, 5, 7 and 13 for n in the formula, as follows:

$$n \text{ Perfect number} = (2^{n-1}) \cdot (2^n - 1)$$

2:6
3:28
5:496
7:8128
13:5033160

The largest perfect number discovered to date is the 20th in the series. The value of n is 2148901, and the resulting perfect number has a total of 130168 digits!

Platonic solids. The five regular convex solids, all solids bounded by regular polygons, with congruent faces and congruent interior angles at its corners. The Platonic solids are: the regular tetrahedron, hexahedron (cube), octahedron, dodecahedron, and icosahedron.

Prime factors. Any composite number can be reduced to a unique set of prime factors. For example, the number 120 has prime prime factors 2, 3, 3, and 5. This is usually written as 2³ · 3² · 5.

Prime Number. The basic building blocks of our number system. The study of prime numbers alone underpins our scientific endeavour to fill several books! Basically, a prime number has no integral divisors except for itself and 1. 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 79, 83, 89, 97, 101, 103, 107, 109, 113, 127, 131, 137, 139, 149, 151, 157, 163, 167, 173, 179, 181, 191, 193, 197, 199, 211, 223, 227, 229, 233, 239, 241, 251, 257, 263, 269, 271, 277, 281, 283, 293, 307, 311, 313, 317, 331, 337, 347, 349, 353, 359, 367, 373, 379, 383, 389, 397, 401, 409, 419, 421, 431, 433, 439, 443, 449, 457, 461, 463, 467, 479, 487, 491, 499, 503, 509, 521, 523, 541, 547, 557, 563, 569, 571, 577, 587, 593, 599, 601, 607, 611, 613, 617, 619, 631, 641, 643, 647, 653, 659, 661, 673, 677, 683, 687, 691, 697, 701, 709, 713, 727, 733, 739, 743, 751, 757, 761, 769, 773, 787, 797, 809, 811, 821, 823, 827, 829, 833, 839, 847, 853, 857, 859, 863, 877, 881, 883, 887, 893, 899, 907, 911, 913, 917, 919, 929, 937, 941, 947, 953, 967, 971, 977, 983, 989, 991, 997.

Pyramidal number. A number in the series 1, 4, 10, 20, 35, etc. Each term is the sum of successive square numbers ($1 + 4 + 9 + 16 + 25 + \dots$). A pyramidal number of any size can be stacked in the form of a square-based pyramid, as, for example, in a supermarket display.

Square number. In recreational mathematics a square number is a perfect square, ie a number with an integral square root.

Tetrahedral number. A number in the series 1, 4, 10, 20, 35, ... Each term is the sum of successive triangular numbers ($1 + 3 + 6 + 10 + \dots$).

Tetrahedron. The simplest of the Platonic solids having four faces, each face being an identical equilateral triangle.

Triangular number. One of the figurate numbers (p.4).

Unity. The mathematical term for one (1).

Zero. One less than unity! Naught. The starting point on a scale of measurement.

With zero we conclude this brief excursion into some of the more commonly used terms in recreational mathematics. If your own particular favourites are not amongst them, please accept my apologies!

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