PABLO'S ARMCHAIR
TREASURE HUNT 2022

THE LIBRARY OF BABEL

THE WORKS OF
LEWIS CARROLL

DAPHNEHQ

Pablo's Armchair Treasure Hunt 2022 Solution
by DaphneHQ

Which is greater?
- List of "which is greater?" questions
- Answer questions, make binary number
- XXX - last 3 digits of helpline number

Helpline
- Helpline number with last 3 digits obscured
- Call helpline, solve anagram BURDENING PACE
- Call helpline, listen to numbers station
- NICE PUB GARDEN
- Numbers

Battleships
- Map with dots and list of coordinates
- Use college positions with college questions acrostic
- MAKE OXON SCARVES WITH HUE TABLE
- Take letter of each college by scarf
- COMBINE MAP AND DATA WITH ROSE ON CHRIST AND JACK ON ST JOHN AND REAPPLY COORDS
- Use college positions again but overlaid on BASIC program data
- BEGINNING AT PATRON SAINT FOLLOW FELINES TO HOSTELRY AND THENCE PASS UPRIVER PAST JACK AND LOCK PROCEED TO HOUSE WHERE ROSE LIES TO SEARCH OUT CORNER BENCHMARK

Sliding Puzzle
- Sliding puzzle
- Grid of arrows
- Solve sliding puzzle
- Sequence of directions
- EACH POINT ON THE BATTLESHIP MAP IS AN OXFORD COLLEGE
- Move around letter grid using directions

Quiz & Brian's Computer Systems
- Questions
- Each is Oxford college, take nth letter, acrostic
- Foundation years disguised as peripheral prices
- ENJOY XMAS CAKE BLOWOUT LOVE DAPHNEHQ
- Use acrostic to decode
- PUT ARROW MATRIX UNDER WOOD TOY TO MAKE WALK ON LETTER MATRIX AND START MOVES ON DARK BLUE E

Esoteric programming
- random characters
- Convert to Braille, dots become Data Matrix, and scan
- WALL2

Cistercian numbers
- cistercian numbers
- Convert to binary, then Data Matrix, and scan
- VL21

Library of Babel
- Enter hexagon code, wall number, shelf, volume and page into Library of Babel website
- NOW FOLLOW BOUNDARY NORTH TO BUCKELLS METAL MEMORIAL AND LOCATE BONUS TREASURE IN CREVICE OF IVY COVERED TREE ON OTHER SIDE OF PATH

Hidden Library Room
- FOLLOW FELINES SEARCH UPRIVER BRIDGE
- Overlay cave maze map on BASIC data and read words under spherical fruits
- OVERLAY DEAD ENDS ON GOD AND THENCE THEN READ LAMPS
- Sweep wall with broomstick, then translate
- Hidden library room in game

BASIC Program
- BASIC Program
- Take lower case letters
- Use online emulator to run program
- Decoder program
- Enter numbers next to program
- WE RECOMMEND PASTING INTO ONLINE EMULATOR AT BBC MIC DOT RO
- Enter numbers from numbers station
- HOUSE OF GOD
- BLOCK OUT LETTER WALKS AND CAT NAMES IN GRIDS AND COMBINE TO MAKE GRILLE

Cats quiz
- Cats quiz
- Fit answers in crossword and read coloured squares
- HANOI DESCRIBES WALK ON COLOUR GRID

Towers of Hanoi
- Silouette of Hanoi skyline
- Move around letter grid using Towers of Hanoi solution
- LOOK INSIDE STONE

Grille

BORGES BONUS TREASURE

0s2kd........ (hexagon code)
- Assemble pieces of other 4 data matrices to make new data matrix
- Text behind Rosa Tech logo
- Areas of battleships map

Copy protection grid
- Colour letter grid
- Cover with grille
- FROM BM SET BEARING TO TWO SEVEN NINE AND TRAVEL ONE FOUR THREE METRES TO SMALL BRIDGE WHERE YOU WILL FIND PRIMARY CONCEALED TREASURE AMIDST CONCRETE RUBBLE

Game Registration
- SPELLCASTING ACEVEDO
- Enter letters into game for requested colours, then reverse & spellcast
- Game registration instructions

Wordsearch
- Wordsearch
- Find cat names from T.S.Eliot's Naming of Cats
- Cat names

"BENCHMARK ROUTE"

PRIMARY TREASURE

Catscan
- First part of treasure route
- Map is red herring, real cats located along Binsey Lane
- Photos of cats on top of game map

Cat Pictures
- OXF (Railway station code for Oxford)
- Spots / stripes are morse code
- Photos of cats

"BUCKELL'S PERAMBULATION ROUTE"

Dr. Boris
- PREOCCUPATION WITH RUIN RURAL MINOR ROAD OVER WATER
- SNOMED codes
- Numeric cheat codes

Quick Reviews
- MATHISON MACHINE
- Named hurricanes, acrostic
- Series of cat icons and codes

Paper tape
- BY BRIDGE UNDER ASH
- Interpret code as Turing Machine, use to decipher text
- Instruction code
- Emile Baudot, paper tape is ITA2 encoded
- DaphneHQ CEO name and photo
- Paper tape code

AI Art
- PITT RIVERS
- photo of Pit and Rivers in Oxford
- AI Art pictures and surrounding code

Edith's Ethereal Peripherals
- FOLLOW BUCKELLS PERAMBULATION STARTING WITH JING JING STONE AND COUNT SIKS MARKERS DEOSIL THEN FOLLOW DITCH SOUTH
- Book code using item description from Pitt Rivers museum catalogue
- Objects with names

Accordion advert
- TWENTY NINE METERS WITHIN BUKELLS BOUNDS
- Wheatstone telegraph
- Lines around border of accordion advert

Rosa's Tech Solutions
- DATA MATRIX IS THE KEY
- TRY SEVERAL DIFFERENT SEMA TEXT DECODERS
- Decode Playfair cipher
- Foundation dates of sister colleges to Oxford colleges
- List of software prices from sister company
- Letters on accordion

Wordsearch
- P40
- Convert to binary, then Data Matrix, and scan
- Cat names in word search

Black & white numbers
- SH1
- run length encoding, dots become Data Matrix, and scan
- Black/white numbers

General Themes

The surface themes of the hunt are **Cats** and **Retro Computing**, with the next level of themes being **Oxford** (TH1) and **Witchcraft** (TH2) (especially the **Godstow Witch**), and the deeper themes are **Lewis Carroll** (TH3), **Alan Turing** (TH4) and **Borges' Library of Babel** (TH5).

CATS	**RETRO COMPUTING**
OXFORD	**WITCHCRAFT**
LEWIS CARROLL	**ALAN TURING**
BORGES' LIBRARY OF BABEL	

Teletext Teaser

This is a reasonably authentic Teletext page, parodying the popular 1980's Teletext game Bamboozle! (T1) This, combined with the mention of "new game", hinted at the adventure game which was released shortly after.

All of the numbers on the page read left-to-right are an encrypted message using a number-to-letter cipher. Each letter of the alphabet corresponds to a number from 1-26, but starting on the letter P (hinted at by 'P' in several places, usually an abbreviation in Teletext for 'Page').

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
P	Q	R	S	T	U	V	W	X	Y	Z	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O

25	26	5	23	26	25	18	25	26	8
N	O	T	L	O	N	G	N	O	W

The decoded message is **NOT LONG NOW** (T2).

Other references in the teaser include:
"digital deities" - a deity's digit - or a *God's Toe* - a homophone of the treasure location Godstow (T3).
"affordable" - hinting at Oxford (T4).
"trace a path" - the adventure game involves tracing a path around a labyrinth and the game itself (T5), and the main hunt involves several paths around grids of letters (T6).

"cold spells" - the game involves casting spells (T7), and it was extremely cold weather at the time.

"eye on the cream" - as in "the cat that got the cream", hinting at the cat theme (T8).

"NEWS" - hinting at the cardinal directions used in the adventure game and the Towers of Hanoi puzzle (T9).

"Catalog" - a subtle reference to the Library of Babel (T10).

CATastrophe! Adventure Game

(See separate solution)

Poster

The image itself is simply a thematic image designed to look like box art for a 1980s video game.

Two messages are hidden in the poster. Firstly, the largest stars in the background on the left are Braille characters. This is hinted at by the almost identical characters near the bottom. Reading downwards this spells **JINGLE BELLS** (P1). This is also a hint that the "Esoteric Programming" puzzle is a Data Matrix encoded in Braille.

Secondly, the text "*a box has been hidden somewhere in England*" features some letters that are higher than the baseline for the font. Also the letter spacing is different to the other lines. There are also exactly 35 letters, which can therefore be split into groups of 5. These form a Baconian cipher that spells the message **A UN GATO** (P2), a (lovely) poem by Borges about a cat. There is also a clue to the use of this cipher on page 8 of the PDF - the article is by *Mr. Bac^{o}n* with a raised "o".

Page 1 - Cover

There are two references to Alan Turing on the front cover, which is a hint that the paper tape puzzle is instructions for a Turing Machine.

The play by Hugh Whitemore about Turing's life, entitled "Breaking the Code" (C1) first opened on Broadway on 15 November 1987 (C2).

Staff Names

The names of the magazine staff are all anagrams of witches.

N1	*Rose Heathpit*	**Sophie Hatter**	Character from the fantasy novel "Howl's Moving Castle"
N2	*Molly Red*	**Moll Dyer**	Moll Dyer lived in Maryland and was accused of witchcraft
N3	*Simon H H Potter*	**Mother Shipton (Ursula Southeil)**	English Soothsayer
N4	*Erich voon Mainstein*	**Catherine Monvoisin**	French fortune teller
N5	*Ben G Marie*	**Merga Bien**	German woman convicted of witchcraft
N6	*Dalton Tristamme*	**Malin Matsdotter**	Swedish woman accused of witchcraft
N7	*Mr Lick A Ragtag*	**Magrat Garlick**	Character/witch from "Discworld" series
N8	*Stew Woad (Chief Thicket)*	**Wicked Witch of the East**	Character from "The Wonderful Wizard of Oz"
N9	*Moray Flange*	**Morgan le Fay**	Enchantress from the legend of King Arthur

Riddle

The answer to the riddle "*Why is a literate child like a smoked fish?*" is that **they're both well-read(/red)** (N10). This is a hint that St Margaret's Church and the Treacle Well at Binsey is in fact a red herring, and not the correct location of the treasure (N11). It is also a reference to the Lewis Carroll riddle "Why is a raven like a writing desk?" (N12).

Velma to Go Public

This contains a number of references to Lewis Carroll's *Hunting of the Snark* (N13) - Charles **Bellman**, Andy **Baker**, the **lawyers** and the **brokers** "**beavering away**". The line about "*feeling threatened by the share offering*" is a nod to "*They threatened its life with a railway-share*" (N14).

The value of the shares - £27,121,871 - is the date 27th December 1871 on which *Through the Looking-Glass* was published (N15). It also shares the first three digits of the mathematical constant *e* (N16) - yes, we think Lewis Carroll intended this!

Drama at the Computering Awards

This contains a number of references to Lewis Carroll's Phantasmagoria Canto I - the times, the cigars, the mud, and the spectre etc (N17).

"*37th Annual Computering Awards*" refers to the fact that this is the 37th annual Pablo's ATH (N18). Also, 37 years before the magazine date of 1987 is 1950 - the year Alan Turing published his paper *Computing Machinery and Intelligence* (N19).

There are some other subtle hints here: "*cut and pasted*" refers to copy and pasting the BASIC program to reveal the lower case letters (N20), and "*clean sweep*" is a hint to use the broomstick to clean the walls in the hidden library room in the adventure game (N21).

The picture of the DaphneHQ CEO is in fact Émile Baudot (N22), inventor of Baudot Code, an early character encoding for telegraphy (N23), a predecessor of the ITA-2 standard, which the paper tape is encoded with (N24).The name is the ciphertext for the paper tape / Turing Machine puzzle. The cat emoji on Baudot's lapel links to the Quick Reviews puzzle (N25), the solution of which is the hint that the paper tape is Turing Machine instructions.

NEWS
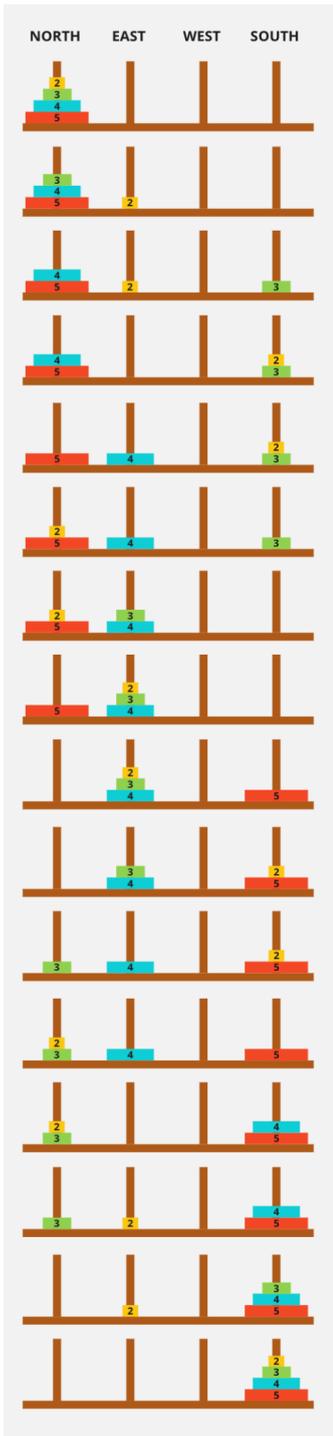
This is a picture of the skyline of Hanoi (N26). Each *tower* is labelled as North, East, West, and South (N27). This corresponds with the [Towers of Hanoi puzzle](#) (N28), where the challenge is to move a number of rings along a series of pillars, one at a time. The only rule is that you can't put a larger ring on top of a smaller ring.

The towers in the photo correspond with four pillars in the four-pillar version of the towers of Hanoi, with each tower representing a cardinal direction, and each ring corresponding with a number of steps in that direction. These are indicated by the numbers on the left-most tower (N29), and the lights on the tower in the shape of rings (N30).

The yellow letter L on a black background (in the word "LATEST") indicates a starting square on the copy protection grid on page 14 (N31).

There is more than one optimal solution, but only one spells a message. This is the solution: 2 EAST, 3 SOUTH, 2 SOUTH, 4 EAST, 2 NORTH, 3 EAST, 2 EAST, 5 SOUTH, 2 SOUTH, 3 NORTH, 2 NORTH, 4 SOUTH, 2 EAST, 3 SOUTH, 2 SOUTH.

This spells the clue **LOOK INSIDE STONE** (N32). The treasure is concealed in a small, fake rock. The moves actually end on a Y but this is an unintended spandrel required by the word PRIMARY in another puzzle.

Page 3 - Esoteric Programming, AI Art, More News

Fundraiser

The photograph is from 1987, the publishing date of the magazine (N33), and is of the villagers of Wolvercote [declaring their independence](#) (N34). This was a stunt to raise over £3,000 for a body scanner for the children's intensive care unit at the John Radcliffe Hospital (N35). This links to the general location of the treasure.

The blocking of the Godstow Road, and charging a fee for passage, is a nod to the story of the Godstow Witch doing the same (N36).

Tv Review - Bandersnatch

This is a reference to the *Black Mirror* episode of the same name (N37) - which is about writing computer games in the 1980s. *Barley Choker* is almost a spoonerism of *Charlie Brooker* (N38). The word "*bandersnatch*" was coined by Lewis Carroll in *Through the Looking-Glass* (N39).

Esoteric Programming

The line of Cs at the bottom suggests a Data Matrix (EP1), although the square is 11x8, which is likely to be confusing for Data Matrix hunters. It is actually encoded with Braille dots from the [ASCII Braille](#) standard (EP2). Each Braille glyph is two dots wide and three dots high, which means a 22x24 matrix where the bottom line is made up entirely of the glyph " ⠿ ".

Braille is hinted at in the poster, where the stars spell JINGLE BELLS, the name *Louis* in the Battleships game, and also in the article text with "*prove a point*" (EP3) and "*we are feeling it*" (EP4).

This Data Matrix encodes the text **wall2** (EP5). This is part of the directions to the book in the Library of Babel which contains directions to the Borges Bonus treasure.

AI Art

The two images are of course not AI art at all (although the poster, magazine cover, and many images in the adventure game are). They are in fact a gravel **pit** on Shotover Hill in Oxford (AI1), and the confluence of the **rivers** Thames and Windrush (AI2).

This is a rebus to indicate the Pitt Rivers Museum in Oxford (AI3), specifically that you need to use the objects in "Edith's Ethereal Peripherals" that are all from the Pitt Rivers Museum's online catalogue.

The numbers around the outside of the images are a book cipher (AI4) using those objects and their descriptions in the Pitt Rivers online catalogue, in the format `object/word/letter`. When counting letters, punctuation is included. The solution is:

==**FOLLOW BUCKELLS PERAMBULATION STARTING WITH JING JING STONE AND COUNT SIKS MARKERS DEOSIL THEN FOLLOW DITCH SOUTH** (AI5)==

The spelling of SIKS is deliberate as there is no X to use.

This message relates to Mayor Robert Buckell's 1886 perambulation of the city boundaries (AI6), described at great length in this contemporaneous account. The approximate locations of the 30 boundary stones are shown on this map.
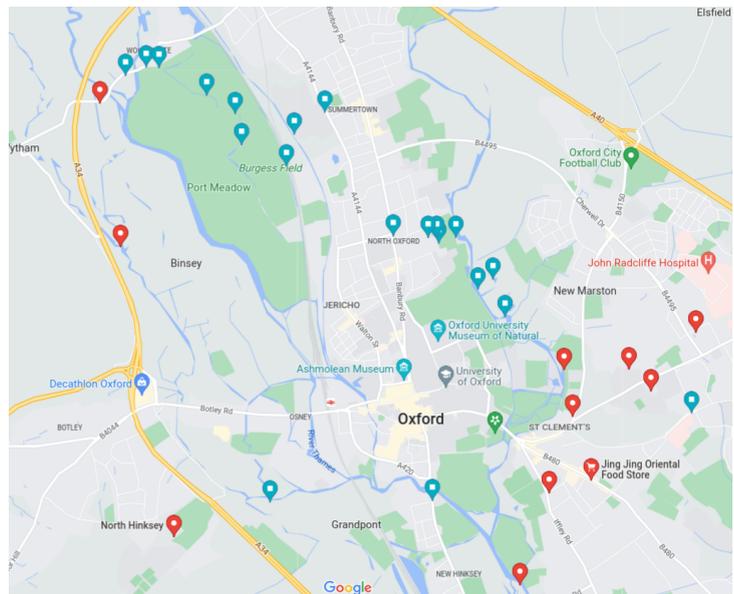
Jing Jing Oriental Food Store (AI7) is at the former location of stone number 6 (AI8) from that account; 6 markers *deosil* (wiccan, i.e. witchy (AI9) word for clockwise) takes you to stone number 12, which also no longer exists, but can be seen here (AI10) on this 1890s map, for example.

The ditch (called "Sanctuary Ditch" in some accounts) fed fish ponds at the abbey. Although the current main road passes virtually over stone number 12, the ditch can still be traced south from the road.

Paper tape

The paper tape is encoded using [ITA-2](#), hinted at by the picture of Émile Baudot. Piecing the tape
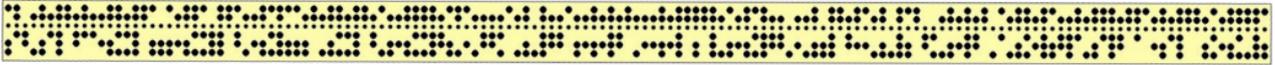
together (in page order) and decoding gives:

BUNL8ACUIR10ABOBR16.AFLR6BBGAL10ACZGR11CBWDLCCPEL5CCEGR4CALRR4A-LB R6CCTRL9ACJDL5BANHL4CATSL14BCVUL7CAUER8AAGYR12B (PT1)

The letters BUN appear in biro on the tape as confirmation that you have decoded correctly. The instructions also thematically contain the word CATS. The Quick Reviews solution "MATHISON MACHINE" hints that this is a Turing Machine state table. If we follow the instructions for this on the [Wikipedia page for Turing Machines](#) (this machine is a modified version which includes a number of cells to move as well as the direction), we see that we must create this table of operations (PT2) and then apply them to a ciphertext.

Instruction Number	Current State	Read Letter	Write Letter	Direction	Cells to move	New State
1	B	U	N	L	8	A
2	C	U	I	R	10	A
3	B	O	B	R	16	[stop]
4	A	F	L	R	6	B
5	B	G	A	L	10	A
6	C	Z	G	R	11	C
7	B	W	D	L	[1]	C
8	C	P	E	L	5	C
9	C	E	G	R	4	C
10	A	L	R	R	4	A
11	[start]	L	B	R	6	C
12	C	T	R	L	9	A
13	C	J	D	L	5	B
14	A	N	H	L	4	C
15	A	T	S	L	14	B
16	C	V	U	L	7	C
17	A	U	E	R	8	A
18	A	G	Y	R	12	B

The ciphertext is in fact the "unpronounceable" name of the DaphneHQ CEO, **OZLFUWEUVUJPTGTN** (PT3). This is the initial state of the "tape" of our Turing Machine. This is hinted at by the same black cat emoji from Quick Reviews appearing on Émile Baudot's lapel.

Assuming the machine is initialised with no current state ("-") we begin by using the 11th instruction, so we start by reading the letter **L**, writing **B** in its place, moving **R**ight **6** letters, and setting the current state to **C**. Our current state of **C**, combined with the fact we are now on the letter **V**, means we must use the 16th instruction, and replace with the letter **U**, move **L**eft **7** letters, and set the current state to **C**. With the machine state still at **C**, and we are now on the letter **Z**, we use the 6th instruction, and replace with the letter **G**, move **R**ight **11** letters and set machine state to **C**.

An easter egg for programmers appears at this point as the first three letters that are printed are **B-U-G** (PT4)**.**

Continue in this fashion until you reach the state of "**.**" meaning "stop" (PT5). The Turing Machine "tape" will now read **BY BRIDGE UNDER ASH** (PT6). The primary treasure is hidden underneath an ash tree by a bridge.

"Page number" symbols

These are cistercian numerals (CN1). They are spread throughout the magazine. Assembled in standard page order, they make twenty-two numbers (CN2). Using a decoder, we can work out that the first number is (2790 * 000) + 6202 = 2796202, for example.

The full set of 22 numbers is 2796202, 2867275, 3561462, 3427039, 2140892, 3387393, 2607978, 2284899, 2925126, 4054607, 2448666, 3717371, 3987216, 2591929, 4109578, 3169373, 3606546, 3370101, 3340808, 3183359, 2318982, 4194303 (CN3).

The last number is, not coincidentally, the largest number that can be expressed in 22 bits. This is the clue to create another data matrix, from the binary forms of these numbers (CN4).

This encodes the text **vl21** (CN5), meaning "Volume 21" (CN6). This is part of the directions to the book in the Library of Babel which contains directions to the Borges Bonus treasure.

By a staggering coincidence, someone tweeted about Cistercian numerals from the PablosATH account earlier in the year. The setters did not have control of the Twitter account at that time.
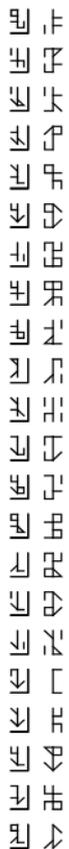
Page 4 - Secret Message Decoder (BASIC program)

This BASIC program can be run in the *jsbeeb* emulator, which is available online at https://bbcmic.ro. This is hinted both in plaintext next to the program, but also if you copy and paste the program into a text editor, you will see some of the letters are in lowercase. These spell **WE RECOMMEND PASTING INTO ONLINE EMULATOR AT BBC MIC DOT RO** (BS1).

This is an important hint, as using the wrong emulator could give the wrong results.

Running this program allows you to decode the long number in the article. If split into groups of 5 numbers, the program prints **HOUSE OF GOD** (BS2). This is designed to be a simple clue for Godstow Abbey (BS3) that is ambiguous but could be used to triangulate with other clues for a "boots on the ground" strategy.

```
5 REM  SECRET MESSAGE DECODER
6 REM  BY DAPHNEHQ
7 REM  (C) COMPUTERING MAGAZINE
10 INPUT "ENTER CODE (e.g. 09402) ",CODE$
20 LET R% = VAL(RIGHT$(CODE$, 2))
25 LET L% = VAL(LEFT$(CODE$, 3))
30 LET SEED = RND(-1)
40 LET SIZE = 100
50 ON ERROR GOTO 120
60 LET D%=RND(SIZE)
65 LET O%=1
70 REPEAT
80 READ WORD$
90 IF L%=D% AND O%=R% THEN P.: P.CHR$141 WORD$: P.CHR$141 WORD$: P.: RESTORE: GOTO 10
95 IF L%=D% THEN  O%=O%+1
100 D%=RND(SIZE)
110 UNTIL FALSE
120 IF ERR=42 THEN RESTORE: GOTO 70

DATA FROM,SOUTHweST,rOOF,BeNcHMARK,GRILLE,CoDE,LION,FIVE,SIZE,SHOP
DATA FIND,GRILLE,COmBINATION,BETWEEN,COmBINe,HAnOI,SEARCH,COMIC
DATA BEFORE,LEFT,CLOTHES,EVEN,MAGIC,WHEAT,OLd,COLOURS,KEY,TURN
DATA FIFTH,A,FOLLOW,FAIL,ON,RETRACE,LEWIS,SHELF,pOSSUM,PaPER
DATA OUT,POTTER,BOTH,WALK,MATRIX,ELIOT,BLUE,ENTER,HEXAGON,BACKWARDs
DATA FOLLOW,FOOD,NAMES,CIPHER,LEtTER,COPY,iSIS,WIGGLE,UP,SEALED
DATA FEEL,STEEP,SMALL,GREAT,CHAPTER,nORTH,COPY,BOTH,SHELF,AND
DATA OF,NAMES,MUSEUM,REUBEN,FOR,STUMP,FIVE,A,OUT,UP,LIgHT,THiRD
DATA SHALL,LOOK,HEXAGOn,CIPHER,X,SEARCH,tHE,PUB,GoD,DATA,FIVE
DATA HoUSE,PACES,IS,DARK,MARKET,RED,THE,SEALED,SOUTH,SECOnD
DATA DOOR,TREASURE,LiOn,ODD,SQUARe,THIRD,SQUARe,DEGREE,mORSE
DATA PRACTICAL,BEGINNING,TREACLE,LETTER,HERRING,THE,BOOK,AT
DATA SAINT,SIGN,WITH,HOLE,WHICH,TEN,CIRCLE,GATE,POST,CODE,IN
DATA BEGINNING,WHEEL,PATH,PAST,uNDER,PATH,TO,SHIFT,GAME,PROCEED
DATA SIGN,MAKE,SQUARED,OF,OF,PROTECTION,REMEMBER,GRIDS,SIGNAl
DATA aLONGSIDE,WORD,FENCE,OUtER,AND,PRoCEED,WINDOW,HOLE,BOOK
DATA THEN,SETS,FISH,PATrON,CaESAR,BEYOND,SCORE,StONE,SOLVE,PASS
DATA STUMP,COURSE,CORNER,IVY,AND,TWENTY,QUADRANT,MARKS,ENCODING
DATA PAD,MARKED,TO,JACK,TELEGRAPH,SEARCH,WHERE,PASS,VIGNERE
DATA FOR,CORNER,JACK,AND,EAST,WITCH,bEARING,DOOR,LOCK,EVERY,LOOK
DATA THE,TRAP,FIRST,bLOcK,SEARCH,WHERE,mETRES,SPELL,MAZE,WEST,PABLO
DATA TRACE,TWELVE,A,OUT,WORD,LOCK,FELiNES,LIBRARY,RIBBON
DATA cIRCLE,NAME,FELINES,THEN,LIETH,A,MUNGOJERRY,HOSTELRY,AT,TOWARdS
DATA HoUSE,FOR,RED,HOStELrY,AT,RoT,HOUSE,LENGTH,COMBINE,BRIDGE
DATA THENCE,LIES,A,THIRD,THREE,IN,TO,WALKS
DATA PUT,I,YOU,IN,A,NEAR,UPRIVER,TO,SPIRAL,BORGES,RAINBOW
DATA LARGE,CAT,TRUNKS,EAST,OUTSIDE,HELP,BUILDING,PACES,SIDE
DATA AERIAL,CLIMB,END,ROSE
```

If the number is entered fully, the program prints POTTER - this is a red herring, as hinted in the adventure game when you try to speak to the hat (it gives you an ironic Harry Potter reference and tells you that you are in the wrong fictional universe).

Some other codes that can be entered into the program are **09402** (the example mentioned in the article) which prints **CAT**, and the dialling code of the DaphneHQ helpline **01606** which prints **WITCH** (BS4), two of the hunt's themes.

Page 5 - Game Walkthrough

Catscan game

The "patron saint" mentioned in the battleships solution is St Frideswide, the patron saint of Oxford. The small cross on the Catscan "game walkthrough" is St Frideswide's Church in Osney, Oxford (CS1). Each of the arrows points to a place on Binsey Lane (CS2) where DaphneHQ team member Paul has photographed cats in the past. Some of the locations should still be recognisable, and you may even have seen some of the cats.

The route takes you up Binsey Lane to Binsey, where The Perch has a NICE PUB GARDEN (see helpline solution). The background map is not relevant.

Brian's Computer Systems

Each price in the peripherals advert is the foundation year of an Oxford college (BCS1). Reading top-to-bottom and left-to-right obtains a message by using the college-to-letter key from the Christmas Quiz (shown here with foundation years). This is hinted at by the "EST. 1980" text in the advert (BCS2).

The item names are from genuine adverts of the time, except one - *The Game of Logic*, a book by Lewis Carroll (BCS3) published in 1886, a key date in the hunt, and known to have been an inspiration for Alan Turing (BCS4) (along with *Alice in Wonderland* and *Through the Looking Glass*).

College	Foundation year	Letter		College	Foundation year	Letter
University College	1249	O		Pembroke College	1624	L
Balliol College	1263	B		Worcester College	1714	O
Merton College	1264	T		Harris Manchester College	1786	H
St Edmund Hall	1278	H		St Catherine's College	1868	A
Hertford College	1282	E		Keble College	1870	K
Exeter College	1314	X		Lady Margaret Hall	1878	Y
Oriel College	1326	R		St Anne's College	1879	E
The Queen's College	1341	Q		Somerville College	1879	V
New College	1379	W		Mansfield College	1886	S
Lincoln College	1427	N		St Hugh's College	1886	O
All-Souls	1438	S		St Peter's College	1929	E
Magdalen College	1458	D		St-Hilda's	1929	D
Brasenose College	1509	A		St-Antony's	1929	T
Corpus Christi College	1517	P		Nuffield College	1937	C
Christ Church	1546	U		Linacre College	1962	I
St John's College	1555	E		St Cross College	1965	L
Trinity College	1555	N		Wolfson College	1966	E
Jesus College	1571	J		Kellogg College	1990	O
Wadham College	1610	A		Green Templeton College	2008	M
Reuben College	1624	O				

The solution is **PUT ARROW MATRIX UNDER WOOD TOY TO MAKE WALK ON LETTER MATRIX AND START MOVES ON DARK BLUE E.** (BCS5)

This hopefully gives enough hints for someone to solve the wooden sliding puzzle.

Page 6 - Arrow advert

This is a parody of a real advert for the PDP/8E computer from Digital Equipment Corporation (DEC), from around 1971 (A1).

The logo, comprising a 4x5 grid of direction arrows, is to be placed underneath the wooden sliding puzzle on page 7 (A2). This is mildly hinted at in the text by *"don't get left behind"*.

There is a published lecture about Alan Turing entitled "Standing on the Shoulders of a Giant" (A3).

Page 7 - Game Reviews 1

Battleship Down!

Really Good Software is a parody of game company names of the time, for example *Superior Software* (BD1).

The four names and corresponding areas of the grid refer to sections of the four Data Matrix codes which must be cut out and joined to form a new Data Matrix (BD2); this is the final clue required to find the book in the Library of Babel for the Borges Bonus treasure. The names refer to two sets of people: first, painters of cats (BD3) Louis Icart, Thomas Eakins, Jean Bernard Duvivier and Tokuhiro Kawai; and second, to the inventors of the encoding systems used for each Data Matrix: **Louis Braille** (BD4), Thomas **(T). S. Eliot** (BD5), **Bernard** of Clairvaux (Cistercians) (BD6), and **Tokuhiro** Tsukiyama (lead name on patent for Run Length Encoding) (BD7).

Each of the dots corresponds with an Oxford College.
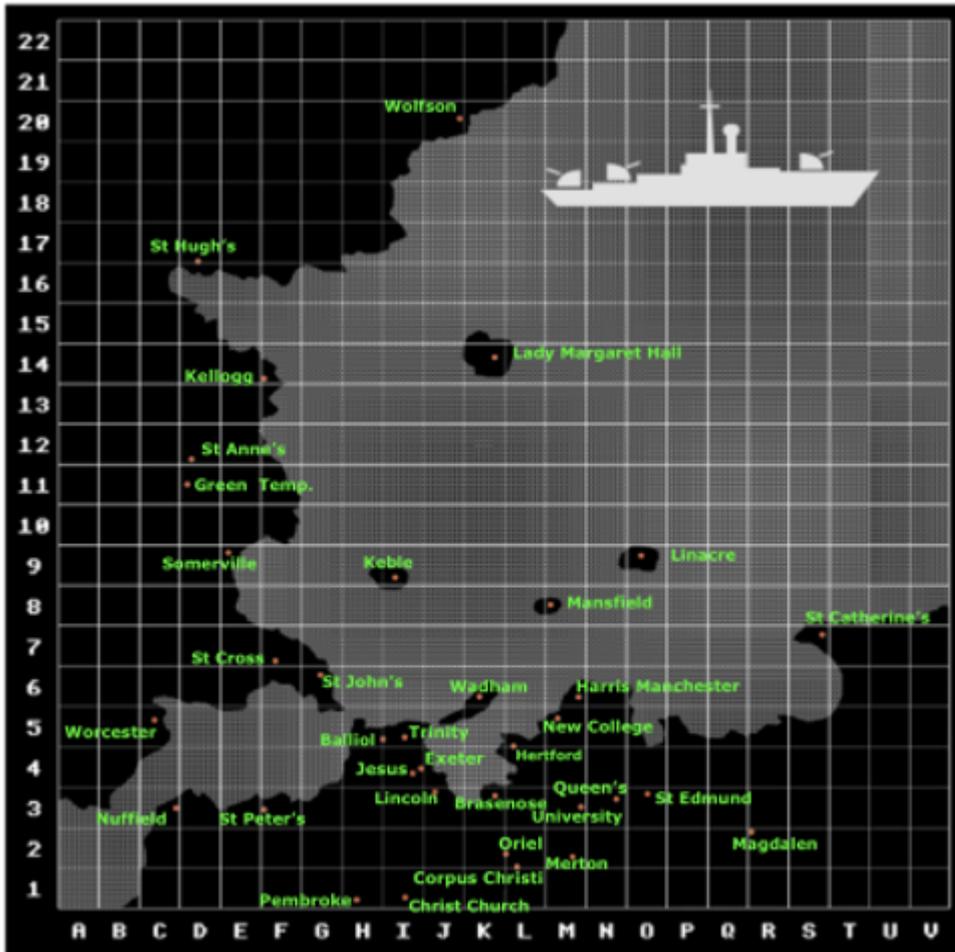
If we read the "winning moves", using the college-to-letter key from the quiz, it spells **MAKE OXON SCARVES WITH HUE TABLE** (BD8).

D11	K3	I9	D12	D16	I4	M3	J3	M8	C3	S7	L2	E9	G6	M8	M5	O9	M2	O3	M6	I1	F3	M2	K6	H5	F7	J20
M	A	K	E	O	X	O	N	S	C	A	R	V	E	S	W	I	T	H	H	U	E	T	A	B	L	E

Actual Reality Games

This is a classic puzzle game, often called "Dad's Puzzler".

The arrow logo from page 6 is placed "underneath" the wood puzzle, with the gap revealing two arrows, and as the puzzle is solved, the arrows that are revealed are noted. Each arrow is a direction and a number of moves, indicated by the number of lines next to the arrow (AR1). So the starting position indicates "South 2, North 3".

These directions and number of moves describes a "walk" around the copy protection grid on page 14 (AR2), beginning on a dark blue "E" (see solution to *Brian's Computer Systems*).

There is more than one solution, particularly around moves 18 - 23, but nearly all of them share the same opening sequence, which when started, should make it clear which walk spells something intelligible.

Arnold Eidus is an anagram of SLIDE AROUND (AR3).

The 27-move solution we used is:

board state	piece to move	directions	letter position	letter
			1	E
1		S2,N3	2,3	A,C
2	5	N3	4	H
3	4	W2	5	P
4	1	E3,N2	6,7	O,I
5	2	E3,W2	8,9	N,T
6	3	S3,S3	10,11	O,N
7	4n	S2	12	T
8	4e	S3	13	H
9	1	N2,W2	14,15	E,B
10	6	S3,N2	16,17	A,T
11	7	S3,W2	18,19	T,L
12	8	W2	20	E
13	9	N2	21	S
14	5	N3,W2	22,23	H,I
15	4	S3	24	P
16	1	W2,N3	25,26	M,A
17	6	N2,W2	27,28	P,I
18	7	S3,N2	29,30	S,A
19	8	S3	31	N
20	9	E3	32	O
21	**4w**	W2	33	X
22	**4s**	S3	34	F
23	8	S3,S3	35,36	O,R
24	7	N2	37	D
25	6	W2	38	C
26	2	E3,N2	39,40	O,L
27	3	E3,W2	41,42	L,E
28	1	S2,N3	43,44	G,E

The walk it describes on the copy protection grid is:
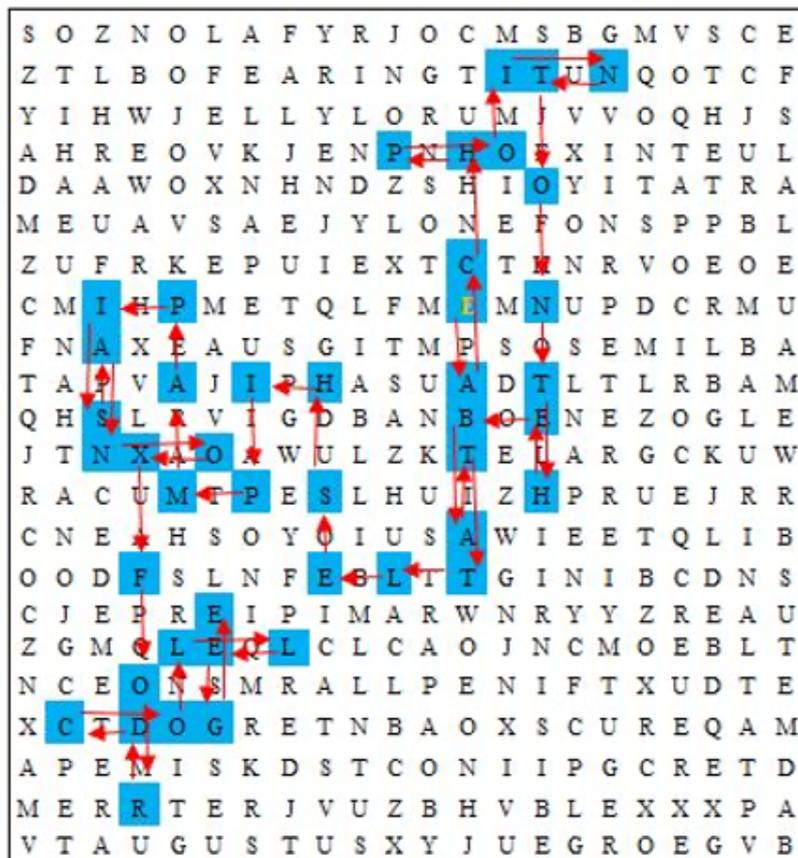
This spells <mark>**EACH POINT ON THE BATTLESHIP MAP IS AN OXFORD COLLEGE**</mark> (AR4).

Page 8 - Game Reviews 2

Dr. Boris

The "cheat codes" are SNOMED codes (GR1). SNOMED is the international standard for describing clinical symptoms, medicines, body locations, and more. There are a few SNOMED browsers online - here's "water" in one of them. The approach is hinted at in the text "*opaque medical terms*". The codes are:

- 276305003 - **preoccupation with ruin** (GR2)
- 257695007 - **rural minor road** (GR3)
- 21481007 - **over** (GR4)
- 11713004 - **water** (GR5)

Mr. Bac^{o}n is a hint that the poster contains a Bacon cipher using raised letters (GR6).

Quick Reviews

Each review corresponds with a named hurricane (GR7). The number of cat icons indicates the storm's CATegory on the Saffir-Simpson scale (GR8), the letter denotes whether it was **A**tlantic, **P**acific or **S**outh **P**acific (GR9), and the date is the date when that storm was classified as that category (GR10). This is hinted at by the cryptic clue "…*mixture of raunchier*…" - RAUNCHIER is an anagram of HURRICANE (GR11). Also "*reviews have been pouring in*" referring to heavy rain (GR12).

Reading the storm names top-to-bottom and left-to-right, they make an acrostic which spells **MATHISON MACHINE** (GR13).

Mathison is Alan Turing's middle name (GR14). This is a clue that the paper tape contains a state table / instructions for a Turing Machine. Alan Turing was the subject of a witch hunt (GR15).

The game names do not relate to the storms but are thematic references:

GR16	*The Vindications*	Reference to the Library of Babel
GR17	*Mamma Mia!*	The film *Mamma Mia 2* was filmed at Godstow Abbey
GR18	*Unrelenting Effort*	Quote from the Library of Babel
GR19	*The Matrix*	Reference to Data Matrix puzzles
GR20	*Spherical Fruits*	Adventure game and Library of Babel reference
GR21	*Humpty Dumpty*	Lewis Carroll reference
GR22	*Verbal Nonsense*	Quote from the Library of Babel
GR23	*Crone Wars*	Reference to witches / Star Wars Clone Wars
GR24	*The Saint*	The film *The Saint* was filmed at The Trout pub in Godstow
GR25	*Flying Aces*	Wolvercote Common was an airfield during WW1 and there is a memorial to an aircrash on the Godstow Road
GR26	*Gone Fishing*	Reference to the fisherpeople who tend to populate the Thames path on the way up to Godstow
GR27	*The Dark Tower*	Game reference
GR28	*Enter The Labyrinth*	Game and Library of Babel reference
GR29	*The Mystic Circle*	Game reference

Page 9 - CATastrophe!, Reader's Cats, Concertronic

CATastrophe!

This is a series of hints for people who were struggling with the game:

- *"Which continent the cats came from"* is a hint that the 6th wall painting in the game is actually *African Cats* - not any of the various specific types of cat (CH1).
- *"Bad … cabbage"* is a reference to the lectern/musical notes puzzle (CH2).
- *"Pop into my head"* is a subtle reference to the Welsh Poppy which was a tricky herb (there were several possible options) (CH3).
- Sentences 2-4 in the last paragraph begin, somewhat clunkily (hopefully noticeably so), with "What", "Three", and "Words" which is a hint to use https://what3words.com for solving two of the Wall Monster's clues (CH4).

Reader's Cats

These are simply Morse code (dots or stripes) - spelling the railway station code for Oxford - **OXF** (RC1).

Concertronic

The concertina - in the shape of a crimson hexagon, hinting at the Borges Library of Babel bonus theme (CT1) - was designed by prolific inventor Charles Wheatsone CT2, who also co-invented the Cooke and Wheatstone Telegraph (CT3). The bars around the advert are the five-needle codes as listed on the Wikipedia page. The missing C is deliberate, as the telegraph code didn't include that letter.

The message spells **TWENTY NINE METERS WITHIN BUKELLS BOUNDS** (CT4).

The ciphertext jumble in the middle uses the Playfair cipher (CT5), also invented by Wheatstone (CT6). Using the key DATAMATRIX (see Sister companies puzzle) gives the message **TRY SEVERAL DIFFERENT SEMA TEXT DECODERS** (CT7), which is an essential hint for decoding the later Data Matrix codes, as testing has shown some decoders don't scan the patterns successfully.

Edith's Ethereal Peripherals

Edith de Launceline was the founder of Godstow Abbey (EEP1), also known as Edith of Winchester. Winchester was also an early manufacturer of hard drives (EEP2).

The strapline "*Working within our limits since 1886*" hints at:
- the year that the Pitt Rivers museum opened (EEP3),
- the year of Buckell's city boundary perambulation (EEP4),
- the year that Lewis Carroll's *The Game of Logic* was published (EEP5),
- and "*limits*" is a reference to the city limits (EEP6).

The photos are of items in the Pitt Rivers Museum collection (EEP7).

Each image is accompanied by a number and some search keywords, to help the determined searcher track down each object. The item number (1-8) and the first paragraph of the description are used to decode the AI Art code on page 3.

	Keywords	Name	Description
EEP8	1. One dark part	Cat from ark (grey) note there's another that matches with almost same text	Dark grey cat figure with black stripes. Part of a Noah's Ark set. One of a pair.
EEP9	2. Used stuck	Object with pins	Object stuck with pins, used in sympathetic magic.
EEP10	3. Holed Stone	Holed stone	Holed stone used as amulet.
EEP11	4. Mass Designs	Witch post	Wooden post carved with designs; a 'witch post' or 'Mass post'.
EEP12	5. One other seated	Cat from ark	Squirrel or seated cat figure from Noah's Ark set. One of a pair.
EEP13	6. Against York	Rowan knot	Rowan tree loop used as prophylactics against witches, Castleton, Grosmont, York
EEP14	7. Stuffed upstairs	Lion	Stuffed toy figure of a kylin, a mythological lion / dragon
EEP15	8. Cork greybeard	Bottle for magic	Frechen stoneware Bartmann (aka 'Bellarmine', 'Greybeard') jug [.1] containing cloth heart stuck with pins [.2] , hair [.3] and a cork stopper [.4] used for magic.

Each item is either associated with witchcraft or cats (EEP16).

DaphneHQ advert ("Which is greater?")

For each of these questions, we assign a 0 if the former is greater, and a 1 of the latter is greater. This gives us a binary number (DHQ1) which when converted to decimal forms the last 3 digits of the hidden phone number (DHQ2), making the full number **01606 663966** (DHQ3).

	Which is larger?	Answer	0 or 1
DHQ4	The population of London OR The number of hairs on an average domestic cat	Hairs on a cat, at 35 million easily larger than the population of London.	1
DHQ5	The cumulative total number of gold medals won in the summer Olympic Games since 1896 OR The number of raindrops that fall on a football pitch in Loughborough in an average minute	Pitch will be hit by approx $1*10^{12}$ raindrops per year, or $1.8*10^5$ per minute. Well over the total of gold medals awarded.	1
DHQ6	The number of chickens that lived in the 20th Century OR the cumulative number of photographs taken since the invention of photography	Photos - top end the number of chickens is 5-10 trillion, photos are 14 trillion and increasing rapidly.	1
DHQ7	The volume of the world's largest oil tanker OR the volume of cups of coffee drunk globally in 2020	Coffee, easily. One trillion cups, 300 billion litres, the tanker is only 500 million litres.	1
DHQ8	The number of people believed to have died as a result of what Popeye did on the 11th of August OR the number of footballers in the UK Premier League	Deaths. The suicide of Robin Williams is believed to have caused an extra 1,800 suicides. Well above the 557 players in the Premier League.	0
DHQ9	The number of people flying during an average second of 2019 OR the population of Reno	Flying - circa 1.25m, pop of Reno is only 500k including metro area. Lots of teams confused "flying" with "taking off".	0
DHQ10	The speed in km per hour of the highest speed achieved on land by any vehicle or the average number of paces walked in a day by an American	10,362 km/h vs circa 4,500 paces. Yes, the fastest vehicle is a sled, not a car! We did hint at this because lots of people were getting it wrong.	0

DHQ11	The cost of the transistors in an iPhone 13 pro Max if each had been bought at 1960, inflation adjusted, prices OR the cost to the USA of the war in Afghanistan	War. Transistors would have cost around $500 billion, the war was more like $2.3 trillion.	1
DHQ12	The percentage of the UK population who died from COVID-19 in January 2022 OR the percentage of the world's population (at that time) that died in the bloodiest single-day battle before 0AD	Approx 0.05% of the global population died in the Battle of Cannae in 212 BC. 8000 COVID deaths in Jan 2022 = 0.012% of the UK population.	1
DHQ13	The number of golf balls you can fit in a recommended-depth Olympic swimming pool OR the population of the UK in 1862	Golf balls - it takes 68 million to fill a pool, population in 1862 was circa 30 million	0

Calling this number gives a recorded message "*Welcome to the Daphne HQ Helpline! Sorry, but our office is currently closed, due to the burdening pace*". Discretionary point awarded if you were brave enough to try calling *any* number (DHQ14). Then a series of numbers are read out in the style of a classic numbers station, which are used to send secret messages (DHQ15). BURDENING PACE is an anagram of **NICE PUB GARDEN** (DHQ16) referring to The Perch at Binsey, which has an exceptional pub garden. The jingle used for the station is the song *Ding Dong the Witch is Dead* (DHQ17).

The numbers are split into groups of 5 and then entered into the BASIC program on page 4.

08301	BLOCK		05603	IN
01003	OUT		07503	GRIDS
07702	LETTER		04601	AND
04204	WALKS		02602	COMBINE
04601	AND		01201	TO
09402	CAT		09602	MAKE
07603	NAMES		01601	GRILLE

BLOCK OUT LETTER WALKS AND CAT NAMES IN GRIDS AND COMBINE TO MAKE GRILLE (DHQ18).

Page 11 - Christmas Fun 1

Word search

The two 22x22 letter grids contain cat names listed in _The Naming of Cats_ by T. S. Elliot (WS1). These are Peter, Augustus, Alonzo, James, Victor, Jonathan, George, Bill Bailey, Plato, Admetus, Electra, Demeter, Munkustrap, Quaxo, Coricopat, Bombalurina, and Jellylorum. In the Word Search letter grid, they are spelled out as follows, left-to-right, top-to-bottom (WS2). The 17 names wrap back round to the beginning.

Note that this is also a Data Matrix, which encodes the clue **p40** (WS3). This refers to "Page 40" (WS4) of the book in the Library of Babel, containing directions to the Borges Bonus treasure.

Rosa's Tech Solutions

This list of prices uses the same college-to-letter method as *Brian's Computer Systems*, but this time the prices represent foundation years of the sister colleges of the corresponding Oxford colleges (RTS1). This gives the message below, which is both a clue that the hunters should be looking for Data Matrix codes (RTS2) *and* functions as the key for the playfair cipher in the Concertina puzzle (RTS3).

DATA MATRIX IS THE KEY (RTS4)

The very long string of characters in the *Rosa Tech* logo is the hexagon code for the book in the Library of Babel with directions to the Borges Bonus treasure (RTS5), but with five missing characters at the start, denoted by underscores (RTS6). They appear in a *crimson hexagon* - a reference to the Library of Babel (RTS7).

Rosa is a reference to Rosamund Clifford (RTS8).

Page 12 - Christmas Fun 2

Christmas Quiz

These questions reveal a set of 39 colleges of the University of Oxford (Q01) - all thematically linked to lions/cats, witches, and wardrobes (Q02). The number next to each question indicates the letter to take from each college name, including spaces (Q03). This acrostic spells out the solution - the traditional Christmas message - ENJOY XMAS CAKE BLOWOUT LOVE DAPHNEHQ EDITORS (Q00). The college-to-letter mapping also forms the basis of several other puzzles.

Code	Index	Question	Answer		Theme	Notes
Q04	6	*Where is a boulder covering someone who was once a sack?*	St Anne's College	E	Witch	Meg Hilton (real name Margery Hilton, d. 1705) , the Fylde Witch, is said to be buried in a vertical position under a boulder at St Anne's Church, Woodplumpton.
Q05	3	*Under where were the remains of a brazen wizard kept in times past?*	Lincoln College	N	Witch	The Bishop of Lincoln was said to have constructed "an hed of bras to... make it for to telle of suche thinges as befelle" over the course of seven years but then lost it through 30 seconds' neglect. Its relics were supposedly held in a vault under Lincoln College. Roger Bacon (a.k.a. Doctor Mirabilis) was his disciple. The head they made supposedly said "Time is, Time was, Time is past".

Q06	1	*David's root*	Jesus College	J	Lion	Refers to Jesus: "Do not weep. See, the Lion of the tribe of Judah, the Root of David, has conquered, so that he can open the scroll and its seven seals." - Revelation 5:5
Q07	8	*It has tekhelet in its arms*	Reuben College	O	Witch	*Tekhelet* blue is a colour in Reuben College's coat of arms. It's mentioned in the Tanakh and used in Jewish tradition; notably, for our theme, it is considered effective against the evil eye in Jewish / Kabbalistic tradition .
Q08	4	*Where does Isambard lend books?*	Lady Margaret Hall	Y	Cat	Isambard, the Librarian's Cat at this college, is a hypoallergenic Siberian forest cat.
Q09	2	*Maud and Alice were first; Alice was the last. Where?*	Exeter College	X	Witch	This is the city of Exeter. It is possible that Maud Park and Alice Mead, convicted at the Borough Sessions at Exeter Guildhall in 1566, were amongst the very first people in England to be hanged for witchcraft, although no record of their execution survives. Alice Molland (d.1684) is thought to be the last. There is a plaque to her in Exeter, "in the hope of an end to persecution & intolerance"
Q10	8	*The home of the chaser whose followers won 110-60**	Green Templeton College	M	Witch	The inaugural British Quidditch Cup was won by Oxford's first team, the Radcliffe Chimeras in 2013, captained by chaser Ash Cooper of Green Templeton.
Q11	3	*Where did the city arms become a doorway for the star of the sea?*	Brasenose College	A	Wardrobe/ C. S. Lewis	City Arms was a pub on St Mary's Passage that became St Mary's Entrance. Our Lady, *Star of the Sea* is an ancient title for the Virgin Mary. The door is said by tour guides to have inspired C. S. Lewis.
Q12	4	*In which SCR hangs the image of the man who only got seven years in exchange for his soul?*	Mansfield College	S	Witch	Before the Battle of Worcester, Cromwell sold his soul to the Devil for seven years ("only" because he had *asked* for fourteen). His portrait hangs in this nonconformist college.
Q13	9	*Nearest to where a saucy bookseller lit a jinxed candle*	Nuffield College	C	Witch	At least 300 people are thought to have died at the "Black Assize of Oxford" in 1577. Presumably an epidemic, but according to local myth, it was the result of a curse from a bookseller who was a prisoner there. This took place at Oxford Castle - Nuffield is the nearest college to that location.
Q14	2	*Home of the welfare cat who was a dog*	Wadham College	A	Lion	In 2016, Wadham College referred to their welfare dog, Maisie, as a welfare "cat" due to dogs not being allowed in the college.
Q15	1	*Where Clive shared a room with Paddy*	Keble College	K	C. S. Lewis	C. S. Lewis was billeted with "Paddy" Moore during officer's training in 1917.

Q16	4	*Where can you make a handkerchief disappear by running round it thrice?*	St Peter's College	E	Witch	The Witch's Stone at St Peter's church is a fallen 14th century gravestone, with this tradition attached.
Q17	1	*Where can you find the ant-like first edition of the first book to be primarily about women?*	Balliol College	B	Witch	This college holds a first edition of *Formicarius* dating to 1473 - the first book where modern ideas of a witch as an uneducated female in thrall to the Devil appeared. It uses an ant colony as a model of a well-structured Christian society.
Q18	11	*Where might one invoke but not elect the wearer of a martlet?*	Pembroke College	L	Magic	A ghost sighting at Pembroke led to the debating society "interviewing" the ghost and considering electing him as a member. The interview included references to a "martlet scarf" (martlets being included in the Pembroke coat of arms).
Q19	12	*Where hotfoot had a meeting with a maker of fake horoscopes in 1964*	University College	O	Witch	Sybil Leek (1917–1982) was something of a celebrity witch in the 1960s and 1970s. The Witchcraft Act was only repealed in 1951 and she was one of the first to "come out". During WWII she made fake horoscopes as propaganda for German audiences. She visited University College for a witchcraft conference in 1964 with her jackdaw, Hotfoot Jackson.
Q20	3	*Where was a dragon turned into a hob?*	New College	W	Magic	In *Harry Potter and the Goblet of Fire,* Draco Malfoy was turned into a ferret by Mad Eye Moody in a scene filmed in New College quad.
Q21	2	*Where a cipher was found describing a Protector who spoke of Piedmont and Poland*	Worcester College	O	Wardrobe	Refers to "some stuff in a cupboard in Worcester" - contemporaneous notebooks about the Civil War, written in a "cipher" (actually shorthand) that was only decoded in the 1970s. It included an account of the death of Cromwell, who supposedly cried out "what will they do with the poor Protestants in Piedmont, in Poland and others places?"
Q22	9	*In which meadow did the devil talk to a youth who was pretending?*	Christ Church	U	Witch	In 1318, John Deydras walked across Christ Church Meadow with his pet cat who he said was in fact the devil in disguise who led him astray. He claimed the throne of England as his own. Deydras and his cat were both executed.
Q23	4	*The workplace of an astronomer and a chaplain accused of treason*	Merton College	T	Witch	John Stacey and Thomas Blake, fellows of Merton, were supposed to have attempted to use black magic to kill the king.

Q24	10	*Where the owner of a mirror hoped to await the secret arrival of special men*	St Cross College	L	Witch	Scientist and occultist John Dee used an obsidian mirror (on display at the British Museum) to commune with ghosts. He prized being Master at St Cross, as it was a "commodious place for the secret arrival of special men".
Q25	9	*Whose first principal might have seen a sombrero in France?*	St Hugh's College	O	Magic	A reference to the Moberly–Jourdain incident. Charlotte Moberly, the first principal of St Hugh's wrote a well-known account of a visit to Versaille, where she saw ghosts, including Marie Antoinette, and someone in a sombrero.
Q26	6	*Centaurs were found on the staff of a major son of which lady of clairvoyance?*	Somerville College	V	Witch	Refers to Major Thomas Weir, executed for being a warlock in 1670. He's an interesting case of someone actually *claiming* to be a witch/warlock, unrepentantly, right up to his death.
Q27	12	*Whose employee may have inspired Macbeth?*	St John's College	E	Witch	On a visit to Oxford in 1605, James I enjoyed a performance in front of St John's College in which three "sibyls" recalled a prophecy predicting James' glorious rule. The sibyls have been mooted as the inspiration for the witches in Macbeth.
Q28	4	*Nothing will happen when the king breathes on the inspirational statues here*	Magdalen College	D	Wardrobe	The cloisters at Magdalen have animal statues which are supposed (largely by tour guides) to be the inspiration for C S Lewis to describe Aslan breathing statues back to life in *The Lion, The Witch, and The Wardrobe.*
Q29	4	*Cats?*	St Catherine's College	A	Lion	St Catherine's is colloquially known as "Catz".
Q30	4	*Where Liz hid Jim in 1667, and they both remain*	Corpus Christi College	P	Wardrobe / ghosts	Elizabeth Spencer accidentally killed her lover James Betts by locking him in a cupboard at Corpus Christi (Cambridge). They are now ghosts.
Q31	1	*Where did the first sorting ceremony happen?*	Harris Manchester College	H	Witch	This was arranged by the university Harry Potter Society.
Q32	4	*I can see spirits coming up the stairs like bees. Where am I?*	Trinity College	N	Witch	Mathematician Thomas Allen was widely considered to be a magician, a reputation he encouraged through saying things like this. He was a fellow at Trinity; although the quote may *actually* date from when he was at Gloucester Hall.
Q33	12	*Who judged Duyvel-Landt a great success?*	Wolfson College	E	Witch	Refers to the Wolfson History Prize, awarded in 2022 for '*Devil-Land: England Under Siege, 1588-1688*'. Devil-Land's title derives from the nickname '*Duyvel-Landt*', coined by an anonymous Dutch pamphleteer in 1652.

Q34	9	*Whose scholars tied an unfortunate cat to an unfortunate bull?*	St Edmund Hall[6]	H	Lion	Refers to an incident of 1727 when a fight broke out between town and gown, resulting in a mob of students smashing up Headington.
Q35	4	*It was about 700 deben. Where was it found?*	The Queen's College	Q	Wardrobe	In a papyrus owned by Queen's College, Amenemope is sentenced to pay Ihy the enormous amount of 700 deben of silver. A web page no longer on the internet explains this was found in a cupboard (wardrobe) in 1997.
Q36	2	*Where was the last gas light between?*	Hertford College	E	Lamp post (L,W& W)	The last gas light in Oxford was turned off in 1979 in New College Lane. Looking at old photos, we place it at this location, which is between the New and Old Buildings of Hertford.
Q37	6	*Where you might find a teabag?*	St-Hilda's	D	Lion	Teabag is one of the college cats
Q38	2	*Where did the ghost in the machine guy leave his books?*	Linacre College	I	Witchy ghosty	Philosopher Gilbert Ryle gave his books to Linacre to help establish its library. He coined the phrase "ghost in the machine".
Q39	2	*He may have ignited a dancing frenzy*	St-Antony's	T	Magic	"St Anthony's Fire" is a name for ergotism; one supposed cause of the 14th and 17th centuries dancing manias.
Q40	5	*Elmo the Elephant was beaten by whose furry friend?*	Kellogg College	O	Feline	Tony the Tiger, a trademark mascot for Kellogg's Frosties. Elmo was an alternative mascot for Frosties, beaten by Tony in a public vote in 1952.
Q41	2	*The passerine home of John, who was sceptical that anyone can transform men and women into cats*	Oriel College	R	Witch	John Wagstaffe, was one of the first writers to label witchcraft accusations as "ridiculously absurd". He matriculated at Oriel, which was named for its first building, La Oriole; orioles are in the passerine order of birds.
Q42	4	*Which series started with object 782?*	All-Souls	S	Witch	"A Discovery of Witches" is the first instalment in the All Souls trilogy by American scholar Deborah Harkness. It's set in Oxford, and begins with the activation of the protagonists powers when she touches a book indexed as Ashmole 782.

Black & white numbers

This is a run-length encoding (RLE) (BW1), i.e. 23 means "two white squares, three black squares". It gives the following Data Matrix when run into a 22x22 grid.

This encodes the text **sh1** (BW2), meaning "Shelf 1" (BW3), the location of the book in the Library of Babel with directions to the Borges Bonus treasure.

Page 13 - Christmas Crossword

Crossword

Note: there are some missing codes here. These correspond to solutions we included in error in an earlier version of the solution, and are indicated by strikethrough text in the marking sheet.

Code	Question	Answer	Letters	Source
X01	What cats would you only want to raise for 6 years and 364 days?	**Bakeneko**	8	https://en.wikipedia.org/wiki/Bakeneko
X02	What would the Dutch throw, instead of a cat, to cause chaos?	**Bat**	3	https://en.wikipedia.org/wiki/Throw_the_cat_among_the_pigeons
X03	What facial features would Egyptians remove upon the death of their cat?	**Eyebrows**	8	https://www.studio16salonspa.com/beauty-blog/blame-your-cat-for-our-eyebrow-obsession-the-history-of-the-eyebrow
X04	What is the name of the vampire cat that has a particular fondness for babies?	**El Broosha**	2,7	https://www.vetstreet.com/our-pet-experts/cats-throughout-history-tales-of-good-bad-and-just-plain-kooky-feline-legends
X05	What was the name of the man who sought to defeat his enemies with rocket-power cats?	**Franz Helm of Cologne**	5,4,2,7	https://en.wikipedia.org/wiki/Franz_Helm#'Rocket_cat'
X06	What can't cats taste? (sweet)	**Sweet**	5	https://www.npr.org/2005/07/25/4766556/cats-cant-taste-sweetness-study-finds
X07	What would resurrect a cat that lost its life due to its inquisitive nature?	**Satisfaction**	12	https://en.wikipedia.org/wiki/Curiosity_killed_the_cat#%22…but_satisfaction_brought_it_back%22
X08	What parasite do you probably share with cats?	**Toxoplasma gondii**	10,5	https://en.wikipedia.org/wiki/Toxoplasma_gondii
X09	What colour were the original cat's pyjamas ?	**Yellow**	6	https://en.wiktionary.org/wiki/cat%27s_pyjamas
X12	Where does a cat stalk the land at Christmas eating people?	**Iceland**	7	https://en.wikipedia.org/wiki/Icelandic_Christmas_folklore#Yule_Cat
X13	Where did a Russian Queen source her cats from?	**Kazan**	5	https://en.wikipedia.org/wiki/Hermitage_cats#History
X14	Where did 180,000 cats arrive by ship in 1890?	**Liverpool**	9	https://www.liverpoolmuseums.org.uk/stories/mummy-cats-tale
X15	Where did Silky arrive, after an incredible journey?	**Melbourne**	9	https://www.pets4homes.co.uk/pet-advice/10-amazing-cats-that-travelled-vast-distances-to-be-with-their-owners.html

X16	Where is a prophetic cat (who won a great victory in 2013) now to be found?	Newport News	7,4	https://en.wikipedia.org/wiki/Oracle_Team_USA_17
X17	Where was a cat mayor for 20 years?	Talkeenta	9	https://en.wikipedia.org/wiki/Stubbs_(cat)
X18	Where did a $20m cat fail in its first mission?	Washington DC	10,1,1,	https://en.wikipedia.org/wiki/Acoustic_Kitty
X19	Where is " Kattenstoet" held?	Ypres	5	https://en.wikipedia.org/wiki/Kattenstoet
X20	Which creamy word describes a group of cats?	Clowder	7	https://www.thefreedictionary.com/A-clowder-of-cats-30-fancy-names-for-animal-groups.htm
X21	What is the full name of the cat who had the longest tail in the world as of September 2016	Cygnus Regulus Powers	6,7,6	https://www.guinnessworldrecords.com/news/2017/12/cygnus-and-arcturus-tallest-cat-and-kitty-with-the-longest-tail-have-died-during-502383
X22	Which cat was the first in space?	Félicette	9	https://en.wikipedia.org/wiki/Félicette
X23	Which leader had a cat named after an article of clothing?	Clinton	7	https://en.wikipedia.org/wiki/Socks_(cat)
X24	Which cat found food in the ruins of Sevastopol	Crimean Tom	7,3	https://en.wikipedia.org/wiki/Crimean_Tom
X25	Which cat was said to be smarter than an entire presidential cabinet?	Dixie	5	http://frontpagemeews.com/category/pet-news/history/great-cats-history-part-1/
X26	Which cat got 7,319 votes in 2012?	Hank	4	https://en.wikipedia.org/wiki/Hank_the_Cat
X27	Which emperor had suits of clothing made for his cat and her kittens (and got a wet-nurse to look after them)?	Emperor Ichijo	7,6	https://www.thegreatcat.org/history-of-the-cat-in-the-dark-ages-part-10/
X28	Which cat steals corpses to eat them?	Kasha	5	https://en.wikipedia.org/wiki/Kasha_(folklore)
X29	Which king danced in front of a bonfire of cats?	Louis XIV	5	https://en.wikipedia.org/wiki/Cat-burning#Descriptions
X30	Which egyptian god protected the pharaohs against poisonous animals such as snakes and scorpions?	Mafdet	6	https://en.wikipedia.org/wiki/Mafdet
X31	Which in which battle was a defensive line of cats used to defeat the enemy?	Battle of Pelusium in 525 BC	8	https://en.wikipedia.org/wiki/Battle_of_Pelusium#Herodotus_on_the_battle
X32	Which cat is ATU545B?	Puss in Boots	4,2,5	https://en.wikipedia.org/wiki/Puss_in_Boots
X33	Which island has a population of cats	Tashirojima	11	https://www.japan-guide.com/e/e5

	that out-numbers people almost 4:1			031.html
X34	Which cat kept letters free of mouse attack for 14 years	**Tibs the Great**	4,3,5	https://en.wikipedia.org/wiki/Tibs_t he_Great
X35	Which city was set ablaze by 1,000 flaming cats?	**Volohai**	7	https://www.ft.com/content/7408 cc02-7004-11e9-bf5c-6eeb83756 6c5
X36	Which president had a bird-like cat?	**Wilson**	6	https://www.presidentialpetmuseu m.com/woodrow-wilsons-puffins-c at/
X37	Which prime minister thought that his cat was so brave he named him after an admiral?	**Churchill**	9	https://en.wikipedia.org/wiki/Nelso n_(cat)
X38	Who feeds Roman cats?	**le gattare**	2,7	https://italybeyondtheobvious.com /le-gattare-italys-caretakers-of-str ay-cats/
X39	Who first described meteorological cats?	**Henry Vaughn**	**5,7**	https://www.loc.gov/everyday-mys teries/meteorology-climatology/ite m/what-is-the-origin-of-the-phrase -its-raining-cats-and-dogs/
X40	What was the first name of the first person to not have a cat in hell's chance?	**John Billingsgate**	4,12	https://windowthroughtime.wordpr ess.com/tag/as-much-chance-as- a-cat-in-hell-without-claws/
X42	Who didn't (despite musical claims to the contrary) name a cat after the Secretary of the Treasury	**Martha Washington**	6,10	https://discoveringhamilton.com/al exander-hamilton-tomcat-fully-refu ted/
X43	Who was given a cat made from a handful of smoke?	**Rostam**	6	https://www.quora.com/Is-it-true-th at-there-exists-a-cat-creation-stor y-about-a-magician-who-created-c ats-for-the-hero-Rostam-after-he- saved-him/answer/Kim-Lloyd-4
X44	Who first defined space in terms of a cat?	**Richard Kephale**	7,7	https://wordhistories.net/2017/05/ 09/no-room-to-swing-a-cat/
X45	Who ordered the killing of the carpenter's cat?	**Shackleton**	10	https://en.wikipedia.org/wiki/Mrs _Chippy
X47	Who was Ta-miu buried with?	**Thurmose**	8	https://en.wikipedia.org/wiki/Thut mose_(prince
X48	Who confessed that a man accompanied by a red and black cat instructed her to hurt children?	**Tituba**	6	https://allthatsinteresting.com/titub a
X49	Who owned a cat that was 5 sun long and 6 sun high?	**Emperor Uda**	7,3	https://historical-nonfiction.tumblr. com/post/632352629242183681/t he-first-japanese-cats-may-have-b een-royal

X52 The exact crossword layout:
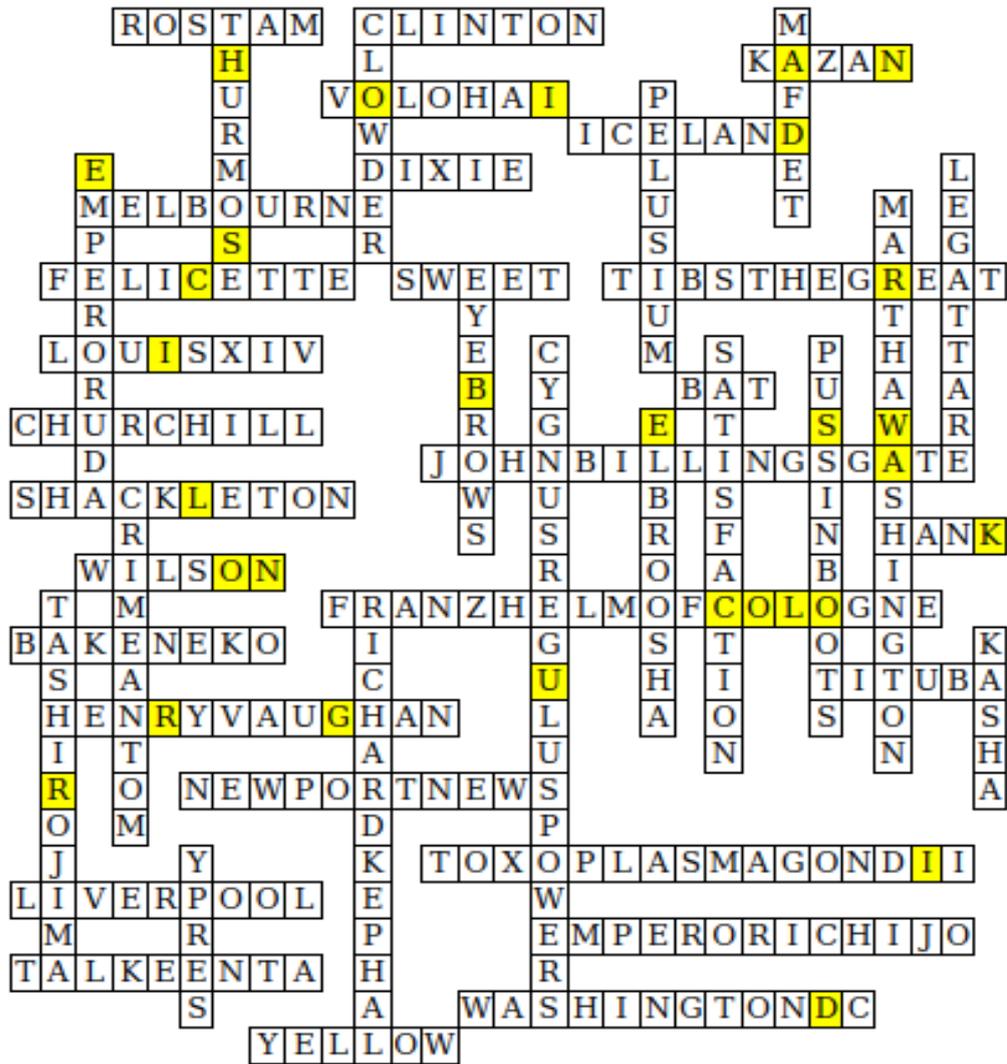
The answers to the questions fit into the "crossword" grid as follows; the letters highlighted in yellow spell **HANOI DESCRIBES WALK ON COLOUR GRID (X53)**. This provides a clue as to how to solve the Towers of Hanoi puzzle.

Page 14 - Copy protection grid

College scarves

"*Hue table*" from the Battleships solution refers to the "copy protection card" whose cell colours correspond with Oxford college scarves (CP1). Use each college scarf (as illustrated in Wikipedia) to obtain a letter from the christmas quiz college-to-letter mapping (CP2), to spell a message.

College		Letter
All Souls College	undefined	S
Balliol College		B
Brasenose College		A
Christ Church		U
Corpus Christi College		P
Exeter College		X
Green Templeton College		M
Harris Manchester College		H
Hertford College		E
Jesus College		J
Keble College		K
Kellogg College		O
Lady Margaret Hall		Y
Linacre College		I
Lincoln College		N
Magdalen College		D
Mansfield College		S
Merton College		T
New College		W
Nuffield College		C
Oriel College		R
Pembroke College		L
Queen's College		Q
St Anne's College		E
St Antony's College		T
St Catherine's College		A
St Cross College		L
St Edmund Hall		H
St Hilda's College		D
St Hugh's College		O
St John's College		E
St Peter's College		E
Somerville College		V
Trinity College		N
University College		O
Wadham College		A
Wolfson College		E
Worcester College		O
Reuben College		O
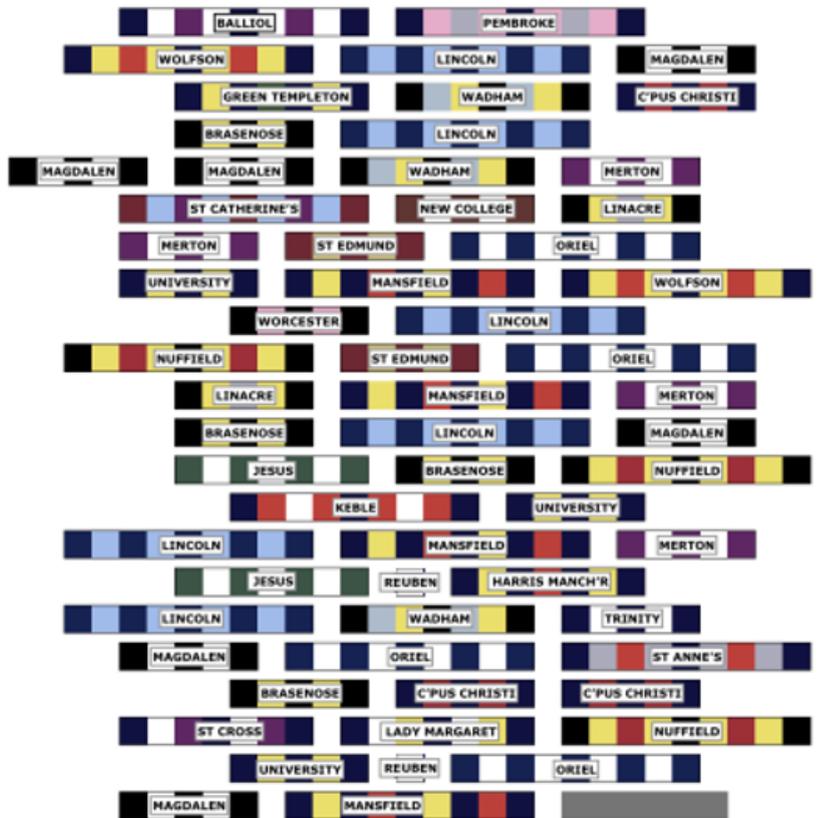
BLEND MAP AND DATA WITH ROSE ON CHRIST AND JACK ON ST JOHN AND REAPPLY COORDS (CP3).

Overlay Battleships and BASIC program

The previous clue hints to align the red dots from the battleships map with the DATA word list in the BASIC program, and read off the words associated with the same coordinates as previously (associating each coordinate/college with a *word*, rather than a letter). There are a few variations on exactly how to align and resize the pixels, but only one way that produces an intelligible message.

Also, Jack and Rose are the main characters in the film Titanic - a film about sinking ships (CP4).

```
95 IF L%=D% THEN O%=O%+1
100 D%=RND(SIZE)
110 UNTIL FALSE
120 IF ERR=42 THEN RESTORE: GOTO 70
DATA FROM,SOUTHWEST,ROC27BENCHMARK,GRILLE,CODE,LION,FIVE,SIZE,SHOP
DATA FIND,GRILLE,COMBINATION,BETWEEN,COMBINE,HANOI,SEARCH,COMIC
DATA BEFORE,LEFT,CLOTHES,EVEN,MAGIC,WHEAT,OLD,COLOURS,KEY,TURN
DATA FIFTH,A,FOLLOW,FAIL,ON,RETRACE,LEWIS,SHELF,POSSUM,PAPER
DATA OUT,POTTER,BOTH,WALK,MATRIX,ELIOT,BLUE,ENTER,HEXAGON,BACKWARDS
DATA 5FOLLOW,FOOD,NAMES,CIPHER,LETTER,COPY,ISIS,WIGGLE,UP,SEALED
DATA FEEL,STEEP,SMALL,GREAT,CHAPTER,NORTH,COPY,BOTH,SHELF,AND
DATA OF,NAMES,MUSEUM,REUBEN,FOR,STUMP,FIVE,A,OUT,UP,LIGHT,THIRD
DATA SHALL,LOOK,HEXAGON,CIPHER,X,SEARCH,THE,PUB,GOD,DATA,FIVE
DATA HOUSE,PACES,IS,DARK,MARKET,RED,THE,SEALED,SOUTH,SECOND
DATA DOOR,TREASURE,LION,ODD,SQUARE,THIRD,SQUARE,DEGREE,MORSE
DATA PRACTICAL,BEGINNING,TREACLE,LETTER,HERRING,THE,BOOK,AT
DATA 4SAINT,SIGN,WITH,HOLE,WHICH,TEN,CIRCLE,GATE,POST,CODE,IN
DATA 1BEGINNING,WHEEL,PATH,PAST,UNDER,PATH,TO,SHIFT,GAME,PROCEED
DATA SIGN,MAKE,SQUARED,OF,OF,PROTECTION,REMEMBER,GRIDS,SIGNAL
DATA 13ALONGSIDE,WORD,FENCE,OUTER,AN17PROCEED,WINDOW,HOLE,BOOK
DATA THEN,SETS,FIS3PATRON,CAESAR,BEYOND,SCORE,STONE,SOLVE,PASS
DATA STUMP,COURSE,CORNER,9,15AND,TWENTY,QUADRANT,MARKS,ENCODING
DATA PAD,MARKED,TO,JACK,TELEGRAPH,SEARCH,WHEF11PASS,VIGNERE
DATA FC26CORNER,JACK14ND,EAST,WITCH,BEARING,DOOR,LOCK,EVERY,LOOK
DATA THE,TRAP,FIRST,BLOC24SEARCH,4HERE,20TRES,SPELL,MAZE,WEST,PABLO
DATA TRACE,TWELVE25OUT,WOF16LOCK,FELINES,LIBRARY,RIBBON
DATA CIRCLE,NAMI6FELINES,THEN,LIETH,A,MUNGOJERRY,HOSTELRY,AT,TOWARDS
DATA HOUSE,FOR,REI8HOSTELRY,AT,2O7HOUSE,LENGTH,COMBINE,BRIDGE
DATA 10THENCE,LIES22THIRD,THREE,I19TO,WALKS
DATA PUT,I,YOU,IN,A,NEF12UPRIVER,TO18/23AL,BORGES,RAINBOW
DATA LARGE,CAT,TRUNKS,EAST,OUTSIDE,HELP,BUILDING,PACES,SIDE
DATA AERIAL,CLIMB,EN21ROSE
  A  B  C  D  E  F  G  H  I  J  K  L  M  N  O  P  Q  R  S  T  U  V
```

The colleges corresponding with the previous message (MAKE OXON SCARVES WITH HUE TABLE) now spell: **BEGINNING AT PATRON SAINT FOLLOW FELINES TO HOSTELRY AND THENCE PASS UPRIVER ALONGSIDE JACK AND LOCK PROCEED TO HOUSE WHERE ROSE LIES TO SEARCH OUT CORNER BENCHMARK** (CP5).

This is the first part of the "benchmark route" to the primary treasure.

CP6	The patron saint of Oxford is St Frideswide - referring to [St Frideswide's Church in Osney]().
CP7	The felines are the cats shown along Binsey Lane in the *Catscan* article.
CP8	The hostelry is The Perch at Binsey.
CP9	Jack refers to Black Jack's Hole on the River Thames.
CP10	Rose refers to [Rosamund Clifford]().
CP11	House refers to Godstow Abbey.
CP12	Corner Benchmark is the benchmark on the corner of the abbey, as you can find out from certain old maps or the glorious [Benchmarks Database]().

This is a two part clue - the second part is required in order to precisely locate the treasure.

Grille

The cat names from T. S. Eliot's *The Naming of Cats* can also be found in the copy protection grid (CP13).

We now follow the instructions from the DaphneHQ helpline solution - BLOCK OUT LETTER WALKS AND CAT NAMES IN GRIDS AND COMBINE TO MAKE GRILLE.

We combine the cat names from both grids, the sliding puzzle moves, and the Tower of Hanoi moves (solution letters only). Points for identifying each of the four grids as a grille component:

Cat names in copy protection grid (CP14)	
Cat names in word search (CP15)	
Silding puzzle moves (CP16)	
Towers of Hanoi puzzle moves (CP17)	
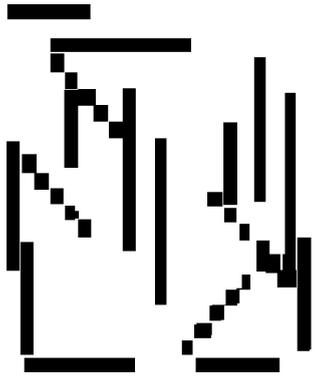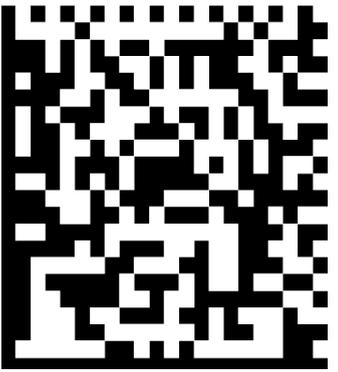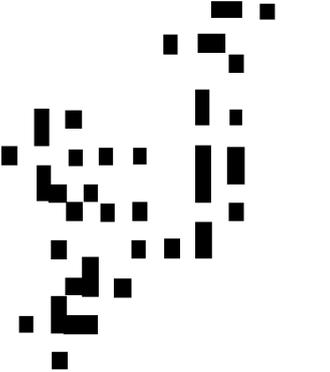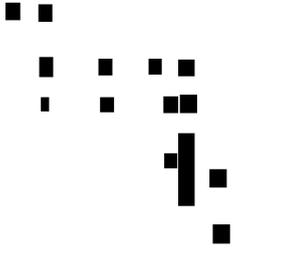
If we combine all of these we get a grille we can apply to the copy protection grid:
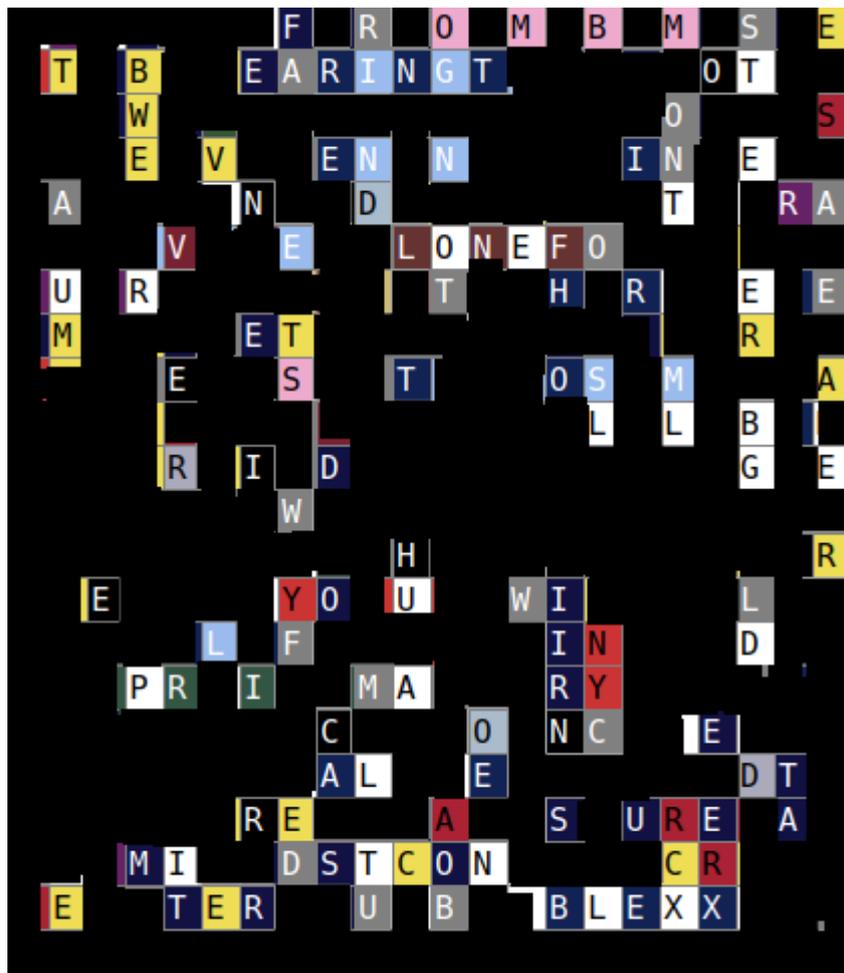
This will lead you from the benchmark on the corner of the abbey to a small bridge underneath an ash tree, where the treasure is hidden in a fake rock in some concrete rubble.

Borges Bonus Treasure

There are plenty of clues throughout the document hinting at a short story by Jorge Luis Borges called *The Library of Babel*, about an almost-infinite labyrinthine library that holds every possible book of a certain size and alphabet. There is also an ingenious online implementation of it (BB1).

The library is divided into hexagon-shaped rooms, each with walls of shelves containing books. We can find a specific page in a book by knowing its **hexagon** (in the online implementation we used, a very long base-36 number); and **wall**, **shelf**, **volume** and **page** number.

The four Data Matrix codes mentioned so far provide the wall, shelf, volume and page numbers.

If we take subsections of each of these four Data Matrix codes, specified by the areas given in the Battleships article, we get the following four pieces (BB2).

T.S. Eliot C15:H20

Louis Braille O15:T20

Tokuhiro Tsukiyama C3:H8

Bernard of Clairvaux O3:T8
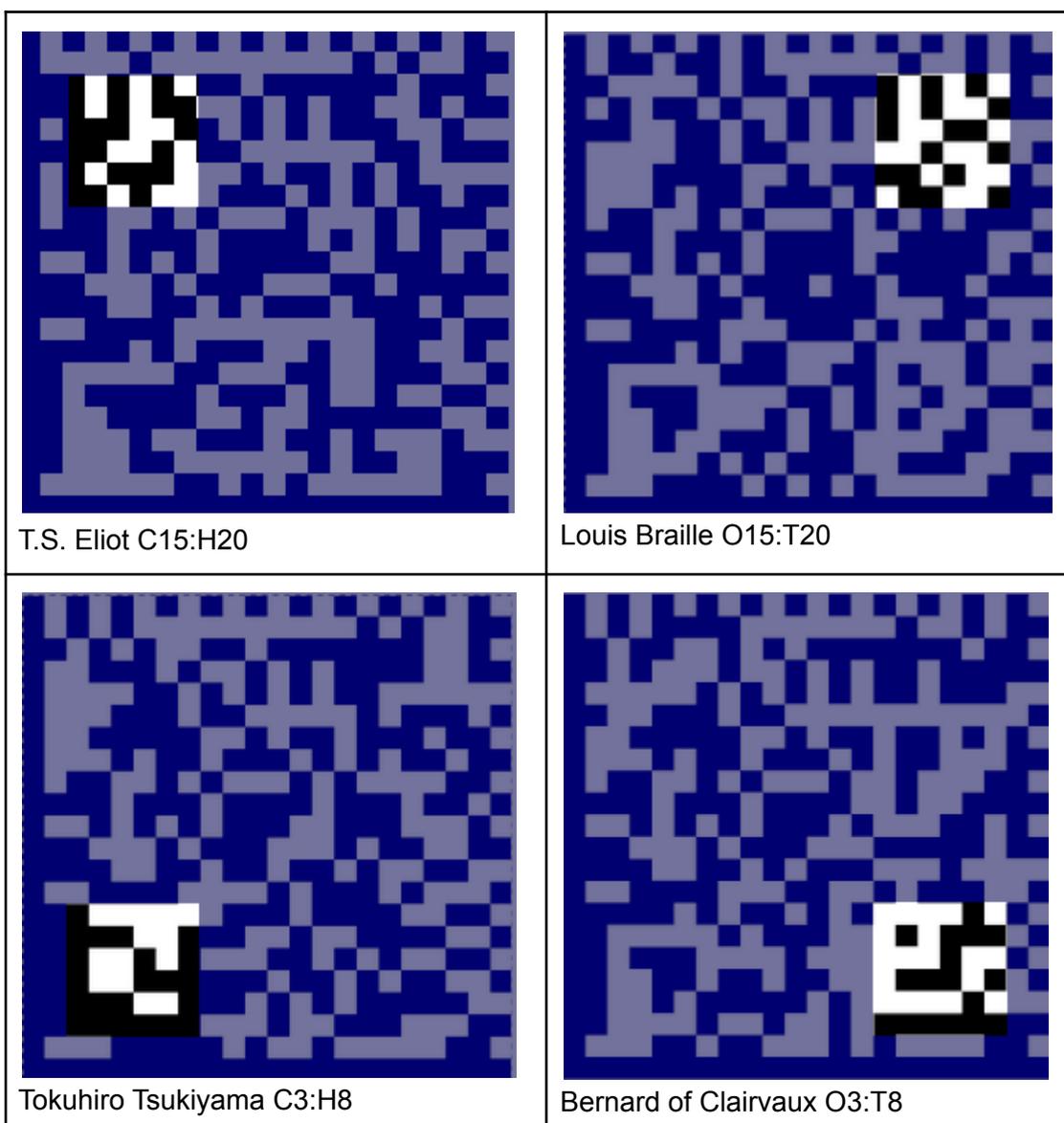
It is also possible to ascertain that there is additional hidden data in the matrices by re-encoding the text and comparing the resulting matrix (BB3). If we assemble these deformed areas, and scan the resulting Data Matrix, we get the five missing characters at the start of the hexagon room code - **0s2kd** (BB4).

We now have all 5 things we need to locate a page in the Library of Babel website. You can browse it here, although note that the website is often very slow. In the specified hexagon, on wall 2, shelf 1, locate volume 21 and turn to page 40, and you will find the final message to lead you to the Borges Bonus treasure.

NOW FOLLOW BOUNDARY NORTH TO BUCKELLS METAL MEMORIAL AND LOCATE BONUS TREASURE IN CREVICE OF IVY COVERED TREE ON OTHER SIDE OF PATH. (BB5).

Library of Babel hints

The hunt contains many hints pointing to Borges' *Library of Babel*. Points for noticing these are awarded elsewhere.:

- *Crimson Hexagons* appear throughout (Rosa Tech logo, Concertina, hidden library room in adventure game).
- The cave maze layout in the adventure game spells BORGES. Borges designed a real maze that contains his name hidden in the layout.
- *Spherical Fruits* in the adventure game maze - these are the "lamps" that light up the library.
- The words BORGES and LABYRINTH in the BASIC program.
- The Baconian cipher in the Poster spells A UN GATO, a poem by Borges.
- Quotes from the Library of Babel on red herring, adventure game, and primary treasure physical location cards.
- "The Vindications", "Unrelenting Effort", "Spherical Fruits", "Verbal Nonsense" games are all references to the Library of Babel.
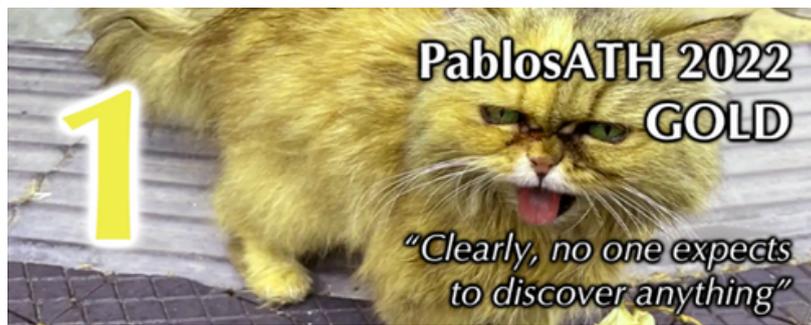
One of the physical location cards, with a Library of Babel quote

Treasure Routes

There are several "routes" to the primary treasure, so not all puzzles need to be solved.

Benchmark Route

This is the longest route to the treasure, which involves solving a considerable number of puzzles.

- Begin by solving the Quiz Questions, to get the traditional Christmas message **ENJOY XMAS CAKE BLOWOUT LOVE DAPHNEHQ EDITORS**.
- Realise that all quiz answers are Oxford colleges, so you have a college-to-letter look-up.
- Realise that the BCS peripheral prices are founding dates of Oxford colleges.
- Solve peripheral price acrostic **PUT ARROW MATRIX UNDER WOOD TOY TO MAKE WALK ON LETTER MATRIX AND START MOVES ON DARK BLUE E.**
- Put *Arrow* logo underneath the wood toy, solve wood toy puzzle, reveal directions and number of moves, move around copy protection grid spelling out **EACH POINT ON THE BATTLESHIP MAP IS AN OXFORD COLLEGE.**
- Use battleships "winning moves" to obtain a list of colleges, then look up letters for the colleges, this spells out **MAKE OXON SCARVES WITH HUE TABLE**.
- Realise that colours on the copy protection grid are actually a series of Oxford college scarf colours, again use college-to-letter look-up for those colleges, which spells **COMBINE MAP AND DATA WITH ROSE ON CHRIST AND JACK ON ST JOHN AND REAPPLY COORDS**.
- Overlay the battleships map onto the BASIC program DATA lines, aligning Christ Church college on ROSE and St John's college on JACK, then use the battleships winning moves again but reading the words of the BASIC program below, which reads **BEGINNING AT PATRON SAINT FOLLOW FELINES TO HOSTELRY AND THENCE PASS UPRIVER PAST JACK AND LOCK PROCEED TO HOUSE WHERE ROSE LIES TO SEARCH OUT CORNER BENCHMARK.** This is the first part of the route, indicated by the *Catscan* map, which takes you from St Frideswide's Church, up Binsey lane, past The Perch, to Godstow Abbey, specifically the benchmark on the corner of the abbey.
- Solve the "Which is greater?" questions, to obtain a binary number, which is **966** in decimal.
- Realise this is the end part of a real phone number, **01606663966.** Call number and listen to "Numbers Station".

- Enter numbers into BASIC program, obtain message **BLOCK OUT LETTER WALKS AND CAT NAMES IN GRIDS AND COMBINE TO MAKE GRILLE.**
- Find all cat names from T. S. Eliot's *The Naming of Cats* in the word search and the copy protection grid.
- Solve the cats crossword quiz, obtain hint **HANOI DESCRIBES WALK ON COLOUR GRID**.
- Realise that the NEWS photo is the Tower of Hanoi puzzle, solve the puzzle and move around the copy protection grid by the number of moves indicated on the ring, in the cardinal direction written above the tower. This spells **LOOK INSIDE STONE**.
- Now block out all cat names from both grids and both letter walks in copy protection grid, and reveal the final clue **FROM BM SET BEARING TO TWO SEVEN NINE AND TRAVEL ONE FOUR THREE METRES TO SMALL BRIDGE WHERE YOU WILL FIND PRIMARY CONCEALED TREASURE AMIDST CONCRETE RUBBLE**.
- The treasure is hidden in a fake stone in the concrete rubble at that location.

Buckell's Perambulation Route

This shorter route should be more straightforward, and involves reading about Mayor Robert Buckell's 1886 perambulation of the city boundaries.

- Realise that the lines around the accordion advert are Wheatstone Telegraph, decode message **TWENTY NINE METERS WITHIN BUCKELLS BOUNDS**. This gives a fairly wide area to search.
- Realise that the AI Art pictures are a **pit** and two **rivers**, hinting at the Pitt Rivers Museum in Oxford.
- Find out that the "ethereal peripherals" are objects from the Pitt Rivers Museum catalogue.
- Realise that the numbers surrounding the AI Art pictures are a Book Cipher, based on the 8 Pitt Rivers objects and their descriptions in the online catalogue, which decodes to **FOLLOW BUCKELLS PERAMBULATION STARTING WITH JING JING STONE AND COUNT SIKS MARKERS DEOSIL THEN FOLLOW DITCH SOUTH.**
- Along with **LOOK INSIDE STONE** from Towers of Hanoi puzzle (or boots-on-the-ground), this should be enough to locate the treasure.

Boots-on-the-ground

We also wanted to include more general clues which could be pieced together and used for a brute force, boots-on-the-ground strategy. However, at least some of the other more specific clues needed to be solved to increase the chance of success.
- The Cat Pictures puzzle is Morse code that spells **OXF** - the railway station code for Oxford.
- The Turing Machine puzzle solution is **BY BRIDGE UNDER ASH**.
- The Dr. Boris SNOMED solution is **PREOCCUPATION WITH RUIN / RURAL MINOR ROAD / OVER / WATER.**
- The BASIC program numbers in the article decode to **HOUSE OF GOD**.

Also, completing the adventure game would lead you to Godstow Abbey, and while it isn't clear that this is the location of the primary treasure, it should be suspected!
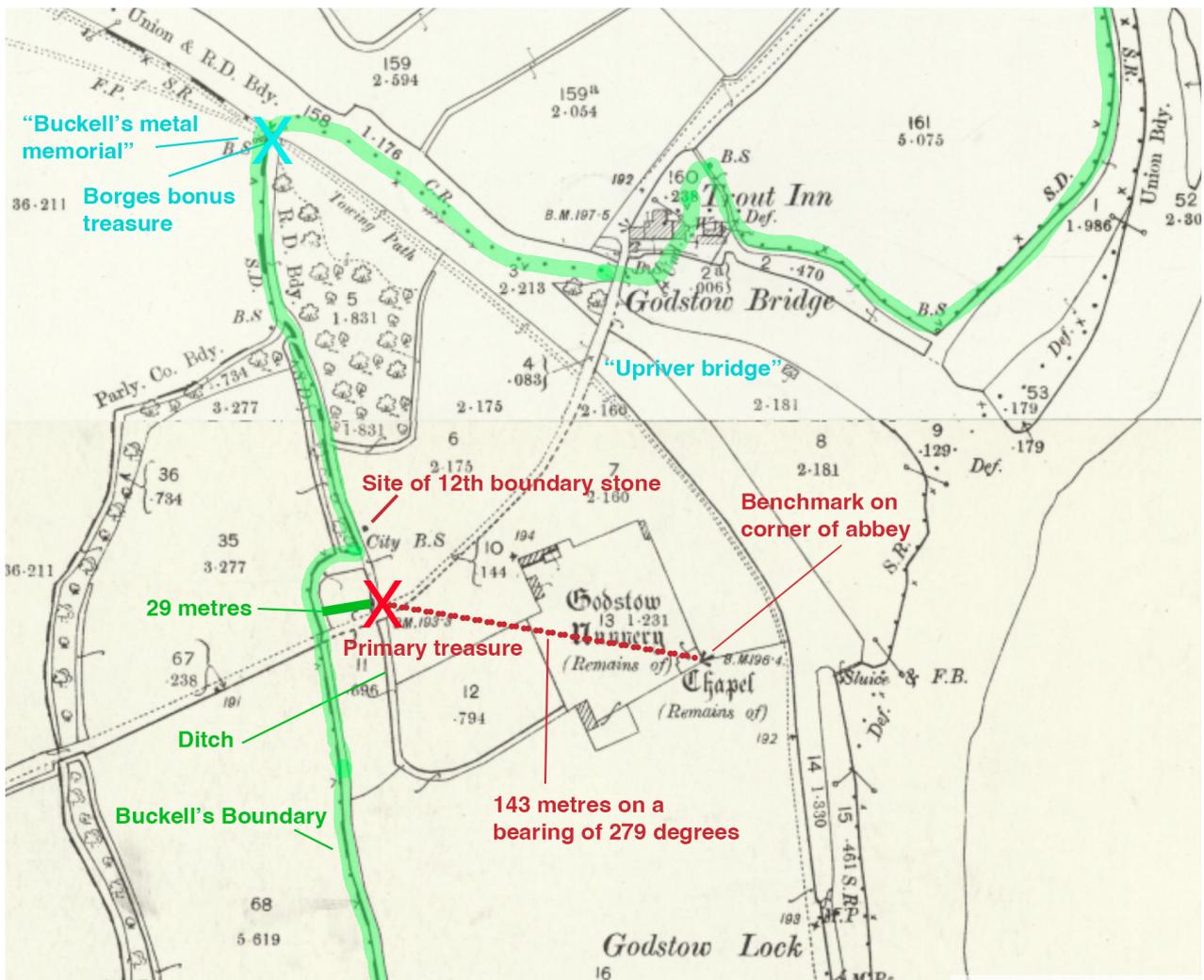
Hints released during the hunt

Poem

The poem "The Sourpuss and the Raconteur" hints at the starting point of the route of cat pictures up Binsey Lane in the *Catscan* article. The cross at the bottom right is the location of St. Frideswide's Church. The title is a reference to *The Walrus and the Carpenter* (PM1), to make it obvious that people should be thinking about Lewis Carroll and Alice, but the first verse is actually a pastiche of *The Mock Turtle's Song* (PM2) aka *The Lobster Quadrille*. The "old conger eel" that the Mock Turtle mentions is based upon John Ruskin and he is hinted at again with the words "*carved Venetian stones*" (PM3).

Alice Liddell was a pupil of John Ruskin, and he taught her both drawing and wood-carving (PM4). "*Cut perhaps in wood*" is hinting that you should be looking for a wood carving in Oxford that can be linked to Alice and John Ruskin, which should lead you to Alice's door in St. Frideswide's church (PM5).

The poem is telling you to follow the cats up Binsey Lane to the Perch (and possibly have a drink!) (PM6) before heading on around a bend (or two). This was deliberately ambiguous as it could be leading you towards St Margaret's Church in Binsey, or Osney Abbey, though the "well read/red" riddle was there to tell you that the former was a red herring.

Christmas Card

Charlie D refers to Charles Dodgson aka Lewis Carroll (CC1). The last part of the poem "*zoo (retired)*" is the number **00302** encoded using Carroll's *Memoria Technica* (CC2). If entered into the BASIC program this produces the word **TREASURE** (CC3).

Business Card

This contains a hint for the helpline number by giving you the final number (6), thus reducing the number of possibilities. Also, a repeated instruction to actually call the number.

Alex Higgins is a reference to the snooker player, who had the nickname "Hurricane Higgins" - a clue that the Quick Reviews puzzle is about hurricanes (BC1).

"*...failed to see the tree for the wood…*" is a clue that the dead tree in the Coppice level of the adventure game is important, as it gives the correct directions through the forest, as lots of teams were missing it (BC2). Also "*wall of honour*" is a subtle hint that the Wall Monster also provides the directions (BC3).

Witch Bottle

The image of the witch bottle is from the Pitt Rivers museum catalogue (WB1), and was reverse image searchable. This, with the suggestion that Edith's Ethereal Peripherals sent the product, hints that the Ethereal Peripherals were also Pitt Rivers objects. As per the other objects, the name of the peripheral ("Glass Inside") includes keywords to help find the object in the catalogue. This is also pointed to by the wording "we worked out how to use it from the catalogue description". The price of the peripheral (£20.23) is intended to make it more obvious the prices are in fact years.