Some Puzzles – Invented, Designed and Discovered.
by James Dalgety

Discussion often arises as to whether a puzzle has been invented or discovered. This is a small selection chosen to illustrate the difference. A puzzle designer is usually “standing on the shoulders of giants” as nearly every new idea must develop from some previous experience. It is also worth noting that many ideas appear to be very obvious only after they have been invented by someone else. Those of us who first saw the 3x3x3 magic twisty cube in 1977 were baffled as to how it could be made and actually work; now, a generation later, there is a wide selection of mechanisms and the surprise has gone.

In 1971, together with Ron Cook, I started PENTANGLE which became the U.K.’s largest manufacturer of high quality puzzles prior to the Cube Craze. During its first 15 years Pentangle manufactured over 200 different mechanical puzzles and I have selected some of my own contributions to this range as examples of how they were invented or what inspired their design.

BALL & CHAIN PUZZLE.
Object: - To remove the small ring. I really did invent this in the bath in 1972. Thinking about the similarities and differences between two antique puzzles in my collection, one of which allowed and required the wire loop to be sprung open, and the other required the small "ball end" to be passed through the slot in the large loop.

These were two easy but very different solutions and I thought that another solution should be possible so long as the cord was made long enough.

So out of the bath, without shouting Eureka, and into the workshop where I made the first one. It then took me a long night to solve it. In the last four decades it has been endlessly copied almost never with the source being credited.

This puzzle was also an interesting exercise in marketing: The original "Manacle" puzzle had two identical wire loops joined by the cord and it sold very slowly. Redesigned as "The Ball & Chain" with the more attractive but cheaper ball on one end it sold at ten times the rate. Why?
MANTRAP

Man's curiosity is such that he will always want to open a box to see what is in it hence the name Mantrap. To open it the victim has to solve a series of linked topological puzzles (Scales, Cardan's Rings, Interlaced Triangles, and Ball & Spiral) before the box could finally be unbolted. This was a one-off artwork exhibited and sold at the 2nd London Exhibition of Eccentrica in 1972. All the individual puzzles were old ideas from my Hoffmann’s “Puzzles Old and New” of 1893; but the ideas both of linking them in sequence and of using them to lock a box were mine, as was the presentation.

COUNTERSPELL or SPELLBOUND

A 1974 design in which six lettered magnets are loose within an acrylic “sandwich” and one appears to float in the middle. Object to spell various different words clockwise around the frame. An original design which was a spin-off of very many unsuccessful attempts to get stationary magnets to levitate for a desktop toy. A decorative object and simple dexterity puzzle, in this example the six letter word is the pleasingly versatile TEASER which is an anagram of 4 other common words.

DOUBLE TREBLE CLEF PUZZLE.

Object: - Remove the cord. Originally designed as one of a set of 12 brass wire Topological puzzles in 1973. It was a development of the classic “Reef Knot Puzzle”. I remember bending what seemed like miles of wire which ended up in the bin before I found this inspired solution making an attractive design from a single piece of rod. Both the doubled cord loop, and the way the cord could be moved to places other than the central bar, added to the bafflement. Received a London Design Centre award in the 1970s and has been endlessly copied ever since.
THE DEVIL’S HALO

Object: - To remove the cord. This was the deliberate attempt to invent a puzzle similar to the Chinese Rings but with a non-binary solution. It takes 40 moves to remove the cord. U.K. Registered Design No. 967536/1974. This was the world’s first puzzle in which a loop of cord or chain had to be removed from a “Sculptural Shape” on a base. It has since inspired many hundreds of variants throughout the world, the first two being Pentangle’s Traffic-Lights and Tangleweed.

ROLY POLY PUZZLES

A range of 18 Dexterity Puzzles manufactured in 1974 incorporating magnets, thumb tacks, ball-chain, and all manner of bits and pieces. All solvable, but far more easily with brain power rather than just manual dexterity. Many original ideas were incorporated into these and though the puzzles were much better, we could not compete with the low prices of Far Eastern products.

LOONEY MODULE.

A 1974 Four Piece 3D explosion type puzzle. Inspired by a box of firewood (factory off-cuts from other puzzles) and also by Pandora’s Box which was invented decades earlier by Lionel Penrose. Designed in 1974 but not manufactured until used as an exchange gift at the 1st Japanese Puzzle Collectors Conference in 1989. Four identical pieces holding together 4 cubes. All pieces move apart simultaneously during solving.

Subsequently made very much more appealing when developed into the Bird in it’s Nest puzzle by Vladimir Krasnoukhov in 2006.
WORRIED WOODWORM

Hamiltonian Path / Travelling Salesman problem: - Start at the bottom left and end at the top right. Every time you pass a hole you must block it with a bead. You are not allowed to pass over any previously blocked hole. Originally a rather hard to visualise pencil and paper puzzle redesigned as a mechanical puzzle in 1976.

Recent computer analysis by William J.Cook confirmed that solutions to and from all corners are possible.

FLIEGLE FLUGEL

A 1976 design. Exchange the three men on the left with those on the right making alternate moves with the odd man. An antique puzzle from the days of the Klondike Gold Rush just redesigned in wood and given a new story.

RUMDOODLE.

Object to climb the "man" from foothold to foothold to the top of the highest peak. Inspired by “Pikes Peak Puzzle” of 1895 this had a new convoluted maze designed in 1977.

PUZZLING POT-STAND PUZZLE

A 1978 design inspired by an 18th Century idea for flooring a two story building with timbers that are shorter than the width of the room. Solid the right way up, but turn it upside down and it falls apart.
MULTICOLOURED MOLECULE

A 1978 design using four of a classic dominoes puzzles. The colourful “dumbbells” made it much more appealing to a wide group of potential customers.

TRIPLE CROSS PUZZLE.

A 1979 design. The original idea for this came from an 1899 copy of Scientific American in which W. Segerblom of Massachusetts proposed a similar puzzle. His long thin interior triangular cross section made it rather weak and wobbly. It was possible to fill in some of the empty interior space whilst still keeping the pieces identical.

COFFIN PUZZLE.

An original 1980 pin maze. Drop the ball in the top and manoeuvre it out of the side. Inside the maze there are 2 loose wooden blocks which have to be moved into different correct positions on two occasions during the balls traverse of the maze.

SICK-MAN PUZZLE

A 1983 two layer “black box” maze. Drop the ball (pill) in his mouth and get it out of his ear. Originally it came out somewhere else but marketing decorum dictated the solution should be oral-aural rather than oral- ....
DRACULA'S CURSE

1983 Design based on a very old eight piece crucifix dissection with an added chequer pattern and a selection of additional shapes to make whilst retaining the dark and light patterns of the wood. In addition to adding to the actual puzzle, it was packaged in a nice hardwood case and then given what we hoped would be an appealing name. All of which is very important because if nobody buys it then nobody will get to puzzle with it.

- = - = -

Like Dr Matrix you will by now have noticed that if you multiply 2014 by 16 puzzles discussed, by the 122 separate parts they contain, by 11, you get 43,244,608 which is exactly the distance from Atlanta to the Sun in Pyramid Furlongs at 11 am.

An 18th Century Toy and Automata shop with visitors from G4G-121.