Math puzzles in

SAM LOYD'S
CYCLOPEDIA
OF
5000
PUZZLES
TRICKS
AND
CONUNDRUMS
WITH ANSWERS

I have listed only puzzles of mathematical interest, omitting most of the word puzzles and all the riddles. Each puzzle that Martin Gardner chose to reprint in his Mathematical Puzzles of Sam Loyd [volume 1, 1959; volume 2, 1960; Dover Publications, Inc., New York] is listed here with a cross reference. For example, "GL2.75" is puzzle number 75 in Gardner/Loyd volume 2. Gardner cleaned up a lot of errors and inconsistencies, caused by the fact that Loyd died in 1911 before having time to straighten these things out himself.

I've also cross referenced items to Loyd's columns with Dudeney in Tit-Bits [e.g., "T30" is Tit-Bits puzzle 30], and to Dudeney's columns in The Weekly Dispatch [e.g., "P144"], and to Loyd's columns in the Brooklyn Daily Eagle [BDE]. In a few cases I also list other newspapers where Loyd published this material or something very similar.
(Thanks to Will Shortz for letting me see some of the Loydiana in his fantastic collection. References to any Loyd publications outside Tit-Bits or the Brooklyn Daily Eagle should be cleared with Shortz before being published elsewhere, since I think he plans to compile a comprehensive index himself.) CP means Dudeney's Canterbury Puzzles; AM means Dudeney's Amusements in Mathematics.

A puzzle with a title like "Sam Loyd's Turf Puzzle" is called just "Turf puzzle" here. He evidently had a regular feature in some newspapers, like a comic strip, and the woodcuts were simply copied to the Cyclopedia.

* denotes a miscellaneous problem in algebra and/or geometry

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66 Mrs. Pythagoras' puzzle: dissect 12x12+5x5 into 13x13 [cf P405] GL1.37
67 A short talk about telegraphy: short story in Morse code
68 Trading lots puzzle: GL2.81
69 The house of Betsy Ross: explains 5-pointed star cutouts
70 The problem of squaring the circle: discussion about pi
71 The fire escape puzzle: escaping in a small basket (like river crossing
but with weight constraints) GL2.140 [similar to P164 = Hoffmann P4.28]
72 A question of time: * GL2.21
73 Cross and crescent: dissect Greek cross to crescent [CP37] GL2.18
74 A puzzling mixture: of milk and water GL1.83
75 The convent problem: * GL1.107
77 The centennial problem: make 100 as sum from {0,1,...,9} and four dots
GL2.53
78 Multiplication and addition: phi^2 times phi = phi^2 plus phi GL1.53
78 Domestic complications: * GL1.97
79 The fighting fishes of Siam: * GL1.110
80 The ferry boat problem: * GL2.14
81 The potato race puzzle: * GL1.103
82 The moving day puzzle: 5-puzzle, fewest moves AB/C0/DE -> BA/xx/xx
[Philadelphia Inquirer 1900.05.13] GL2.36
83 The plumber's problem: box minus lid with least area [P281] GL1.18
84 Tell mother's age: * GL1.85
85 A daisy puzzle game: Kayles with 13 petals [BDE 1896.10.18, T43] GL2.57
86 The great pool puzzle: * GL1.55
87 Free acres: enclose as many acres as 12-foot rails [cf T52] GL1.63
88 Missing numbers: division with concealed digits GL2.100
89 Primitive railroading: two trains must pass, only one switch [MP48] GL1.95
89 Dollars and sense puzzle: reversing digits
90 Counting the coins puzzle: *
91 The Dutchmen and their wives: * GL1.92
92 The great diamond robbery: jewels go but locally OK [cf P268] GL2.108
93 The lily problem: * ascribed to Longfellow GL1.25
94 The missing number: add a+bfrom {0,1,...9}, erase two digits GL2.100
95 The famous hot cross bun puzzle: * GL2.163
95 Eleven men in ten beds: fallacy [P17]
96 Ancient order of the iron cross: dissect St Andrews (or Maltese) cross
to square [P369] GL2.128
97 A battle royal: checkerboard dissected in eight pieces [Sunday Record-Herald
(Chicago) 1902.07.27; St Louis Globe-Democrat 1903.03.08] GL1.51
98 The Guido mosaics: dissect 5x5 into 4x4+3x3 GL1.79
99 Problems of history: a/b from {1,2,...,9} to equal 1/2, 1/3, ..., 1/9 [P376;
Chicago Sunday Record-Herald 1903.02.15; St Louis Globe-Democrat 1903.08.30]
GL2.74
100 The bottle problem: equitable division of wine and bottles [P466] GL1.89
101 Pythagoras' classical problem: dissect axa+bxb into cxc [T1]
102 Tricks with matches: wordplay GL2.15
103 The man with the hoe: * GL1.23
104 The boxer's puzzle: dots and boxes game GL1.91
105 Picket posts: 16 pieces on 8x8, no three in line, two in center [cf P324]
GL2.48
106 Back from the Klondike: shortest path problem supposedly like a whirlpool
[NY Journal 1898.04.04; cf the earlier version, T45] GL1.74
107 Jack and the box puzzle: dissect irregular hexagon into square GL2.118
108 Fore and aft puzzle: Halma on 3+3+5+3+3, allowing jump over your own man
[NY Journal & Advertiser 1899.04.23/sol1899.05.07 in 47 moves;
St Louis Globe-Dem 1903.11.29/sol1903.12.06 again 47, but 31 if diag
moves also allowed; T66 did not allow jumping over your own man] GL1.4
109 Puzzle of the Dewey pillow: Hamiltonian king path on 5x5 spells a motto
110 Crows in the corn: 8 queens with no three in a row [BDE 1896.12.20; T14]
GL1.114
112 The domino puzzle: maximum points scored [T35; P366]
113 Disputed claims: three right triangles with integral sides, same area
[cf P445, CP107] GL2.124
114 Monte Carlo puzzle: odds of a dice game GL1.5
115 North pole puzzle: distances GL2.138
116 Newsboys' puzzle: * GL2.9
117 Aesop's eagle: goes 500 miles west each day [cf T9] GL2.141
117 How to make diamonds: from two congruent pieces
118 King Ptolemy's great puzzle of the Egyptian pyramids: dissect equilateral
triangle to square [P440]
118 Skeins of silk and worsted: * GL2.120
120 Couldn't tell a lie: *
121 The inspector's problem: * GL2.47

121 Ancient Egyptian puzzle: square, triangle, and circle in profile [cf P484]
121 Candy puzzle: * GL2.116
122 The little brown jug: count paths REDRUM&MURDER [BDE 1897.01.10; T12]
GL2.61
123 Squaring accounts, a temperance puzzle: * GL2.65
124 The pony cart problem: * GL2.37
125 Smith's age puzzle: * GL1.99
126 A question of peaches, pears, persimmons and plums: four disjoint solutions
of 10 points in five lines of 4, in 8x8-2x2 [BDE 1897.02.07; T24] GL2.70
127 Professor Blumgarten and the Peace Congress: * GL2.139
131 The Chinee donation puzzle: Hamiltonian king path in 4x6 spells a message
132 Old beacon tower: how many steps in helix? [BDE 1897.03.21; T29] GL1.26
134 A corner in wheat: evaluate 1 + 2 + ... + 2^63
136 The Christmas turkey: count steps in snow GL2.121
137 The flying bird: does it change weight of enclosing box? [BDE 1896.09.13]
138 Cross country running: * GL2.94
139 The golf puzzle: best two strokes to reach {150,225,250,275,300,325,350,
400,425} [cf P331] GL1.77
140 The Chinese cash puzzle: * GL1.111
141 Mixed teas: * GL1.70
142 The time problem: two hands coincide after 1 o'clock GL1.43
143 A square deal: dissect 1x1+4x4+8x8=9x9 GL2.115
144 The moon problem: five straight cuts of a crescent [MP106]
(the text says six cuts but the answer is for five) GL1.101
145 The moon problem: volume of a ball GL2.12
147 The crusaders: dissect Turkish emblem to Crusader's cross GL2.51
148 A problem in diamonds and rubies: * GL1.39
149 The tinker's puzzle: * GL2.72
150 The hoop-snaky puzzle: reassemble with tail in mouth GL1.17
151 The only square game on the beach: * GL2.55
152 The joiner's problem: dissect 1x2 minus corner into square [T40] GL1.40
153 The old gag revived: * (10 dozen eggs)
154 The leaning tower of Pisa: * GL2.32
155 Problem of the bridges of K\"onigsberg: with eight bridges, enumerate
the Eulerian paths GL1.28
156 The general store puzzle: cryptarithm CHESS+CASH+..+SHEEP = ALLWOOL GL2.30
157 The Red Cross Lassie puzzle: dissect one Greek cross into two [cf T27]
GL1.20
158 False weights: * GL1.80
159 The ailing nephew: relationships GL1.22
160 The foot ball problem: * GL1.35
161 Plato's cubes: solve x^3 = y^2 to agree with picture GL1.17
163 The monastery window rebus
164 Alice in wonderland: count paths WASITACATISAW [P182, P189, ...] GL1.109
165 The steeplechase puzzle: * GL2.154
166 Puzzle of grand-father's clock: * GL2.91
167 The switch problem: Two trains must pass [BDE 1897.03.14; T28;
St Louis Daily Globe-Democrat 1903.08.08]] GL2.24
169 The great Columbus problem: egg placing game [P500] GL1.65
171 Dividing the spoils: * GL2.54
172 The grindstone puzzle: when is it half gone? [BDE 1896.08.09; T51] GL1.14
174 The oracle puzzle: * GL1.66
175 The sedan chair puzzle: cut a picture GL1.11
176 A Chinee switch-word puzzle: 12-letter word reproduces itself
[BDE 1896.07.26; T5] GL1.54
177 The great horse show: cut horseshoe into seven pieces GL1.6
178 Gingerbread dog's head: dissect into two congruent pieces GL1.102
180 Puzzle of the pyramids: *
181 Cabbages puzzle: * GL2.52
184 The Gordian knot: to be untangled from scissors GL1.117
186 Chickens in the corn: checkers-like (wazir) capture by parity [P269] GL1.9
187 Lincoln's rail puzzle: max area enclosed by 12 rails GL2.134
188 The merchant of Baghdad: Loyd's famous measuring puzzle [T13] GL1.108
189 Going into action: fewest connected lines to cover 8x8 starting at a5
[BDE 1896.07.12; T26] GL1.46
190 A lip-reading puzzle: identify boys saying their names
191 Weighing the baby: * GL1.50
194 The new star puzzle: fit a star into the picture GL1.1
195 At the "zoo": * GL2.77
196 The Thanksgiving turkey: *
197 Heard at the "zoo": write 1906 in radix 8 GL1.105
198 Christians and Turks: Josephus with large increments [cf P283] GL2.42
199 Red Cross volunteers: dissect square into two Greek crosses [see

331 Tortoise puzzle: * GL2.143
332 Perplexed professor: *
333 Cattle puzzle: * GL2.153
334 Political puzzle: * GL2.132
335 Sea serpent puzzle: * GL1.44
335 Cat and dog puzzle: *
336 Skating puzzle: * GL2.137
337 Conductor's puzzle: * GL2.86
338 The pistol match: 48 from {2,4,6,10,20,40,50,100} GL1.86
339 Puzzling scales: * GL2.64