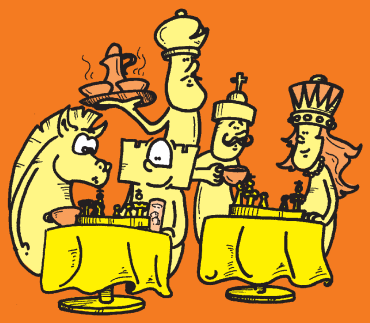


THE PUZZLING SIDE OF CHESS

Jeff Coakley

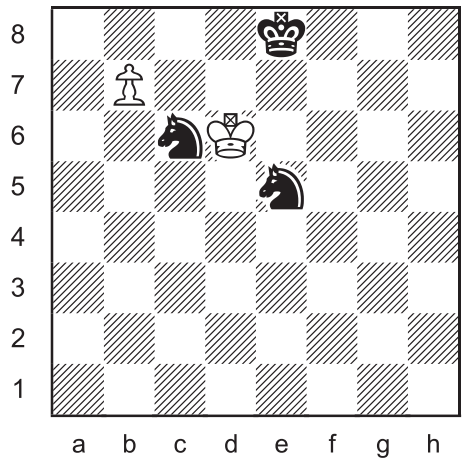
ROOK HOOKS & QUEEN TREKS

number 83 February 20, 2015

A*rtist appreciation month* continues with more “brain rackers” from British puzzle master Henry Dudeney (1857-1930).

As a prelude to the Dudeney conception that follows, here is a basic example of a *series-mate*.

1



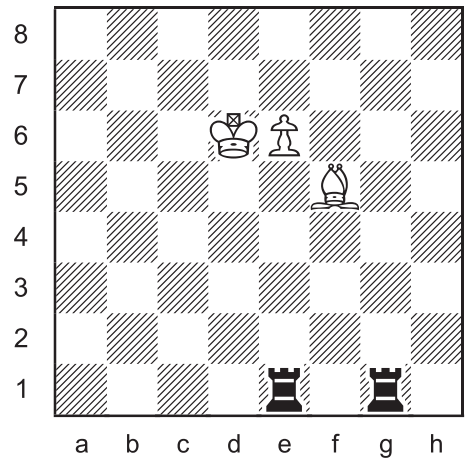
Series-mate in 7

White plays seven moves
in a row to mate Black

Only the last move may give check. Captures are allowed. White may not place their own king in check. Black does not get a turn.

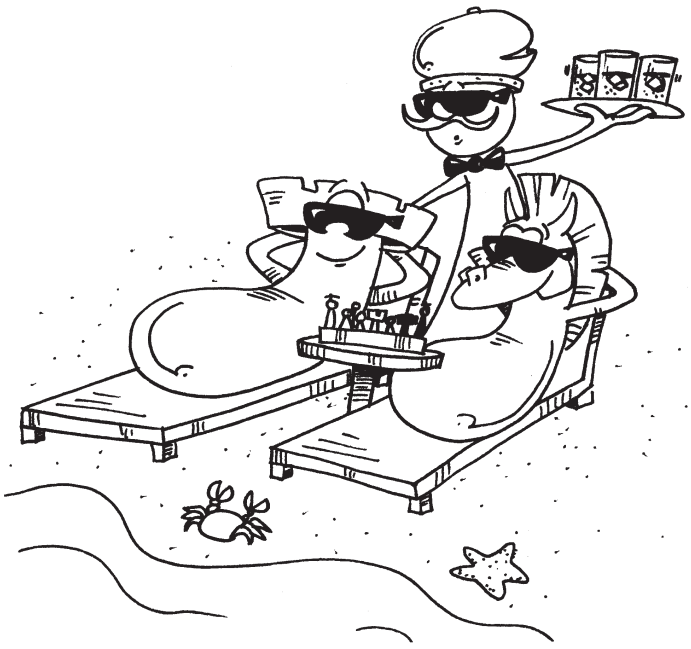
The next puzzle is a version of a Dudeney work called “An Amazing Dilemma” from *Amusements in Mathematics* (1917).

2



Place the black king on the board so
that White does not have a series-mate
in any number of moves.

After the black king is on the board, it should be impossible to checkmate him regardless of how many moves in a row White plays. The normal rules for series-mates apply, as explained in the first problem.

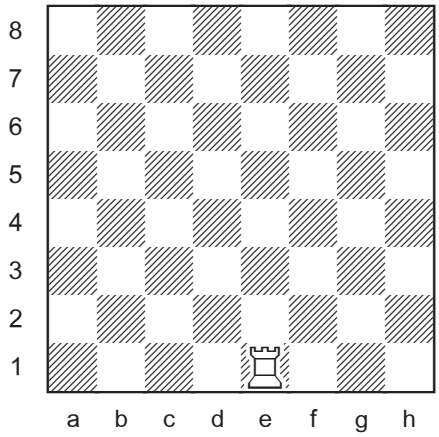


February Daydreams

Henry Dudeney published original puzzles in *The Strand Magazine* for over thirty years, from 1896 until his death in 1930. His monthly column was called *Perplexities*. The *Sherlock Holmes* stories by Arthur Conan Doyle also became famous in this popular British magazine which ran from 1891 to 1950.

The next perplexity for us is titled “A Dungeon Puzzle”, from volume 42 (1907). In the accompanying tale, a French prisoner is confined in a dungeon that has sixty-four cells, not unlike a chessboard. Out of boredom, he devises numerous amusing tasks to pass the time.

3

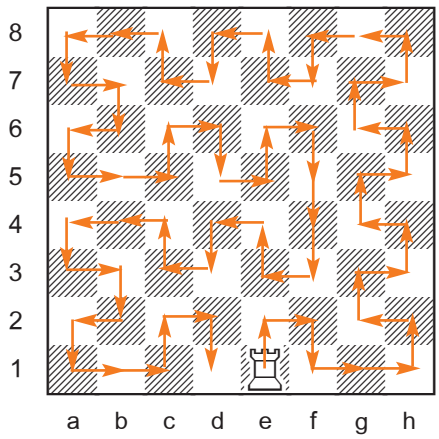


Moving the rook one step at a time,
go to each square on the board once,
making the most turns possible.

The word ‘turn’ is not used here in its usual chess sense. The goal is to maximize the number of “changes in direction”, as shown in the diagram below.

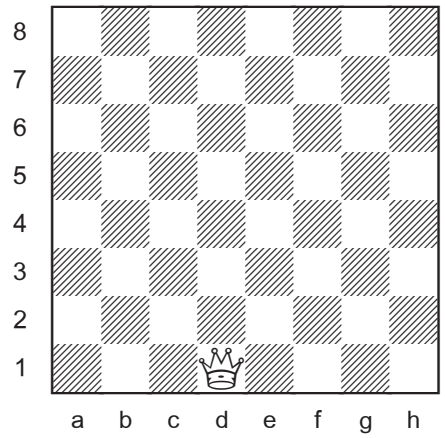
The rook does not have its full mobility. It may only move to an adjacent square. It may not go to the same square twice. The “rook tour” does not have to end at e1.

Dudeney gives the following example where the prisoner makes 54 turns on his walk through the dungeon. He then writes, “Can you get more than fifty-four? You may end your path in any cell you like. Try the puzzle with a pencil on chessboard diagrams.”



The grand finale in this week's column is a masterpiece of chess geometry. Part b refers to distance as measured by a ruler.

4



Move the queen five times without crossing her path so that she travels:

a. the maximum number of squares.

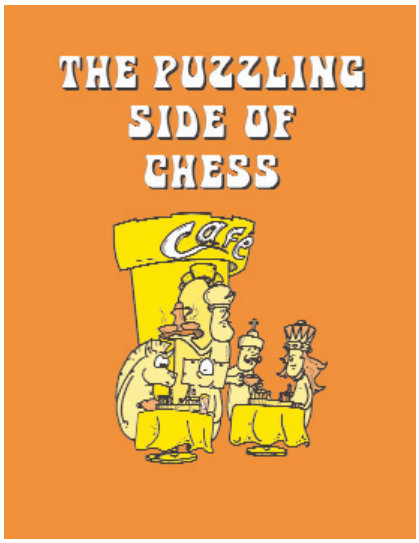
b. the greatest distance.

The queen may not go across her earlier path. For example, after 1. Qd8, 2.Qh8, the move 3.Qa1 is not allowed.

We conclude our three week tribute to Henry Dudeney with one last quote:

"The history of mathematical puzzles entails nothing short of the actual story of the beginnings and development of exact thinking in man."

Henry Dudeney



SOLUTIONS

PDF hyperlinks. You can advance to the solution of any puzzle by clicking on the underlined title above the diagram. To return to the puzzle, click on the title above the solution diagram.

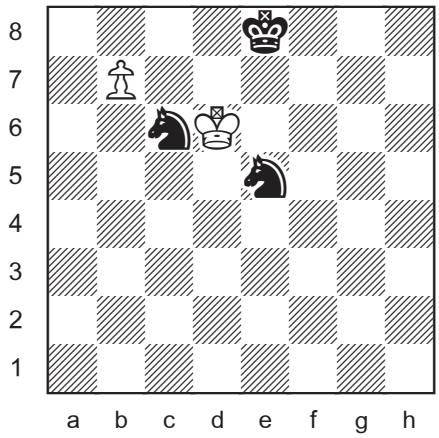
1

Series-mate in 7

Multi-wham 20

J. Coakley 2015

ChessCafe.com



1.Kc7

2.Kc8

Obstructing the last rank to allow a queen promotion.

3.b8=Q

4.Qb3

The tricky move. Mate will be delivered from g8.

5.Kc7

6.Kd6

Returning where he came from.

7.Qg8#

For more information on series-mates, see *Alekhine's Whammy* (column 80) in the archives.

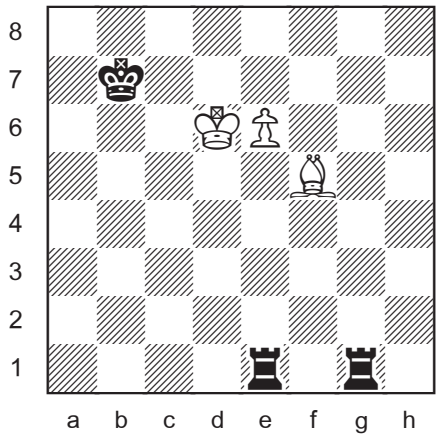
2

Impossible Series-Mate

J. Coakley 2015

ChessCafe.com

after Henry Dudeney 1917



With the **black king on b7**, a series-mate by White is impossible. There is no way to mate the king on b7 with a king, light-square bishop, and queen (or knight).

On all other squares where the king can be legally placed (not in check), a series-mate is possible.

If the king is placed on any square not along the side of the board, except b7 and g2, the mate is easy. For example, with the black king on b6, the mating formation for White is Kb8 Qa7 Bd7. With the black king on b5, White has Kb7 Qb6 Bb3. Similar patterns can be used elsewhere.

If the king is placed on g2, White mates by first taking the rook on e1 (leaving the rook on g1), followed by Kh4 Qf4 Be4 or by Ke2 Qh4 Be4.

If the king is placed along the side of the board on the a-file, h-file, or 1st rank, there is a simple mate with a white queen. Three of the squares on the 8th rank require special treatment.

a) With the king on e8, White has a series-mate in five.
1.Be4, 2.Ke5, 3.Kf6, 4.e7, 5.Bc6#

b) With the black king on f8, the white king must capture the rook on e1 and then go to f6, followed by Bf7 and e7#.
1.Bd3, 2.Bf1, 3.Kd5, 4.Kd4, 5.Kd3, 6.Kd2, 7.Kxe1, 8.Kf2, 9.Kf3, 10.Kf4, 11.Kf5, 12.Kf6, 13.Bd3, 14.Bg6, 15.Bf7, 16.e7#

c) The black king on d8 is the same as f8, only the white king goes to d6 and the bishop to d7.

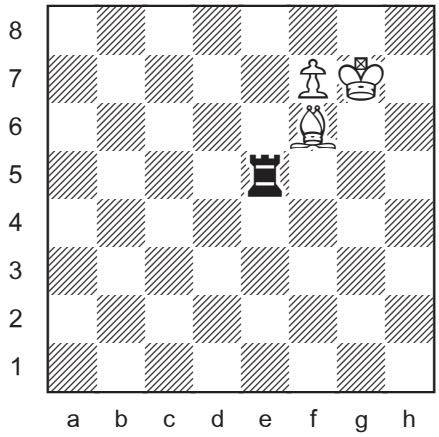
continued next page

Here is the Dudeney original, complete with story.

2b

Henry Dudeney 1917

Amusements in Mathematics



An Amazing Dilemma

“In a game of chess between Mr. Black and Mr. White, Black was in difficulties, and as usual was obliged to catch a train. So he proposed that White should complete the game in his absence on condition that no moves whatever should be made for Black, but only with the White pieces. Mr. White accepted, but to his dismay found it utterly impossible to win the game under such conditions. Try as he would, he could not checkmate his opponent. On which square did Mr. Black leave his king? The other pieces are in their proper positions in the diagram. White may leave Black in check as often as he likes, for it makes no difference, as he can never arrive at a checkmate position.”

The solution is to place the **black king on b2**. As noted by the composer, “Sam Loyd first pointed out the peculiarity on which this puzzle is based,” referring to part D of *Triple Loyd 01* (Column 1).

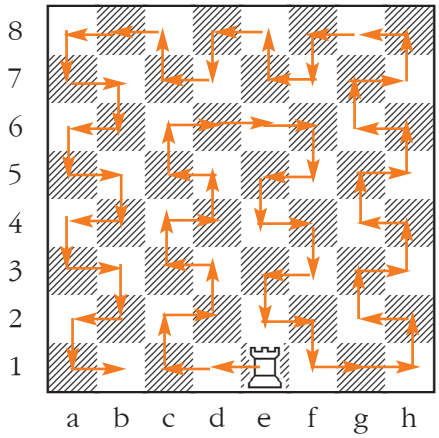
In my version of the problem, with the white pawn on the 6th rank and the g2 square unoccupied, there are more possible placements to tempt the black king.

3

A Dungeon Puzzle

Henry Dudeney 1907

Strand



56 turns, or “rook hooks” as I like to call them.
Only six moves are made without a change of direction.
Do not count the first move as a turn.

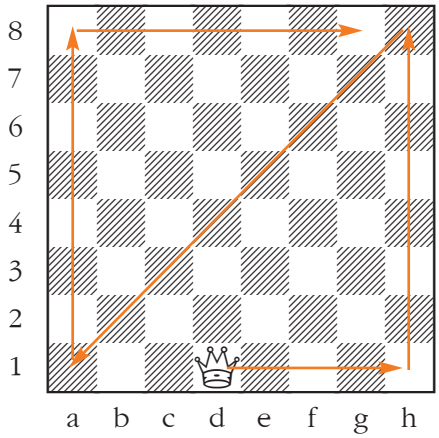
According to Dudeney, “No rook's path over the chessboard can exceed this number of moves.” I presume he meant “this number of turns”.

4a

The Queen’s Journey

Henry Dudeney 1913

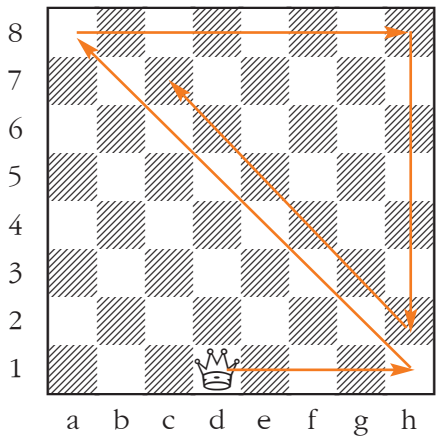
Strand



Qh1-h8-a1-a8-g8

The queen’s path is 31 squares long.

4b



Qh1-a8-h8-h2-c7

The queen's path is only 29 squares long, but the actual distance travelled is greater than the path given in 4a.

Moving diagonally a certain number of squares is a longer distance than going the same number of squares on a rank or file. Let's say that each side of a square is 1 centimeter in length. That means that moving one square on a rank or file is a distance of 1 cm, measuring from the centre of the squares. But moving diagonally one square is 1.414 cm.

The formula for calculating the diagonal length 'd' of a square with side length 's' is $d^2 = 2s^2$. If s = 1 cm, d is the square root of 2, or 1.414 cm.

In path **4a**, the queen goes 24 squares along ranks and files, and 7 squares diagonally, for a total distance of **33.898 cm**.

$$24 + (7 \times 1.414) = 33.898$$

In path **4b**, the queen goes 17 squares along ranks and files, and 12 squares diagonally, for a total distance of **33.968 cm**.

$$17 + (12 \times 1.414) = 33.968$$

Path 4b is longer by a mere **.07 cm**. That is approximately 1/14 the width of a single square. Winning by a nose.

Until next time!