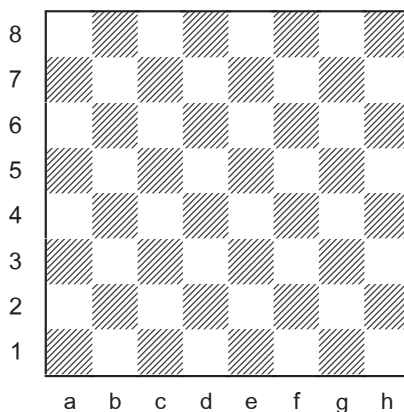## KING OF THE LOOPERS

number 151   May 19, 2018

This column presents four defensive loop problems, all involving kings. As chessboard strategists know, when it comes to defence, his majesty is a very strong piece. Can you match the records for these tasks?
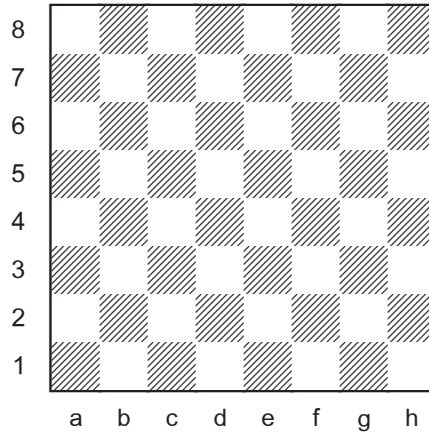
King of Rock 'n' Roll

Double Defensive King Loop

Place the maximum number of kings on the board
so that each king is defended exactly twice.

The kings should form a continuous loop, with each
piece protecting the two others it is linked to in the "chain".
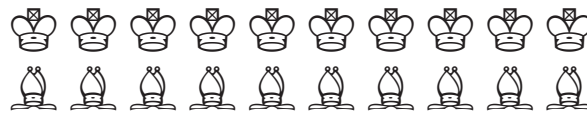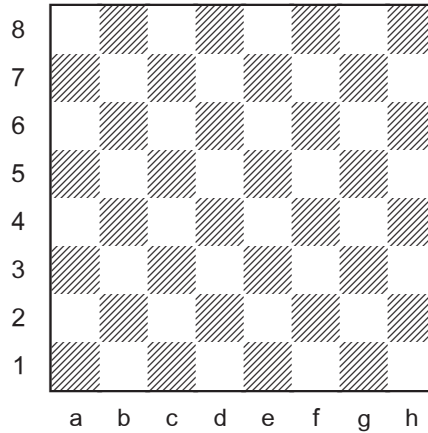
King and Rook Defensive Loop

Place six kings and six rooks so that each piece is defended exactly once and each piece defends exactly one other piece.

The chain of defence must form a *continuous loop*. The first piece guards the second; the second guards the third; the third guards the fourth; ...; and the last guards the first.

King of Beasts

King and Bishop Defensive Loop

Place an equal number of kings and bishops on the board so that each piece is defended exactly once and each piece defends exactly one other piece.
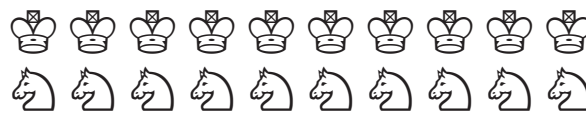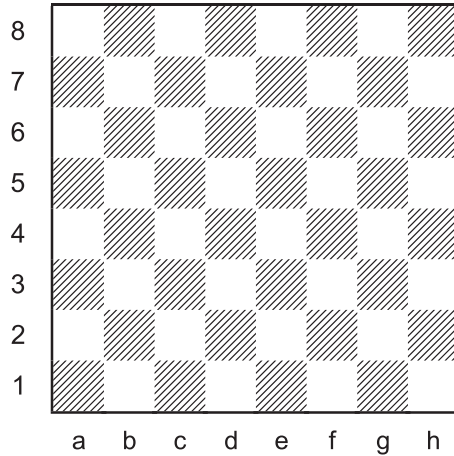
The chain of defence must form a *continuous loop*. The first piece guards the second; the second guards the third; the third guards the fourth; ...; and the last guards the first.

A. Eight kings and eight bishops

B. Ten kings and ten bishops

Magnus, reigning King of Chess

King and Knight Defensive Loop

Place an equal number of kings and knights on the board so that each piece is defended exactly once and each piece defends exactly one other piece.

The chain of defence must form a *continuous loop*. The first piece guards the second; the second guards the third; the third guards the fourth; ...; and the last guards the first.

      A. Eight kings and eight knights

      B. Nine kings and nine knights

   **C.** Ten kings and ten knights

Ali, King of the Ring

SOLUTIONS

All puzzles, except the 10K/10N defensive loop, are by J. Coakley, *Puzzling Side of Chess* (2018). Computer analysis of the KR, KB, KN loops by Caisay 4.1 (Adrian Storisteanu).

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.

Archives. Past columns and a detailed index of problem-types and composers are available in the *Puzzling Side of Chess* archives.

<u>Double Defensive King Loop</u>
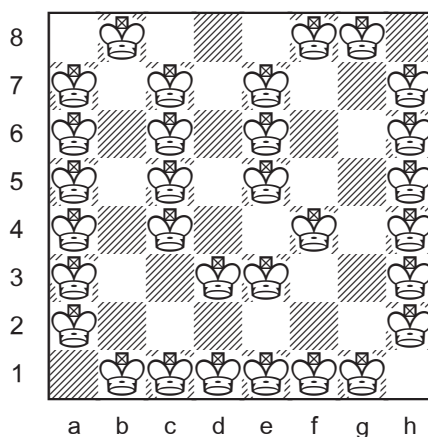
31 kings, each defended twice.

Bonus puzzle: Place 32 kings on the board so that they form a *continuous but non-looping chain of defense*. The kings at each end of the chain only defend one piece and are only defended once. The other 30 kings each defend two pieces and are each defended twice.
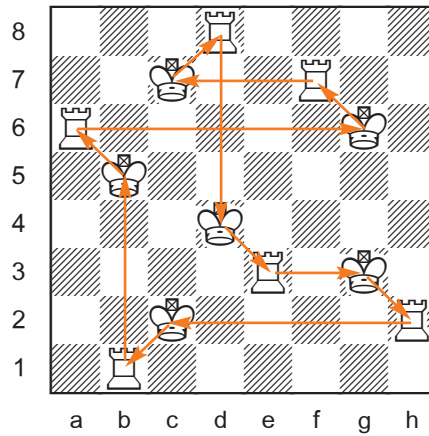

King of Diamonds, the man with the axe.

Non-looping Continuous King Chain
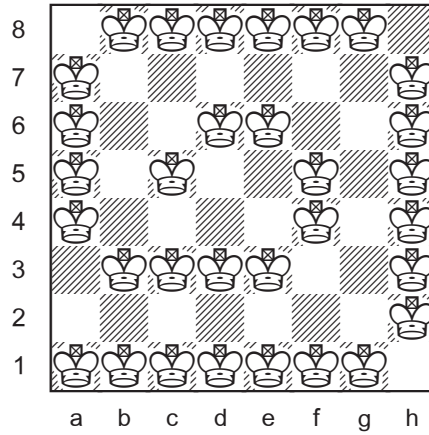
32 kings

King and Rook Defensive Loop

Six kings and six rooks,
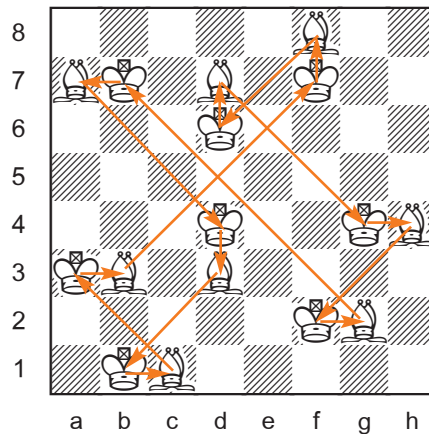each defending one piece, each defended once.

There are 26 different patterns for the solution. Surprisingly perhaps, a king and rook loop with seven or more of each piece is impossible.
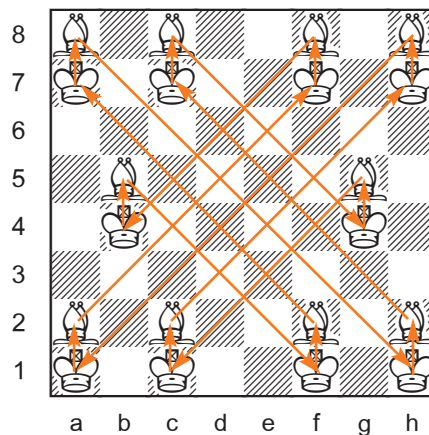

Sting, King of Pain

King and Bishop Defensive Loop

A.

Eight kings and eight bishops,
each defending one piece, each defended once.

There are 1012 patterns for the solution. A loop with nine, or any odd number, of each piece is impossible. Each bishop in the loop must stand on a different colour from the one preceding.

B.

Ten kings and ten bishops,
each defending one piece, each defended once.

There are only three patterns for the solution. A king and bishop loop with twelve or more of each piece is impossible.
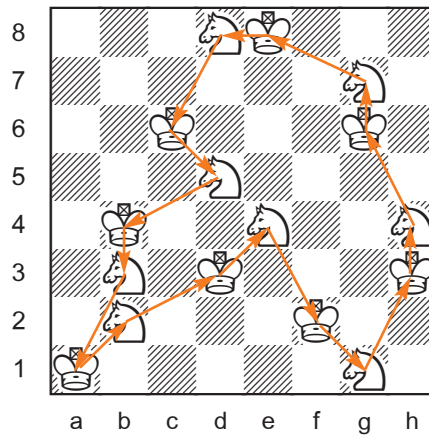
Ka1 Ka7 Kb4 Kc1 Kc7 Kf1 Kf7 Kg4 Kh1 Kh7 (shown above)
Ba2 Ba8 Bb5 Bc2 Bc8 Bf2 Bf8 Bg5 Bh2 Bh8

Ka1 Ka7 Kb4 Kc1 Kc7 Ke2 Kf7 Kg4 Kh1 Kh7
Ba2 Ba8 Bb5 Bc2 Bc8 Bf2 Bf8 Bg5 Bh2 Bh8

Ka6 Kb1 Kb8 Kc3 Kc6 Kf3 Kf6 Kg1 Kg8 Kh6
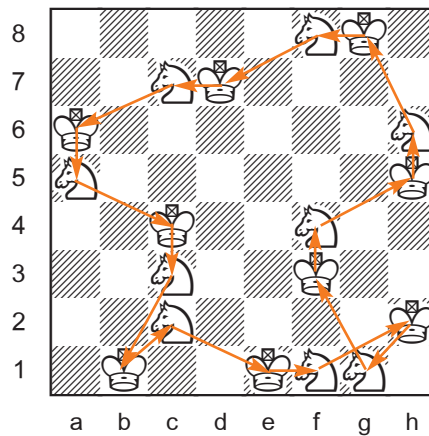Ba5 Ba8 Bb3 Bc1 Bc5 Bf1 Bf5 Bg3 Bh5 Bh8

King and Knight Defensive Loop

A.

Eight kings and eight knights,
each defending one piece, each defended once.

There are thousands of patterns for the solution, 4579 to be exact.

B.

Nine kings and nine knights,
each defending one piece, each defended once.

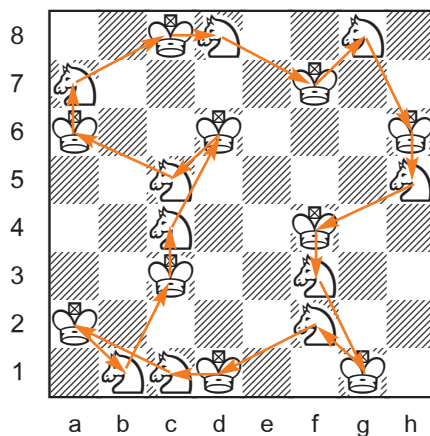There are 262 different patterns for the solution. Plenty to choose from.

King and Knight Defensive Loop
C.

Adrian Storisteanu 2015
ChessProblems.ca Bulletin

Ten kings and ten knights,
each defending one piece, each defended once.

A unique solution!

A king and knight loop with eleven or more of each piece is impossible.

King of Beers

Until next time!