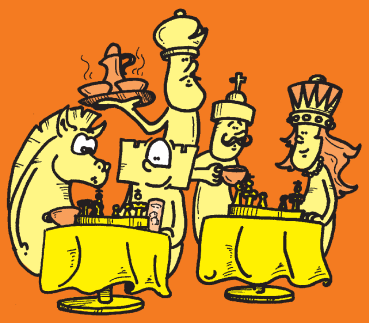


THE PUZZLING SIDE OF CHESS

Jeff Coakley

CYCLOTRONIC JOYRIDE

number 74 November 22, 2014

The main attraction in this week's column is a "carousel of cyclotrons". But first, let's play the old switcheroo.

Step right up, folks. It's an easy game.
Just keep your eye on the bean.

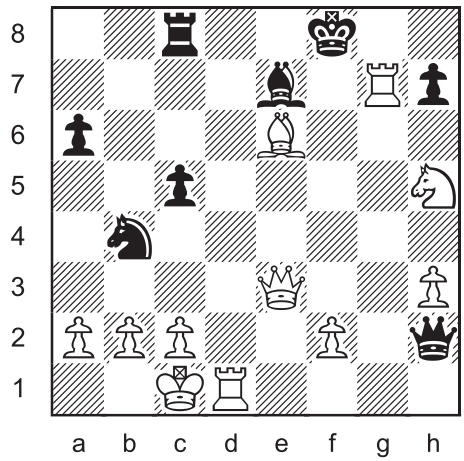
In case you're new to *switcheroos*, here are the rules. The goal is to put the black king in checkmate by switching the position of two pieces. No actual chess moves are made. The pieces simply swap squares.

Any two pieces can switch places. Colours do not matter. You can trade white with white, black with black, or white with black. Switching the black king is a common trick.

The position after the switch must be legal. A position is legal if it could occur in an actual game. This rule implies several things.

a) A pawn cannot be put on the 1st or 8th rank.
b) Both kings cannot be in check.
c) There must be a way to reach the resulting position with a legal white move. Impossible checks, especially double checks, are a frequent “violation”.
d) In some cases, *retrograde analysis* may be required to decide if the position after a switch is legal.

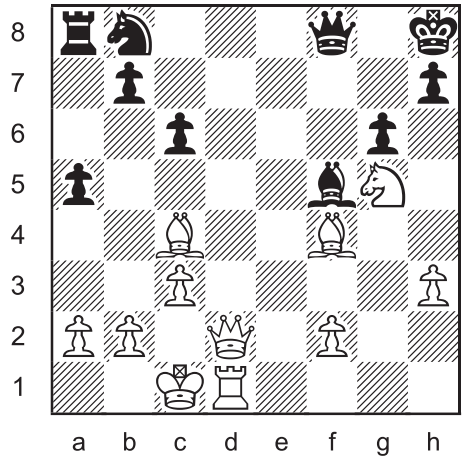
Switcheroo 65



Switch two pieces so that
Black is in checkmate.

For problems 1-64 and more information on switcheroos, see the Puzzling Side archives, starting with column 4.

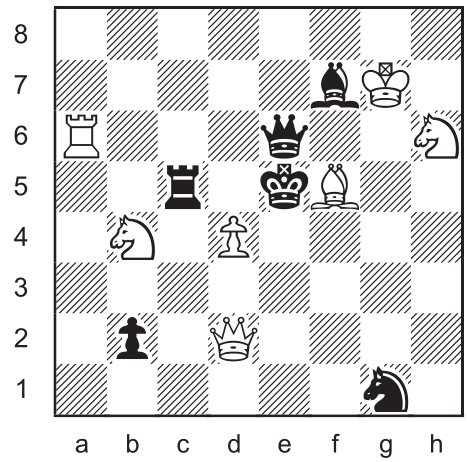
Switcheroo 66



Switch two pieces so that
Black is in checkmate.

In the next puzzle, the hand is truly quicker than the eye.

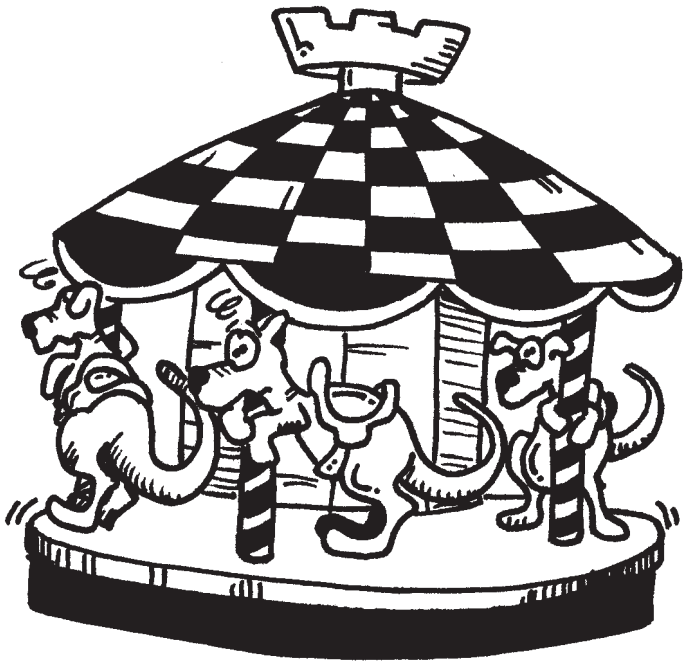
Switcheroo 67



Switch two pieces so that
Black is in checkmate.

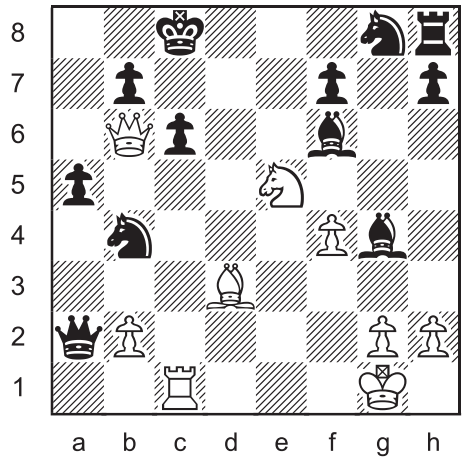
And now, ladies and gentlemen, we are pleased to present the highlight of the evening:

A Carousel of Cyclotrons



A *cyclotron* is a three-way switcheroo. Instead of switching two pieces, we switch three. The pieces trade places in a “cycle”. Piece A goes to square B, piece B goes to square C, and piece C goes to square A. Otherwise the usual rules for switcheroos are followed. See column 55.

Cyclotron 08

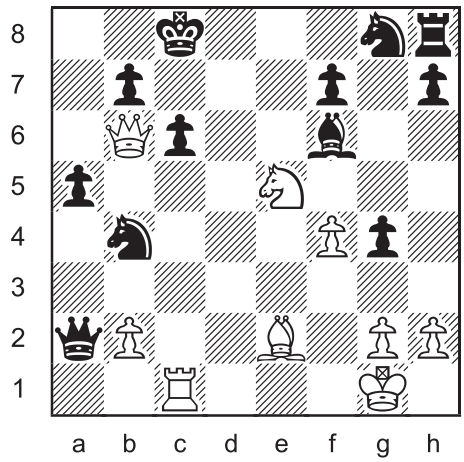


Cycle three pieces so that
Black is in checkmate.

Any three pieces may trade places. Colours do not matter. The resulting position must be legal.

As you will soon notice, all eight cyclotrons in this column share a common “zero position”. Only one or two pieces are different in each diagram.

Cyclotron 09

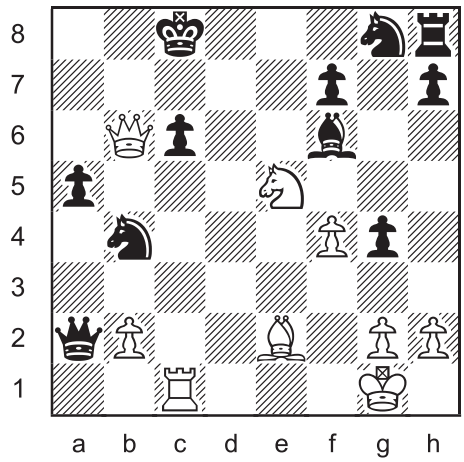


Cycle three pieces so that
Black is in checkmate.

Merry-go-rounds have been a popular ride at carnivals and fairs for over 150 years. It seems that there is something inherently fun about going in circles!?

Have you heard of the *Merry-Go-Round Museum*? It’s in Sandusky, Ohio. Not far from *Cedar Point Amusement Park* on the shores of Lake Erie.

Cyclotron 10



Cycle three pieces so that
Black is in checkmate.

Ferris at the Fair

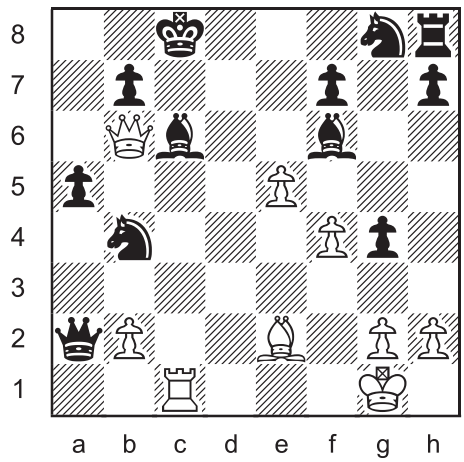
The *Ferris wheel* was invented by Illinois engineer George Ferris (1859-1896) as part of the Chicago World's Fair of 1893. The 80 meter "observation wheel" (264 feet) was designed to rival the Eiffel Tower which was built for the previous exhibition in Paris 1889.

The original Ferris wheel. Seating capacity: 2160.

For an interesting article, with a surprise ending, check out *The Life and Death of Chicago's Great Ferris Wheel* by Patrick Meehan.

http://www.hydeparkhistory.org/2015/04/27/ferris-wheel-in-the-1893-chicago-worlds-fair/

Cyclotron 11



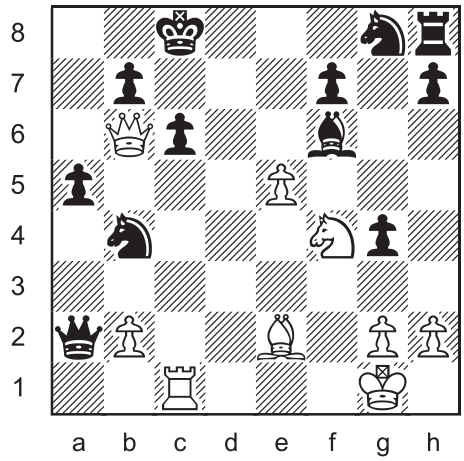
Cycle three pieces so that
Black is in checkmate.

As of March 2014, the tallest Ferris wheel in the world is the *High Roller*, located on the strip in Las Vegas, Nevada. At 167 meters (550 feet), it surpassed the height of the *Singapore Flyer* by two meters.

Other past record holders include the *Star of Nanchang* (China) and the *London Eye*. Several new giant wheels are currently in the works around the world. Records are made to be broken, right?

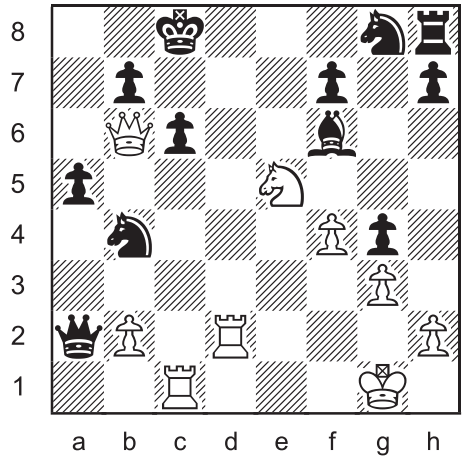
High Roller

Cyclotron 12



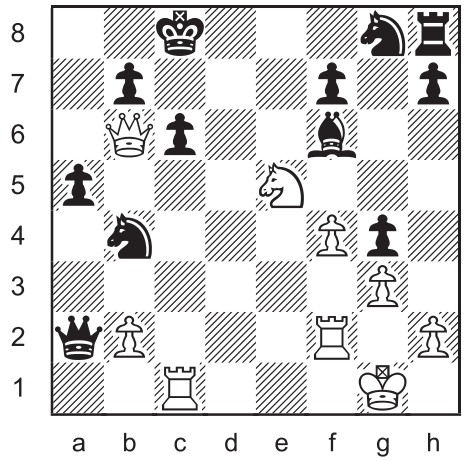
Cycle three pieces so that
Black is in checkmate.

Cyclotron 13



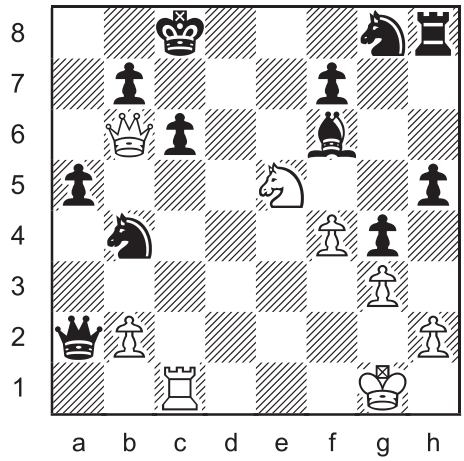
Cycle three pieces so that
Black is in checkmate.

Cyclotron 14



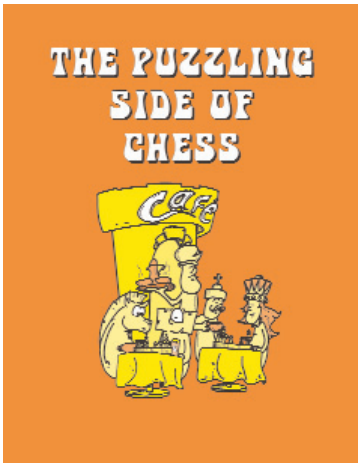
Cycle three pieces so that
Black is in checkmate.

Cyclotron 15



Cycle three pieces so that
Black is in checkmate.

Stay tuned next week for the winning problems from the *2014 Chess Cafe Puzzlers Cup*.

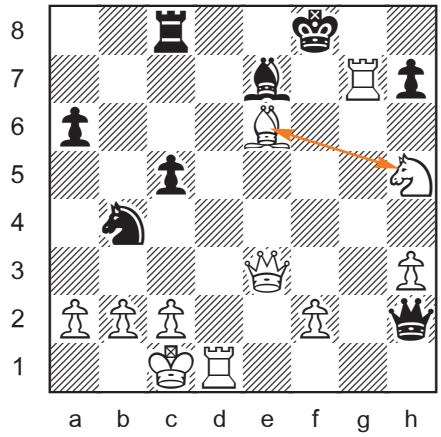


SOLUTIONS

All problems by J. Coakley. Switcheroos 65 and 66 are from *Winning Chess Puzzles For Kids Volume 2* (2010). The others are *Chesscafe.com* originals (2014).

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.

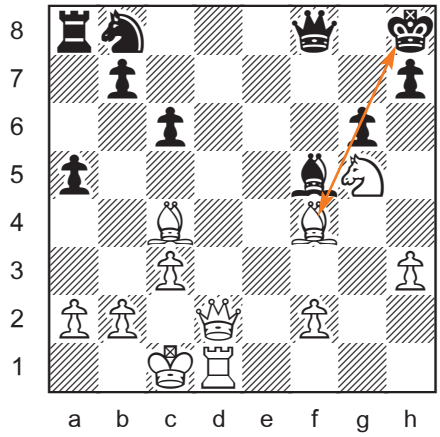
Switcheroo 65



Be6↔Nh5

The knight switches squares but keeps the rook on g7 protected.

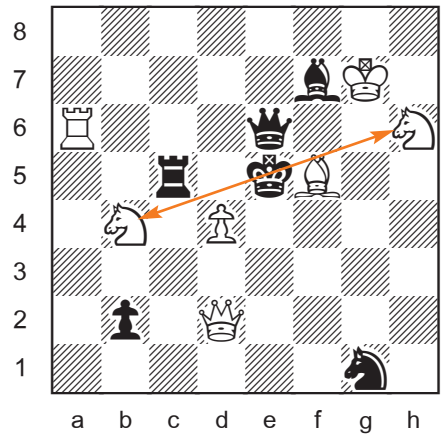
Switcheroo 66



Bf4↔Kh8

From the far corner, the white bishop covers e5.

Switcheroo 67

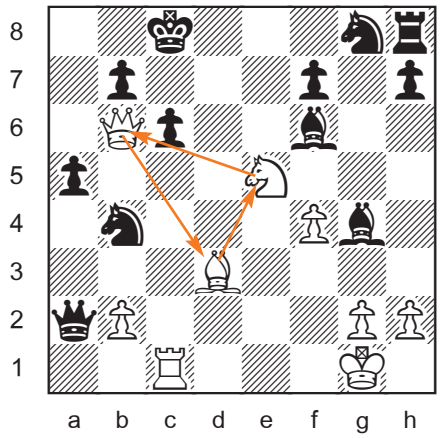


Nb4↔Nh6

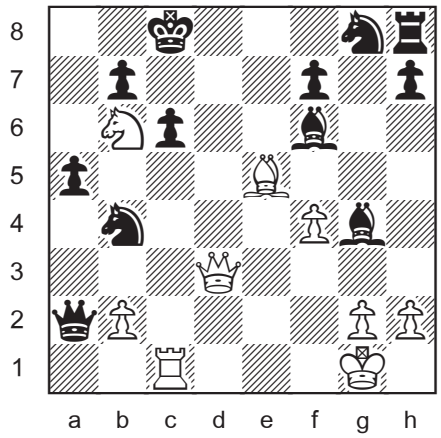
An “invisible pseudo-switch”. Black is mated in the diagram. Only this knight swap maintains the mate.

(Ra6↔Qe6? is an impossible double check.)

Cyclotron 08



Qb6→d3 Bd3→e5 Ne5→b6



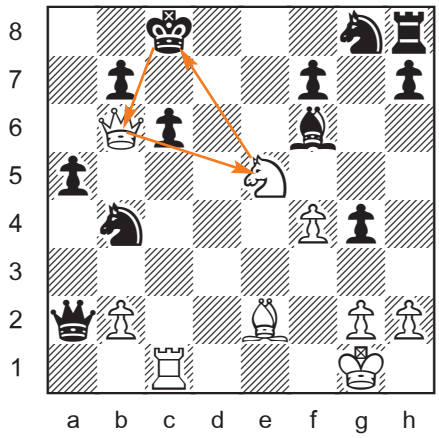
post-cycle

The order in which the pieces are cycled is not important. The resulting position will still be the same.

In this puzzle, all three cycled pieces are white. But this is not a requirement. Like switcheroos, the pieces changing places in a cyclotron may be of either colour.

The diagram on the right shows the position after the cycling of pieces.

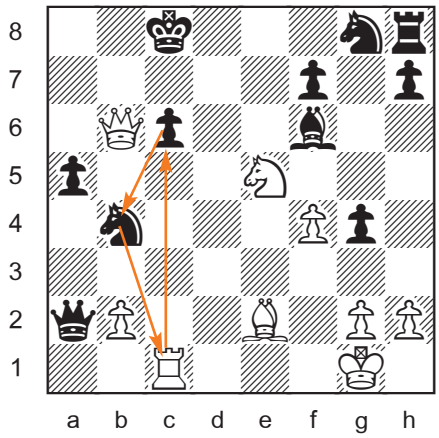
Cyclotron 09



Qb6→e5 Ne5→c8 Kc8→b6

The cyclotronic king spins his way to defeat.

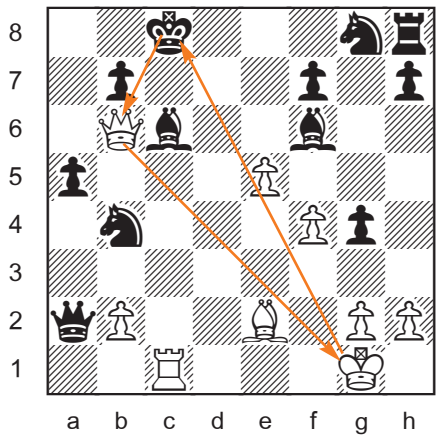
Cyclotron 10



Nb4→c1 Rc1→c6 c6→b4

Maybe that one was too easy.

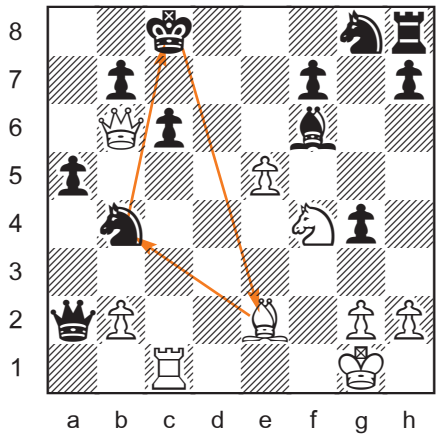
Cyclotron 11



Qb6→g1 Kg1→c8 Kc8→b6

Both kings get in on the action.

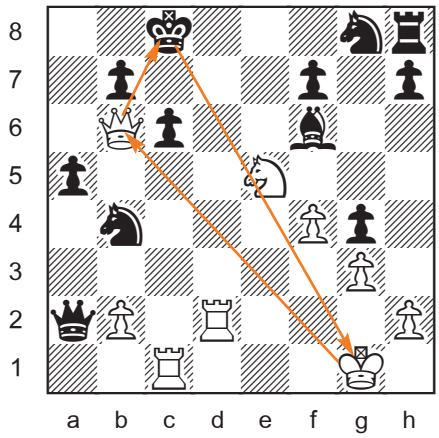
Cyclotron 12



Nb4→c8 Kc8→e2 Be2→b4

The cycle Qb6→c8, Kc8→c6, c6→b6? is an impossible double check.

Cyclotron 13

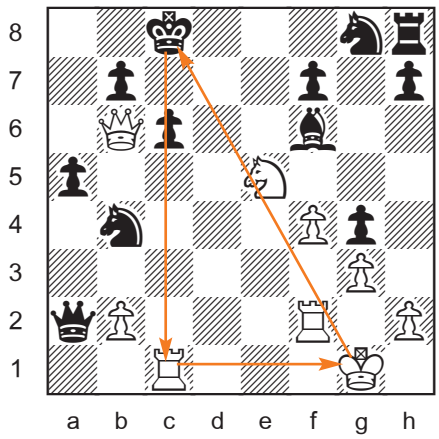


Qb6→c8 Kc8→g1 Kg1→b6

The white king must go to b6. Anywhere else would place him in check, bring a pawn to the 1st or 8th rank, or eliminate the mate.

The cycle c6→e5, Ne5→c8, Kc8→c6? is an impossible double check.

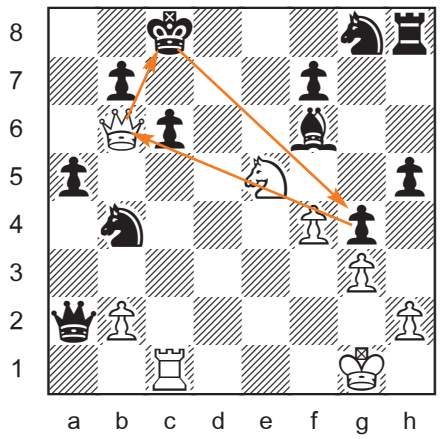
Cyclotron 14



Rc1→g1 Kg1→c8 Kc8→c1

The kings perform a right triangle.

Cyclotron 15



Qb6→c8 Kc8→g4 g4→b6

The last move was the double check 1.Nd7-e5#. The black queenside pawn structure after cycling is legal, because the captures ...c7xb6 and ...d7xc6 were possible.

Until next time!