CYCLOTRONIC MINDWARP:
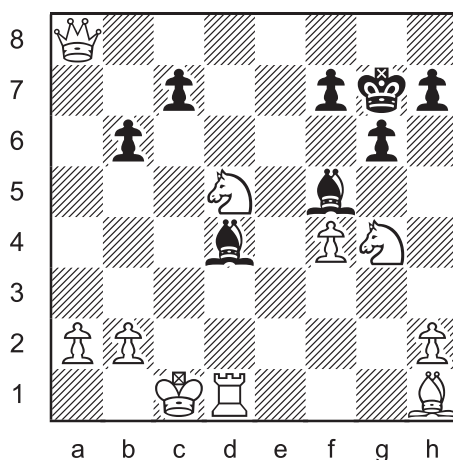## The Thrill of Neural Acceleration

number 126   November 12, 2016

The day is not far away. Biocomputer technology will eventually allow humans to download knowledge and skills directly into our brains. The consequences are mind-boggling. Everyone will be a genius. And nobody will be interested in chess puzzles because they're all too easy. So, enjoy them while you can!

As usual on the *Puzzling Side*, the five problems in this week's column cannot be solved with standard chess programs.

A *cyclotron* is a three-way switcheroo. Instead of switching two pieces, we switch three. If you're new to this type of puzzle, the rules are given below.

Cyclotron 43

Cycle three pieces so that
Black is in checkmate.

CYCLOTRONS

Switch the position of three pieces so that Black is in checkmate. No actual chess moves are made. The pieces simply swap squares. 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.
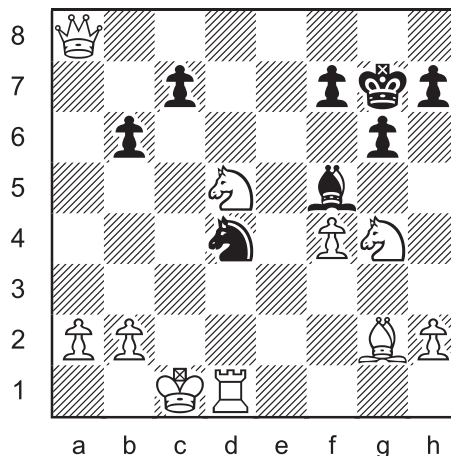
Any three pieces can trade places. Colours do not matter. The cycled pieces can be all white, all black, or a mix of both. Cycling the black king is a common trick.

The position after the cycle must be legal. This rule implies several things.
  a) A pawn cannot be on the 1st or 8th rank.
  b) Both kings cannot be in check.
  c) There must be a way to reach the position with a legal white move. Impossible checks, especially double checks, are a frequent "violation".
  d) In some cases, retrograde analysis is required to decide if the position after a cycle is legal.
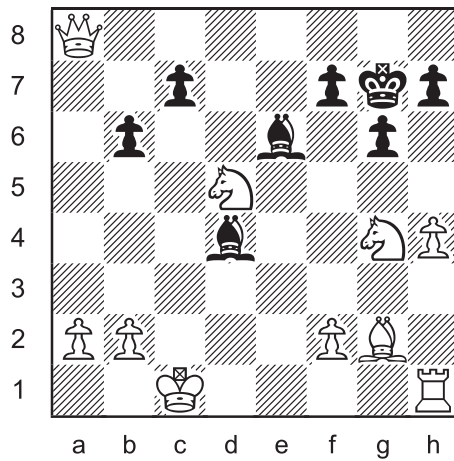

Cyclotron 44

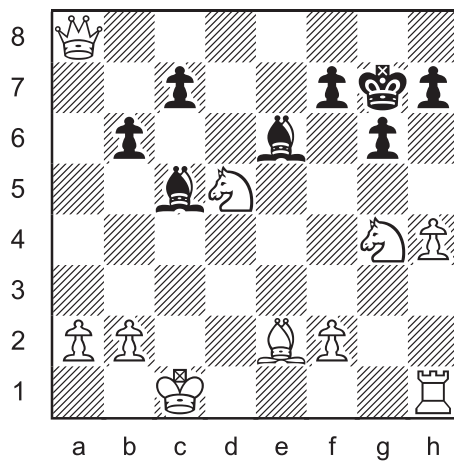
Cycle three pieces so that
Black is in checkmate.

Cyclotron 45

Cycle three pieces so that
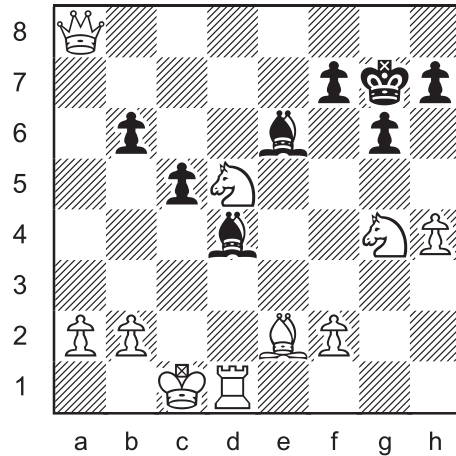Black is in checkmate.

Cyclotron 46

Cycle three pieces so that
Black is in checkmate.

Cyclotron 47

Cycle three pieces so that
Black is in checkmate.

Happy birthday to Mikhail Chigorin. The great Russian chess master was born 166 years ago on November 12. Known for sharp tactics and original ideas, he valued knights more highly than bishops. This unusual belief is reflected in the strategy of the *Chigorin Defence* 1.d4 d5 2.c4 Nc6, in which Black typically exchanges bishop for knight.

Mikhail Chigorin (1850-1908)

Chigorin played for the world championship twice against Wilhelm Steinitz, nearly winning in 1892. He led 10-9 in the best of twenty match, but then lost the final game as well as the ensuing playoff.
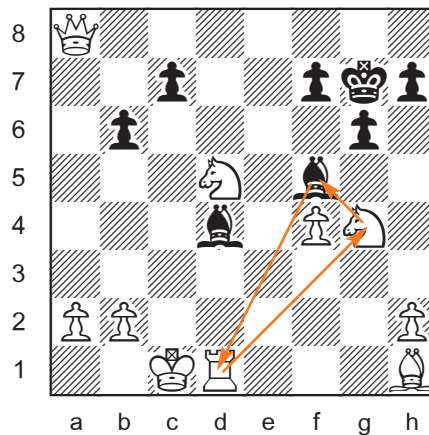
SOLUTIONS

All cyclotrons by J. Coakley. *Puzzling Side of Chess* (2016).

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. Other columns with similar problems can be found in the Puzzling Side archives (55, 89, 92, 95, 119). For more information on ordinary switcheroos, see column 4.
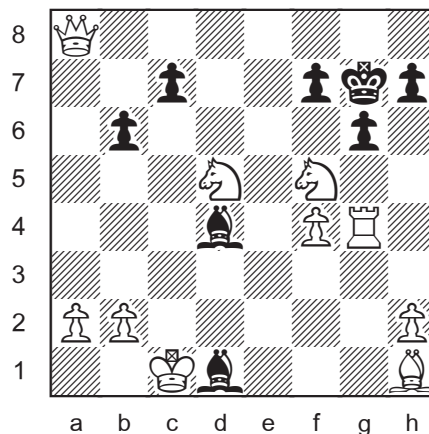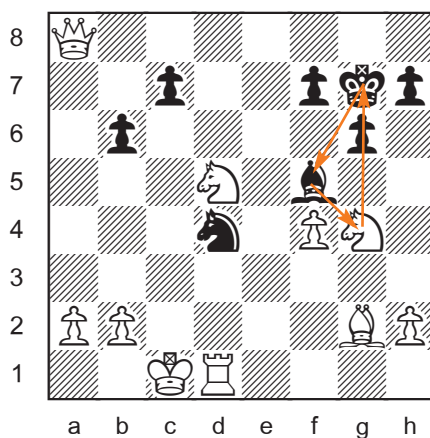
Cyclotron 43

Rd1→g4 Ng4→f5 Bf5→d1

The cycle Nd5→g7 Kg7→h1 Bh1→d5? is an impossible double check.

The order in which the pieces are cycled is not important. The resulting position will still be the same. See diagram below.
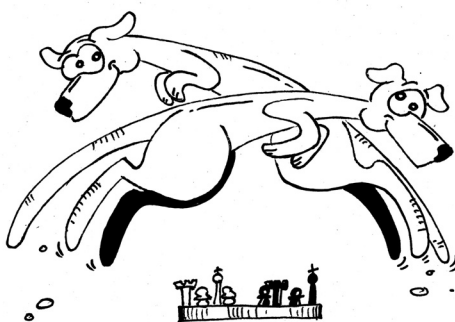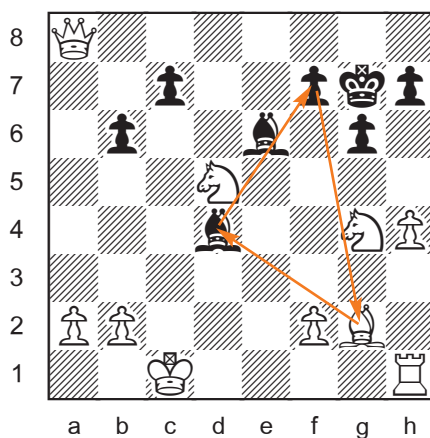
Cyclotron 44

Ng4→g7   Kg7→f5   Bf5→g4

The black king emerges to embrace his fate.

Cyclotron 45

Bg2→d4   Bd4→f7   f7→g2

Shifting the pawn on f7 eliminates the block ...f6.

Cyclotron 46

Ng4→d5 Nd5→g7 Kg7→g4

Two white knights in the same cycle!? This is the equivalent of a basic switcheroo with the solution Ng4↔Kg7. But in a cyclotron, we must cycle three pieces.

Cyclotron 47

Nd5→f7 f7→g7 Kg7→d5

As you couldn't help but notice, the cyclotrons in this column all share the same "zero position". Check back next month for more problems in the *Cyclotronic Mindwarp* series.

Until next time!