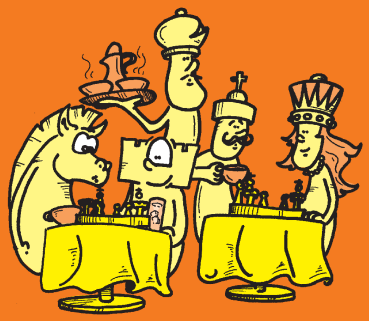


THE PUZZLING SIDE OF CHESS

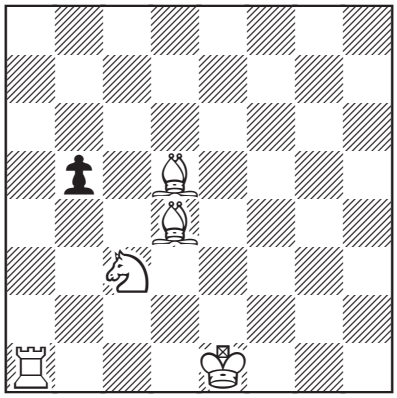
Jeff Coakley

SMORGASBORD XXXVI

number 228 October 31, 2023

Hey there, halloweeners! Are you ready for some tricks and treats? Here's a seven puzzle smorgasbord. Leave your mask on if you like.

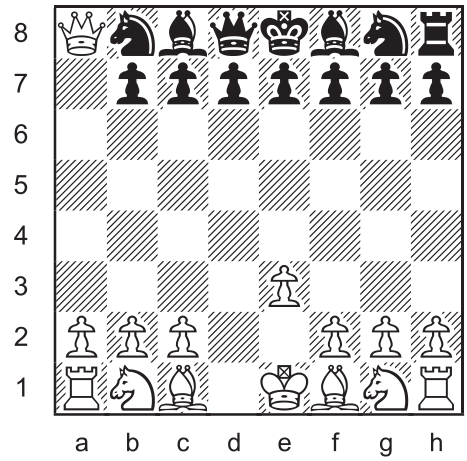
Triple Loyd 90



Place the black king on the board so that:

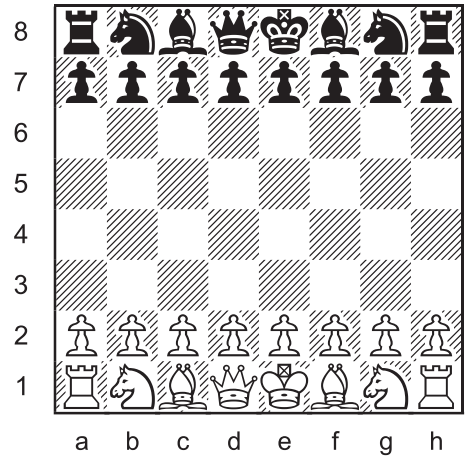
A. Black is in checkmate.
B. Black is in stalemate.
C. White has mate in 1.

Longer Proof Game 112 (4.5 moves)



This position was reached after
White's fifth turn. What were the moves?

Synthetic Game 52



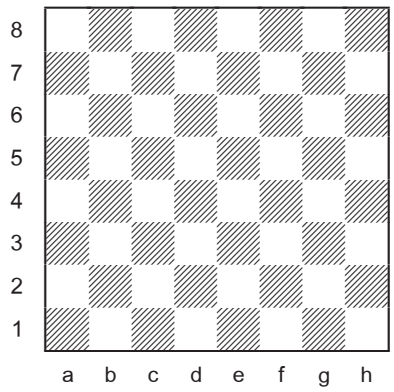
Compose a game that ends with 5...Re5#.
(*Not the capture 5...Rxe5#*)

The following construction task is a rerun from column 178. It's the usual reason. We have a new record thanks to the king of dead reckoning, Andrew Buchanan!

The goal is a dead position with the most possible moves. Of course, a dead position is drawn so technically no further moves can be made. Perhaps the clearest way to state the objective is a position with the most apparently legal moves, but moves which in fact could not be played in an actual game because the game is already over according to FIDE rule 5.2.2. "*The game is drawn when a position has arisen in which neither player can checkmate the opponent's king with any series of legal moves. The game is said to end in a 'dead position'. This immediately ends the game.*"

Positions involving retrograde analysis can be divided into three types based on how we know whose turn it is. The task here is for a position where White is in check (type C). See column 178 for solutions to the same task with type A and B positions.

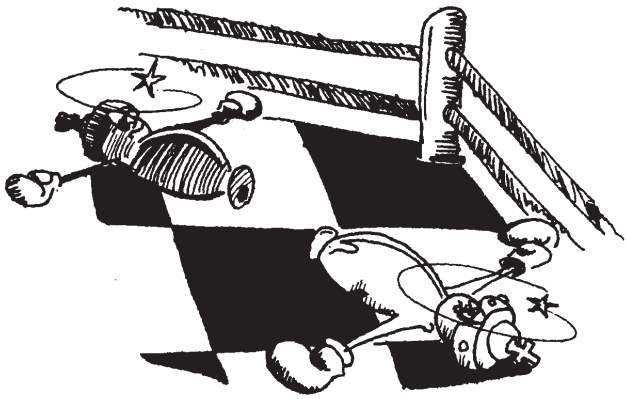
Dead Position Move Maximizer



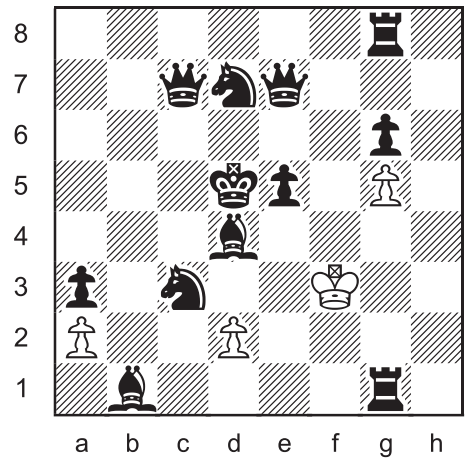
Construct a dead position with White in check
so that the number of possible moves is maximized.

The position must be legal, which means reachable in an actual game.

The old mark was 15.



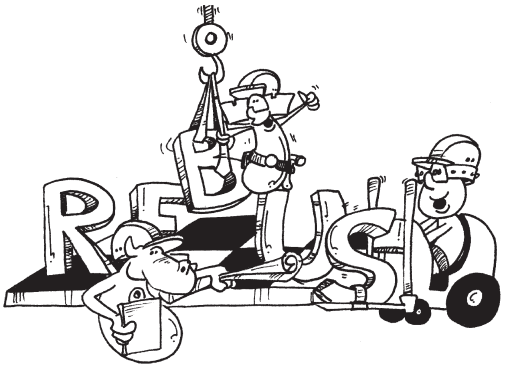
Multi-Wham 77



series-mate in 22

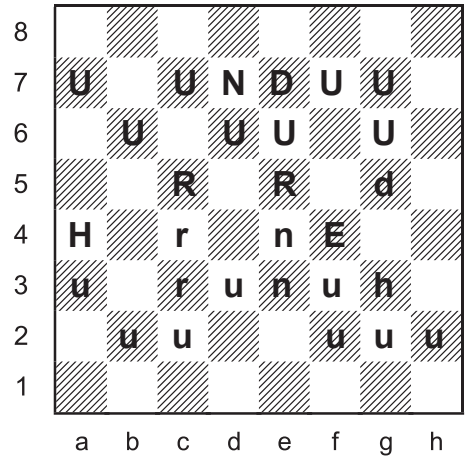
White plays twenty-two moves in a row to mate Black.

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.



Rebus 100

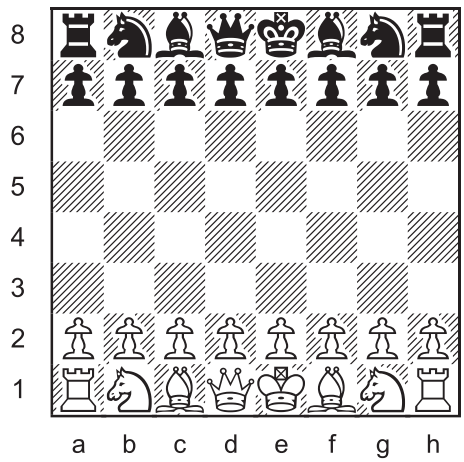
"*hundred*"



Each letter represents a different type of piece.
Uppercase is one colour, lowercase is the other.
Determine the position and the last move.

Our final problem is a replay from column 100 of a frequently asked question that has confounded many a mind, including mine evidently. The reason in this case is to give the right answer! It's something that I've meant to do for years since I realised that my solution was off by half a move.

Longest Possible Game of Chess



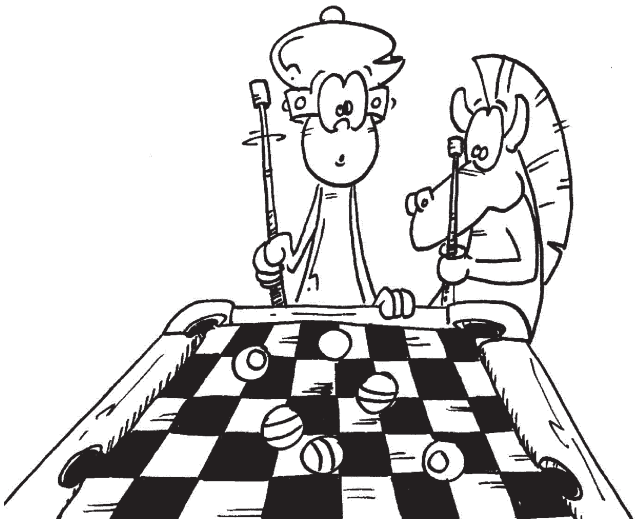
part A

What is the longest possible game of chess
based on the 50 move rule?

Assume that a draw will be claimed if fifty moves are made by each side without a capture or a pawn move.

part B

What is the longest possible game of chess
based on the 75 move rule?



"We haven't made a shot in 50 turns. Can we just call it a tie?"

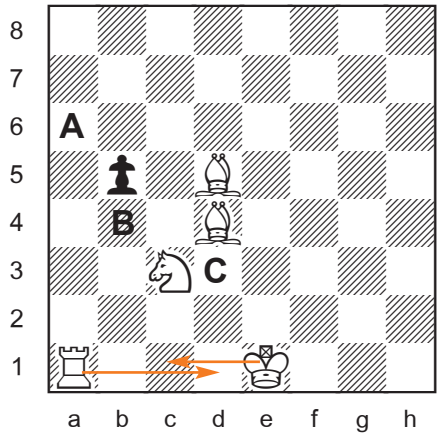
SOLUTIONS

All problems except the *dead position move maximizer* and *longest game* are by J. Coakley, *Puzzling Side of Chess* (2023). Rebus 100 is a joint composition with Andrey Frolkin.

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.

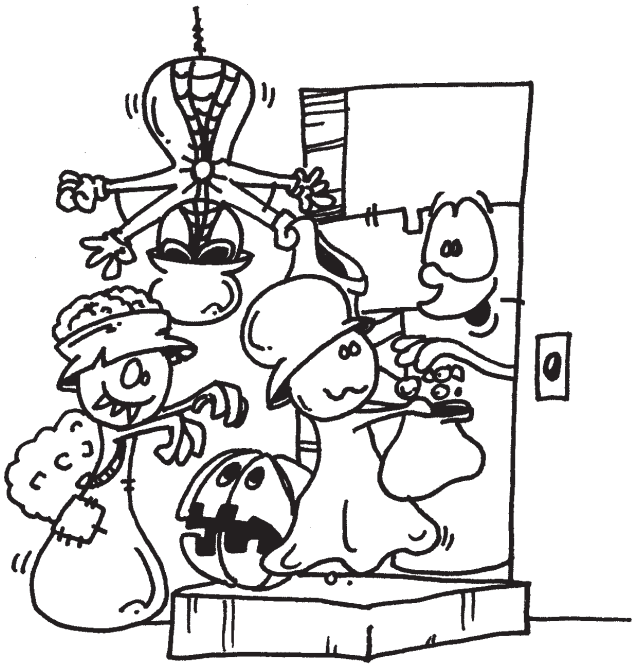
Archives. Past columns are available in the *Puzzling Side* archives.

Triple Loyd 90

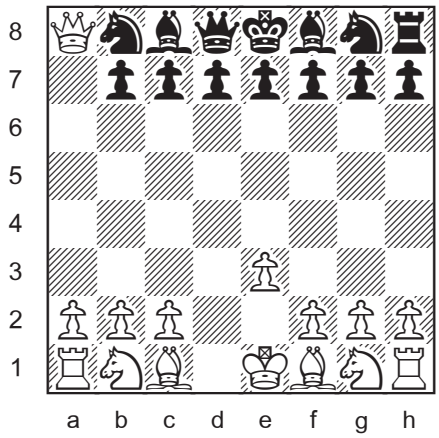


A. Ka6#
B. Kb4=
C. Kd3 (0-0-0#)

The black king surrenders at the white castle.



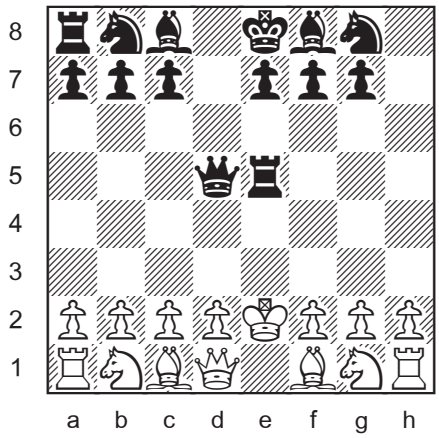
Longer Proof Game 112 (4.5 moves)



1.e3 a5 2.Qh5 Ra6 3.Qxa5 Re6 4.Qa8 Rxe3+ 5.dxe3

Phantom non-capture on a8.

Synthetic Game 52



1.e4 d5 2.exd5 h5 3.Qxh5 Qxd5 4.Qd1 Rh5 5.Ke2 Re5#

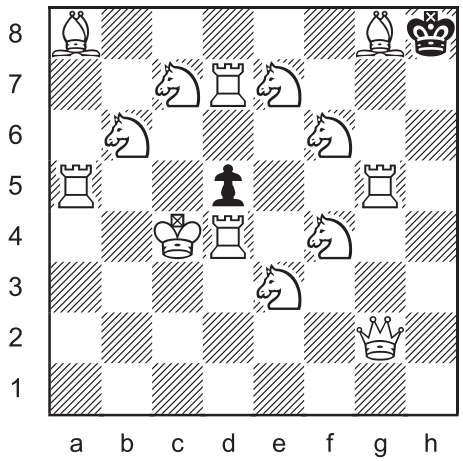
The moves can be played in different orders.

Dead Position Move Maximizer

Type C position

Andrew Buchanan 2023

Puzzling Side of Chess

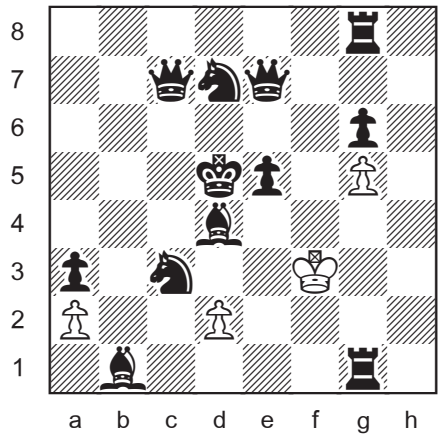


White is in check so it is White to move.

20 “legal but unplayable moves”

White is in check by the pawn on d5. White has 20 ways to get out of check, but they all result in stalemate so the position is dead. The white king has 7 moves, including a capture on d5. The other 13 white pieces could each capture on d5.

Multi-Wham 77

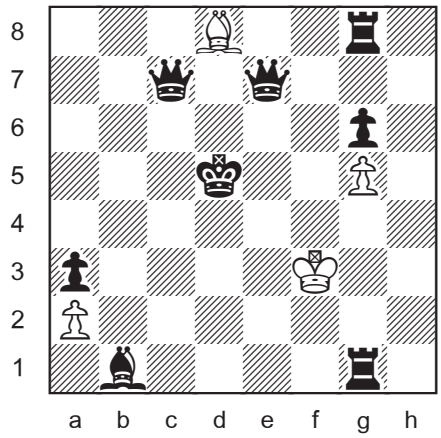


series-mate in 22

The only mobile piece is the d-pawn, so the first 5 moves are obvious.

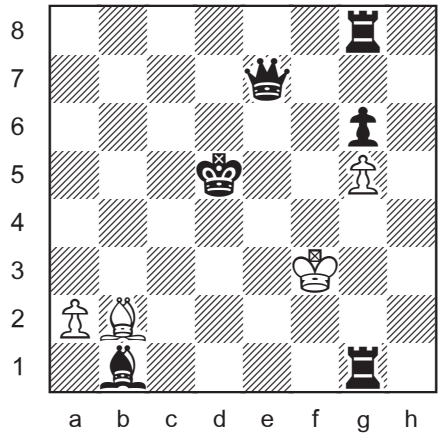
1.dxc3 2.cxd4 3.dxe5 4.e6 5.exd7 6.d8=B

Promoting to queen or rook would be check. Knighting the pawn is one move too slow. For example, *6.d8=N? 7.Nb7 8.Na5 9.Nb3 10.Nd2 11.Nxb1 12.Nxa3 13.Nc4 14.Nd6 15.Nb7 16.a4 17.a5 18.a6 19.a7 20.a8=Q 21.Qe8 22.Qxe7 23.Qe4#.*



7.Bxc7 The bishop will free the a-pawn by capturing on a3. Surprisingly, taking first on c7 is quicker by one move than the seemingly more direct capture on e7. For example, *7.Bxe7? 8.Bxa3 9.Bd6 10.Bg3 11.a4 12.a5 13.a6 14.a7 15.a8=R 16.Rxg8 17.Rxg6 18.Rc6 19.Rxc7 20.Ke3 21.g6 22.g7 23.g8=B#*.

8.Bd6 9.Bxa3 10.Bb2 The bishop takes control of d4 and e5.

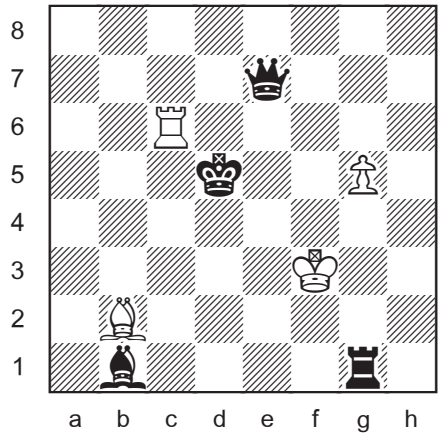


11.a4 12.a5 13.a6 14.a7 15.a8=R

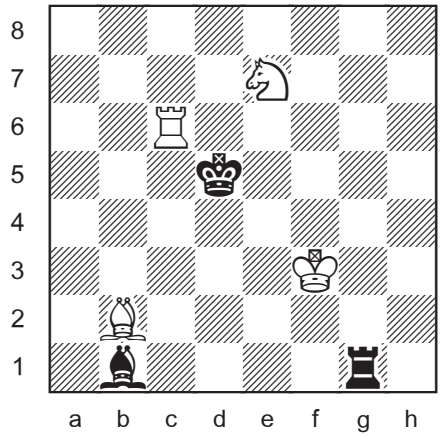
Promoting to queen or bishop would be check. A knight could not leave a8 without checking.

16.Rxg8 17.Rxg6 18.Rc6

The rook frees the g-pawn and takes its place in the mating net.



19.g6 20.g7 21.g8=N 22.Nxe7#

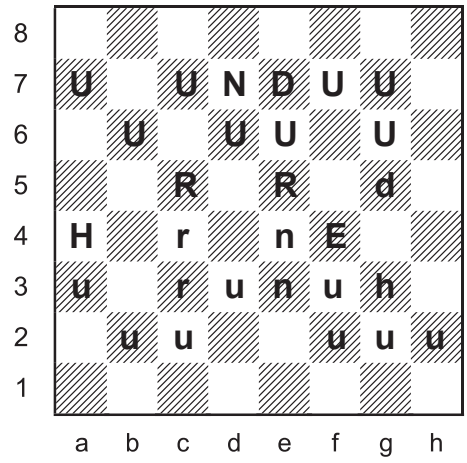


Promotions to R, B, N. Three-quarters of an *allumwandlung*.

Rebus 100

Andrey Frolkin & Jeff Coakley

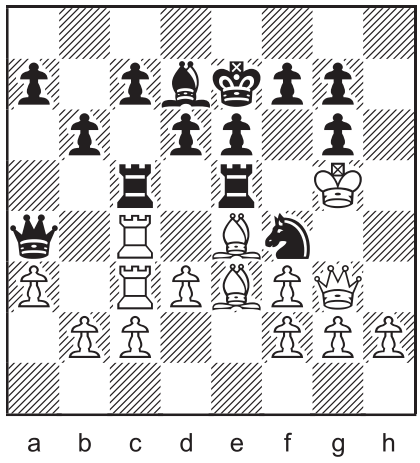
"*hundred*"



H = queen
U = pawn
N = bishop
D = king
R = rook
E = knight

caps = black

last move:
1...Rd5xNe5+



(14 + 14)

U = ♙ If U ≠ ♙, there are 12 promoted pieces (U's) and at least one passed pawn. That is impossible with only four missing pieces.

caps = black If caps = white, there are too many "inverted" pawns.

All 16 pawns are on the board so there are no promoted pieces.

HD = (♔♕) Letters with one uppercase, one lowercase.

N = ♗ R ≠ ♗ Both uppercase R's are on dark squares.
E ≠ ♗ Impossible check (f4) regardless of which letter is king.

RE = (♖♘)

R = ♖ If R = ♘ E = ♖

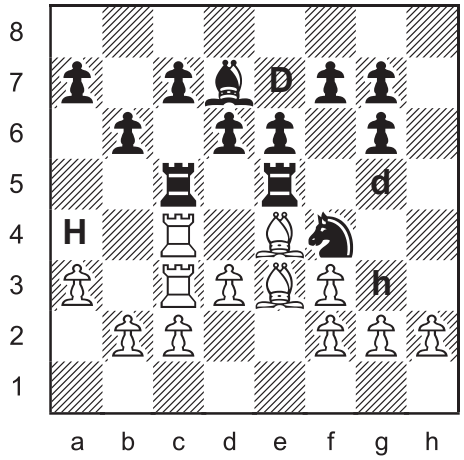
Black is missing a rook and a dark-square bishop. The rook was captured on the light square f3 by the white e-pawn. The black rook could only get to f3 after the h-file was opened by the capture ...h7xg6.

White is missing a rook and a light-square bishop. Those pieces could only get to g6 after lines were cleared by the capture e2xf3.

A classic "time loop" contradiction. The captures on g6 and f3 had to <u>precede and follow</u> each other. So R ≠ ♘.

E = ♘ Diagram next page.

One of the kings (HD) is in <u>check</u> by a rook (from either c4 or e5). Both checks would have to be a <u>capture</u>.



caps = black

H ≠ ♔ If H = ♔

The last move was a capture by 1.Rd4xc4+. Black is missing a rook and a dark-square bishop. The rook was captured on f3. So a capture on the light square c4 is impossible.

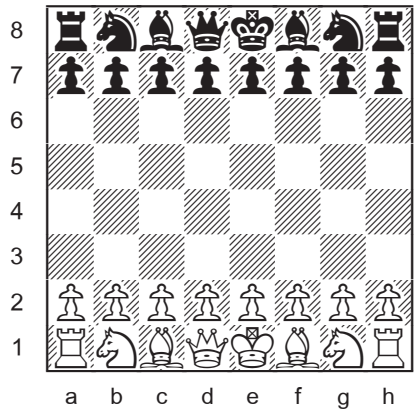
H = ♕

D = ♔ The king on g5 is in <u>check</u> by the rook on e5.

Last move: **1...Rd5xNe5+** The two missing white pieces are both knights so the piece captured must be a knight.

Ms. Scarlett and Mr. Green in the lounge with the candlestick.

Longest Possible Game of Chess



part A

Based on the 50 move rule.

5898.5 moves

This solution is a revision and correction to the answer of 5898 as originally published in column 100, March 2016. Changes to the analysis occur after move 5000.

In the longest possible game of chess, a capture or a pawn move is only made every 50th turn.

The maximum number of captures in a game is 30, leaving king vs. king.

The maximum number of pawn moves in a game is 96. However, in order for all the pawns to get by each other, 8 pawn moves must also be captures. So for this calculation, we count 88 pawn moves (96 - 8 = 88).

Using these values, the maximum number of moves would be:

(50 x 30) + (50 x 88) = 1500 + 4400 = 5900

However, we must still subtract a certain number of moves because not all the captures and pawn moves can be made by Black (on their 50th, 100th, ..., 5850th move).

At some point, White will have to make a capture, let's say on move 150. Then, if Black makes the following capture, it would have to be on move number 199 (not 200). If White captures next after that, it would be move 249. And if Black makes the next capture, it would have to be on move number 298 (not 299 or 300).

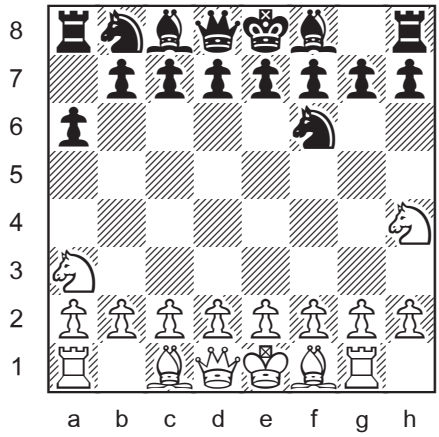
So each time the colour of the capturer (or pawn mover) changes from white to black, or vice versa, the maximum number of moves must be reduced by "one half move".

It is possible to play the longest game by only “changing colours” three times, twice to White, and once to Black. Those three switches equate to the loss of 1.5 moves. Subtracting this amount from 5900 gives us 5898.5, which means that the last move of the longest game would be on White’s 5899th move.

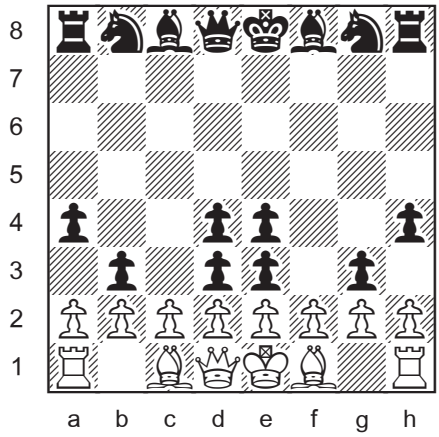
However, something strange happens when we get to the final moves. But first, let’s see how we get there.

1.Nf3

The game starts with 49.5 moves (50 by White, 49 by Black) in which the pawns remain stationary. The knights hop around and the rooks shuffle back and forth in their corners. Then, Black plays 50...a6.



Black continues to make a pawn move every 50th turn. On move numbers 100, 150, 200, etc. White only moves knights and rooks. After 1400...h4, the following position is reached. Black has made 28 pawn moves, two of which were captures.

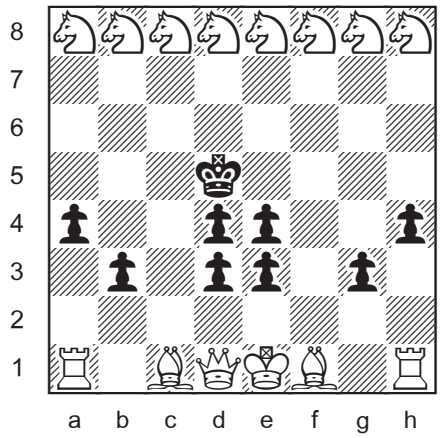


This brilliant position was given by Karl Fabel, Eero Bonsdorff, and Olavi Riihimaa in their excellent 1966 book *Schach und Zahl* (Chess and Numbers).

The important feature of this pawn formation is that now White will be able to promote all of their pawns before the “colours shift” again. That is, before Black is the player who makes a capture or pawn move.

As you can see, each of the white pawns will be able to pass by the black pawns. The c-pawn and f-pawn can pass without a capture. The other six pawns will need to make a capture.

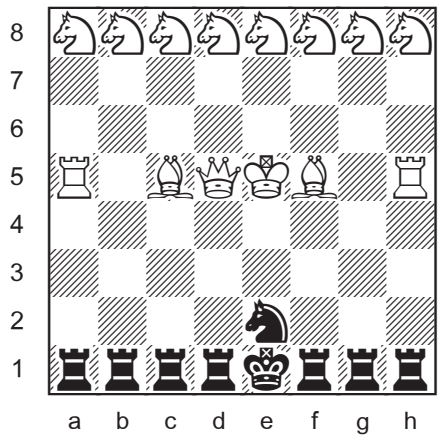
So White makes 48 pawn moves, one every 50 turns, six of which are captures. The first white pawn move is 1450.a3. The 48th pawn move is 3800.g8=N. Black still has one piece (besides the king and 8 pawns) on the board. So the next capture is 3850.Nxa8, reaching this diagram.



Of course, the promoted pieces do not need to be knights, and the white pieces can be on different squares. The main thing is that all of the white pawns have promoted.

Now the colours shift a second time. Black will be the one moving pawns and making captures. Black will make 20 moves to promote all eight pawns. None of those moves are captures.

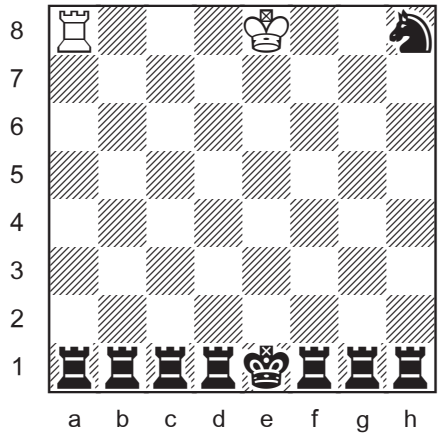
The first black pawn move in this phase of the game is 3899...a3. The last promotion will be 4849...h1=R. Giving us the next diagram.



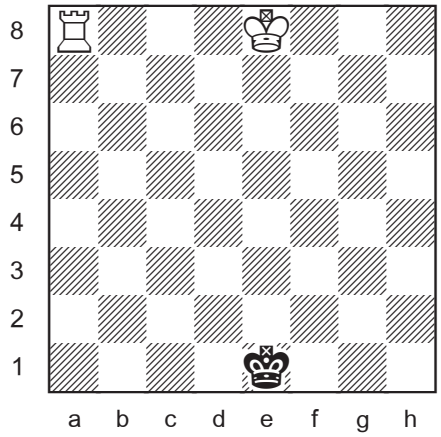
Here is where the 2016 solution is improved. In the next phase, Black leaves one white rook on the board. This allows White to make the last move of the game, thereby extending the marathon by a half move.

White has 13 pieces on the board, not counting the king. Black will capture one every 50th turn, until White only has a king and a rook. The first capture is 4899...Rxh5. The 12th capture is 5449...Nxh8.

[*In the original solution, Black captured all 13 pieces. The remaining diagrams are different now with corresponding changes to the text.*]

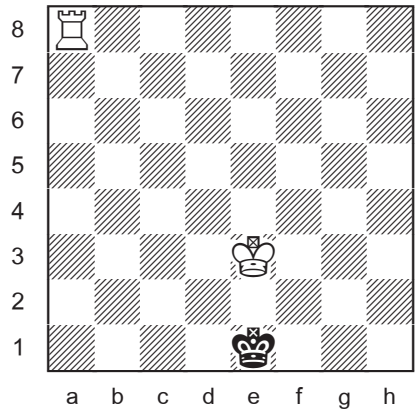


A white king and rook versus the black king and 8 pieces. The colours now shift for the third and last time. White will capture a black piece every 50 turns. The first will be 5499.Kxd8. The eighth capture will be 5849.Kxe8. Reaching this endgame.



The battle rages on until Black plays 5898...Ke1, with the following interesting position.

The next white move will end the game. Either mate by 5899.Ra1# or a draw by the 50 move rule with any other 5899th move. It is essential that White have the option of mating with the final move, otherwise the position would already be drawn by the "dead position" rule. (This is the *something strange* that happens when we get to the final moves.)



The grand conclusion is: The longest possible game based on the 50 move rule is **5898.5** moves, ending with White's 5899th move, as given by Karl Fabel in 1966.

Concerning the possibility of a dead position, FIDE article 5.2.2 states:

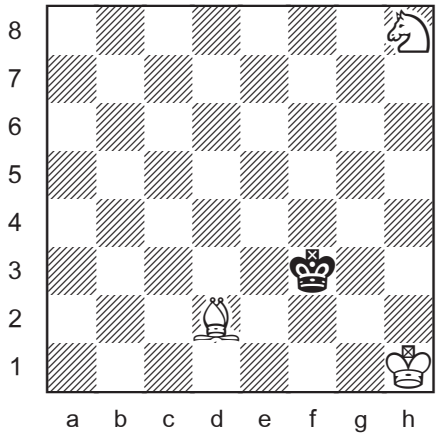
> *The game is drawn when a position has arisen in which neither player can checkmate the opponent's king with any series of legal moves. ... This immediately ends the game.*

Therefore White must be able to mate with their 5899th move. If not, the position is already drawn because no mate is possible before the 50 move rule ends the game. However, the application of dead reckoning to this puzzle is debatable because in a normal game, a draw by the 50 move rule is not automatic. It must be claimed by one of the players, so the dead position rule would not apply.

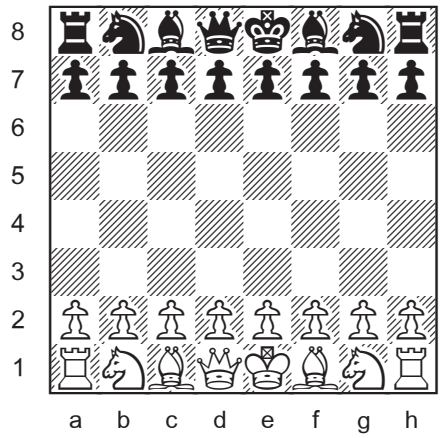
On the other hand, the 75 move rule is automatic, in which case dead reckoning does evidently apply.

Imagine the following weird situation in a tournament game.

In this position, with Black to play, say that 10 moves have been made without a capture or pawn move. The game is already drawn because the quickest possible checkmate takes 66 moves, which exceeds the 75 move limit. But how would the players or arbiter know?



Longest Possible Game of Chess



part B

Based on the 75 move rule.

One shortcoming of part A is that in a game of chess, the players are not required to claim a draw by the 50 move rule. Theoretically the game could go on forever, at least it could before the year 2014. That's when FIDE introduced the new *75 move rule*.

With the 75 move rule, the draw happens automatically. There is no need for a claim by one of the players. So we now have a definitive solution to our puzzle. Perhaps this is why they made the rule?!

All calculations in part B are the same, except we multiply by 75 instead of 50.

(75 x 30) + (75 x 88) - 1.5 = 2250 + 6600 - 1.5 = 8848.5

The longest game of chess is 8848.5 moves.

8848.5

Until next time!