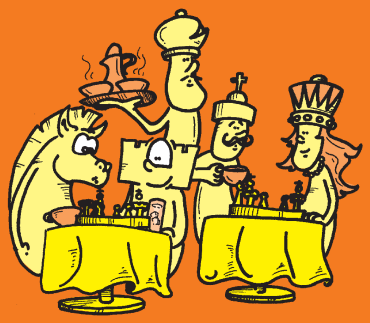


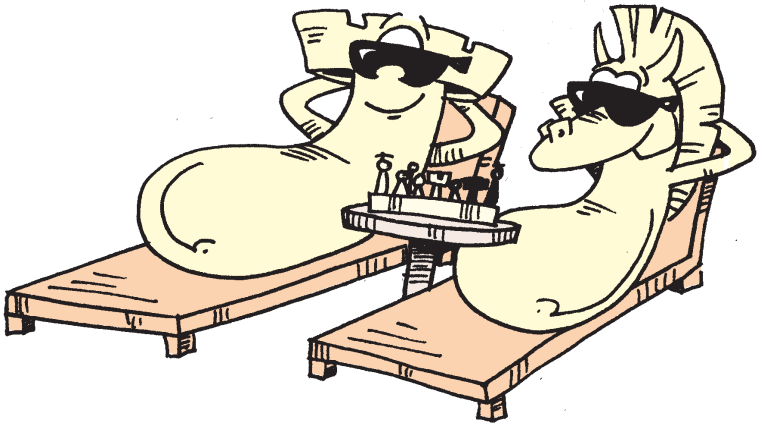
THE PUZZLING SIDE OF CHESS

Jeff Coakley

REBUS UPLOAD 03

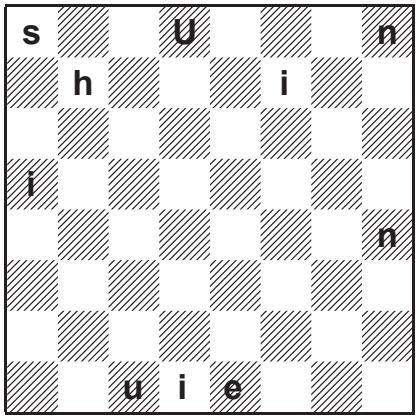
number 210 April 27, 2022

Another load of rebuses for solvers to solve. Another inconsequential introduction for readers to ignore. Like a fine spring morning, we begin with a promising ray of sunshine.



Rebus 81

"*sunshine*"

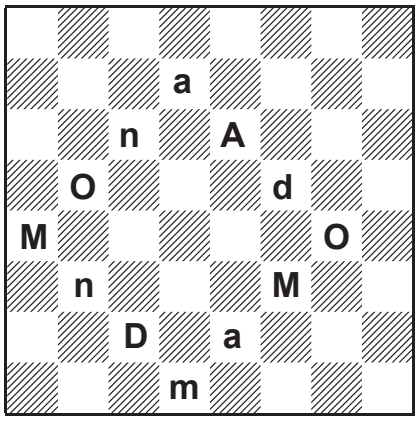


Each letter represents a different type of piece.
Uppercase is one colour, lowercase is the other.
Determine the position and, if possible, the last move.

The next problem is an elementary puzzle and particle, a diamond without the ‘i’. They say that diamonds are forever. Hopefully it won’t take that long to solve.

Rebus 82

“*monad*”



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

Rebusland Express

Evidently picture rebuses are becoming a regular feature of *Rebus Uploads.* Here is one about a topic on everybody's mind.

Riddle: "*A wish for our times.*"





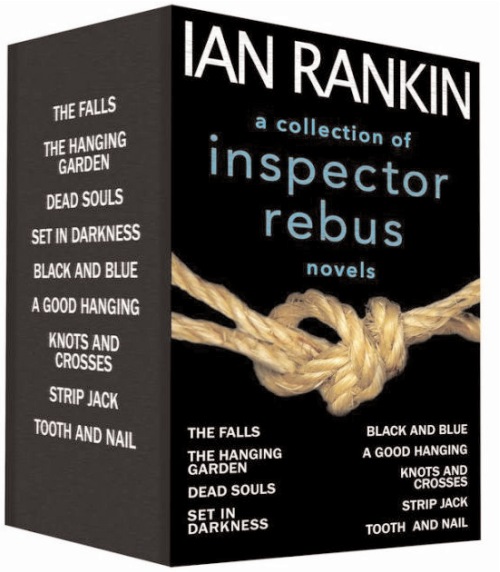




Inspector Rebus is a very successful series of novels by Scottish author Ian Rankin. The protagonist is Detective Inspector John Rebus of the Edinburgh police, a dark character solving the darkest of crimes.

The books have sold millions and been translated into 36 languages, earning the writer the epithet “king of tartan noir”.

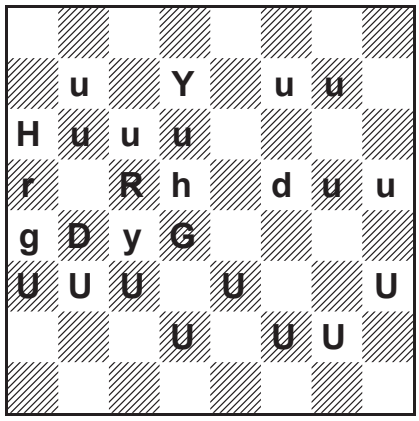
But has Inspector Rebus ever solved a chess rebus? Could he crack the “Baffling Case of the Hurdy-Gurdies”?



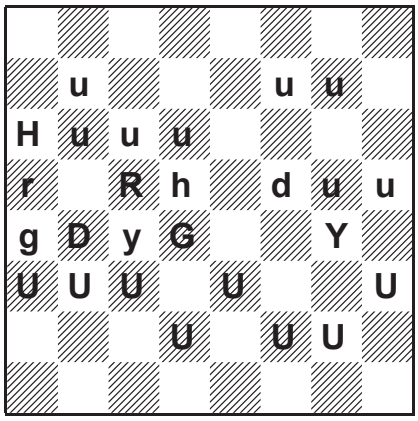
Rebus 83

“*hurdy-gurdy*”

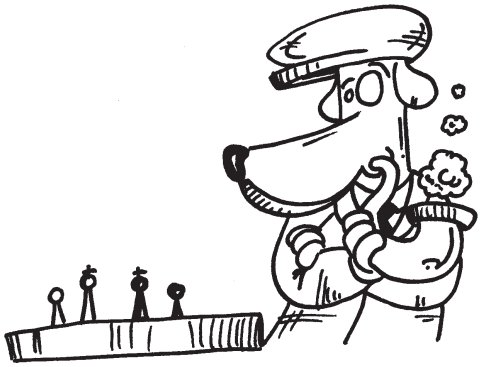
a



b (Y/d7→g4)



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



If you are looking for more chess rebuses, check out the *rebus index* in the appendix to column 188 (Rebusland). It lists over 200 problems, most of which are readily available online.

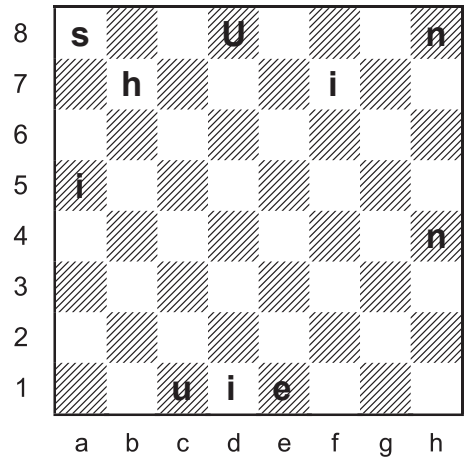
SOLUTIONS

All chess rebuses are joint compositions by Andrey Frolkin and Jeff Coakley, *Puzzling Side of Chess* (2022).

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 an index of problem-types, composers, and side themes are available in the *Puzzling Side of Chess* archives.

Rebus 81

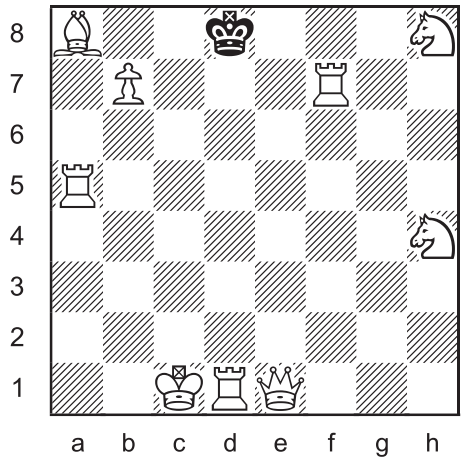


"*sunshine*"

S = bishop
U = king
N = knight
H = pawn
I = rook
E = queen

caps = black

last move:
1.Kd2>c1#



(9 + 1)

U = ♔ Only letter with one uppercase, one lowercase.

H = ♙ Only remaining letter not on 1st or 8th rank.

The king on d8 is in <u>check</u> by letter 'I' (♗a5, ♖d1, or ♘f7).

SN ≠ ♕♖ Impossible double check (a8 or h8).

SN = (♗♘)

IE = (♕♖)

E = ♕ I ≠ ♕ Impossible double check (a5 d1).

I = ♖ <u>Check d1</u>.

N = ♘ N ≠ ♗ Impossible double check (h4 d1).

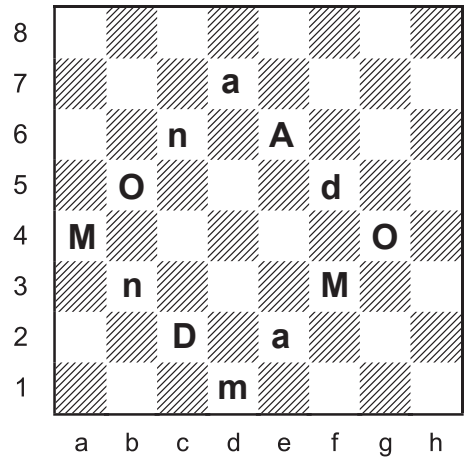
S = ♗

caps = black A black bishop cannot be on a8 with a black pawn on b7.

last move: 1.Kd2>c1# Only way to explain the rook check. This move may or may not have been a capture.

Rebus 82

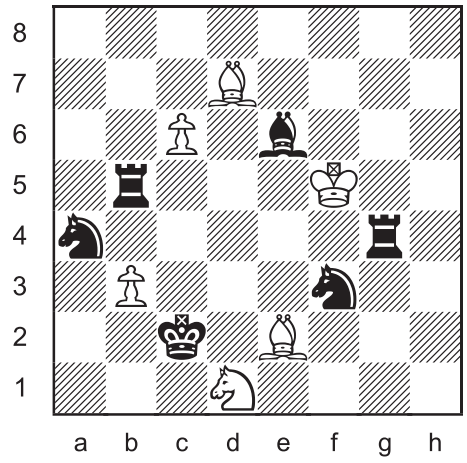
"*monad*"



M = knight
O = rook
N = pawn
A = bishop
D = king

caps = black

last move:
1...Bd5>e6++



(6 + 6)

D = ♔ Only letter with one uppercase, one lowercase.

Both kings are attacked along a diagonal by each of the other letters.
Both kings are attacked along a rank or file by each of the other letters.

♕ = Ø No letter can be queen. Impossible double check.

MONA = (♖♗♘♙) Regardless of piece assignment, there is a <u>double check</u> by rook and bishop.

There are two possibilities to consider: (A=♖ M=♗) (O=♖ A=♗).

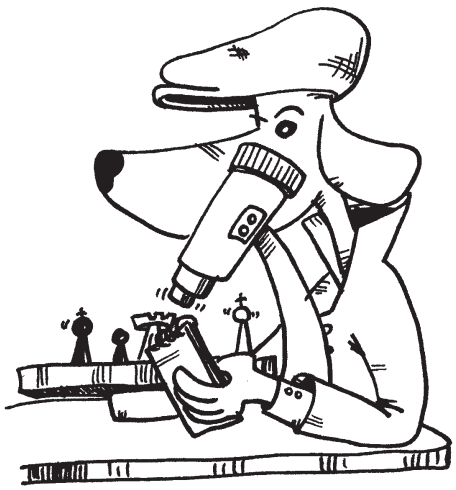
If A=♖ M=♗ last move: 1...d2-d1=B++ caps = white
ON ≠ ♙ Three checks (b3 or g4).
No letter can be pawn. So this possibility is impossible.

O = ♖
A = ♗
M = ♘ M ≠ ♙ On 1st rank.
N = ♙

caps = black If caps = white
Three checks (pawn b3).

last move: **1...Bd5-e6++**

This move may or may not have been a capture.

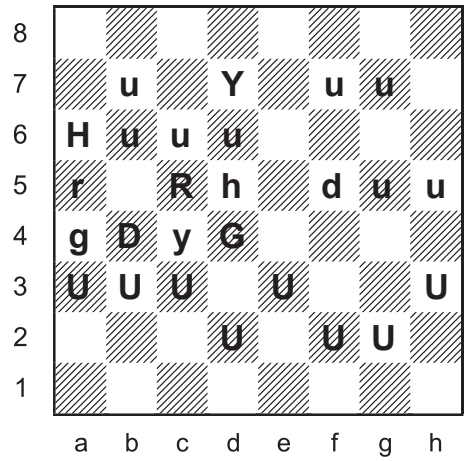


Diamonds, the hardest substance known to man, were formed over a billion years ago at depths more than 200 kilometres within the Earth.

Monads, in the metaphysical theory of Gottfried Leibniz (1646-1716), are the elementary particles of all things in the universe.

Rebus 83a

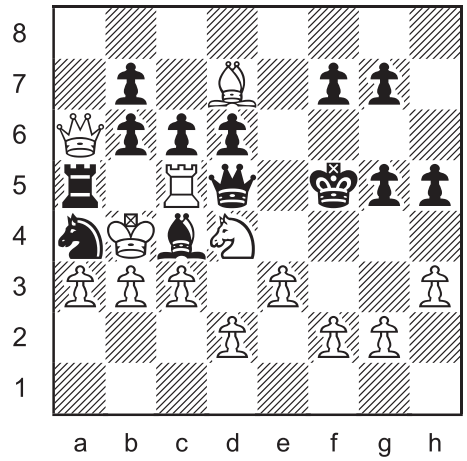
"*hurdy-gurdy*"



H = queen
U = pawn
R = rook
D = king
Y = bishop
G = Knight

caps = white

last move:
1.Ne6-d4++



(13+ 13)

Both sides have 8 U's and one of each other letter (DGHRY). So there are five potential king pairs. It seems likely that the U's are pawns, but this is not necessarily the case. The following two conclusions about U apply throughout the analysis, regardless of king assignment.

a) If U = ♙, then caps = white.

If caps = black, the pawn formation would require at least 9 captures. Only 6 pieces are missing.

b) If U ≠ ♙, then all captures were made by pawns.

Regardless of piece assignment, if U ≠ ♙, there are 12 promoted pieces and 2 passed pawns. A total of 14 pro-passers.

There are 2 missing pawns and 4 missing officers. This is exactly enough to account for the number of captures by pawns required to create 14 pro-passers. (2 pawns x 3) + (4 officers x 2) = 14

Therefore no captures were made by officers in the retroplay.

See next page for a detailed explanation of *pro-passer theory*.

REBUS page 3

A wish for our times.

"Peace and Independence for Ukraine"

pea-sand-inn-D-pen-dents-4-uke-rain

PRO-PASSER THEORY

Pro-passer theory is an analytic tool for determining the legality of a position based on the number of passed pawns, promoted pieces, and missing pieces.

A pro-passer is a promoted piece or a passed pawn. In this theory, they count as the same thing.

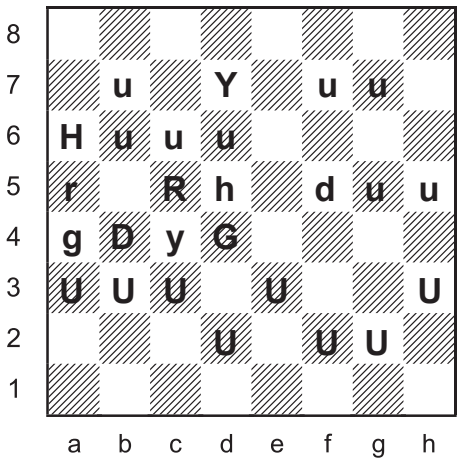
Missing pieces are divided into two categories: pawns and officers. 'Pawn x officer' captures can create 2 pro-passers (one per side). 'Pawn x pawn' captures can create 3 pro-passers (two for capturing side).

For a position to be legal, there must be a sufficient number of missing officers and pawns to create the required number of pro-passers.

If the calculation shows insufficient missing pieces, the position is illegal.

However, a favourable count, with an apparently sufficient number of missing pieces, does not prove that the number of pro-passers is legal. There are numerous situations that can still make the position illegal: doubled pawns, inverted pawns, the colour of promotion squares for promoted bishops, or the need for additional captures. If these things are a factor, deeper analysis is required.

Rebus 83a *continued*



There is no quick way to determine which letter is king. Each of the five candidates must be analysed separately.

H ≠ ♔

If H = ♔

U ≠ ♕♗ Both kings in check (b7 g2).

U ≠ ♙ Impossible check by black pawn (b7).

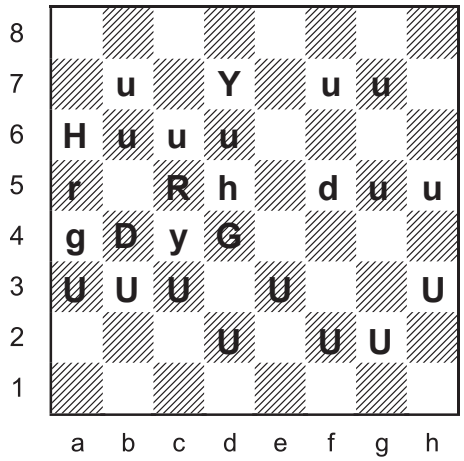
U ≠ ♖ Impossible check (b6).
The capture Rb5xc6+ is impossible because all missing pieces were taken by pawns. The non-capture Rb5-c6+ is impossible because the king would already be in check from the rook on c6.

U ≠ ♘ Impossible double check (c3 e3).

U = Ø? No piece can be assigned to letter U.

Thus H ≠ ♔

Rebus 83a *continued*



G ≠ ♔

If G = ♔

U ≠ ♕♗ Both kings in check (b3 g7).

U ≠ ♖ Impossible check (a3).
(Rxa3+? No captures were made by officers.)

U ≠ ♘ Both kings in check (c3 c6).

U ≠ ♙ Check (b3).

D ≠ ♕♖ Impossible double check (b4).

HY ≠ ♕♖ Both kings in check (d5 or c4).

(♕♖) = Ø? Impossible to assign either queen or rook. Letter R cannot be both.

U = Ø? No piece can be assigned to letter U.

So G ≠ ♔

R ≠ ♔

If R = ♔

U ≠ ♕♗♙ Impossible double check (b6 d6).

U ≠ ♖ Impossible check (c6).
(Rxc6+? No captures were made by officers.)

U ≠ ♘ Both kings in check (b3 b7).

U = Ø? No piece can be assigned to letter U.

Hence R ≠ ♔

Y ≠ ♔

If Y = ♔

U ≠ ♕♗ Both kings in check (b3 c6).

U ≠ ♖ Four checks (b7 c3 d6 f7).

U ≠ ♘ Four checks (a3 b6 d2 e3).

U ≠ ♙ Check (b3).

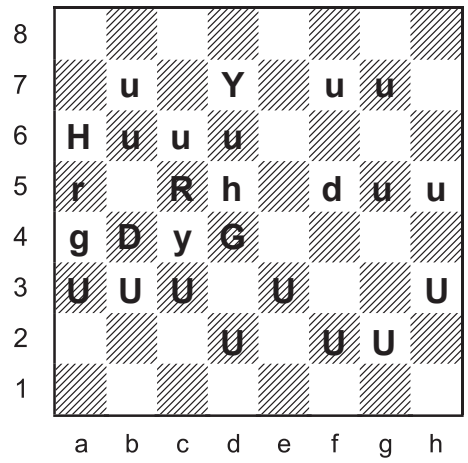
DGHR ≠ ♕ Impossible double check.

♕ = Ø? Impossible to assign queen.

U = Ø? No piece can be assigned to letter U.

Ergo Y ≠ ♔

Rebus 83a *continued*



Therefore **D =** ♔ GHRY ≠ ♔

U ≠ ♕♖ Both kings in check (b6 f2).

U ≠ ♘ Both kings in check (c6 e3).

U ≠ ♗ Impossible check (h3).
Discovered check by Rg4-d4+ with G = ♖ is impossible because both kings would be in check (a4).

U = ♙

caps = white

H = ♕ GR ≠ ♕ Impossible check (a4 or a5).
Y ≠ ♕ Both kings in check (c4 d7).

R = ♖ GY ≠ ♖ Impossible check (a4 or c4).

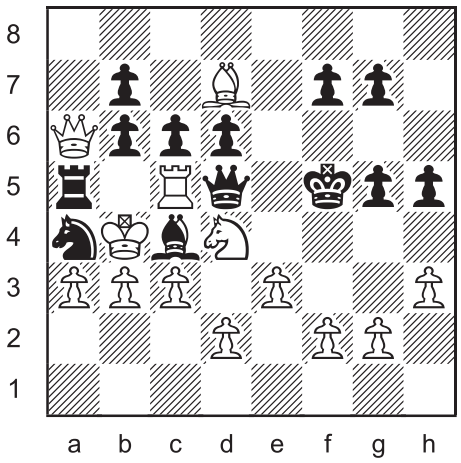
GY = (♗♘)

Y = ♗ G ≠ ♗ If G = ♗, White is missing a light-square bishop. But the 3 missing white pieces were all captured on dark squares (...a7xb6, ...e7xf6, ...f6xg5).

G = ♘

last move: **1.Ne6>d4++**

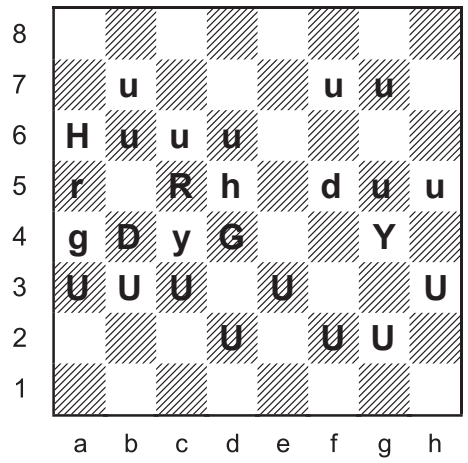
This double check may or may not have been a capture.



The position is legal. The escape of the white rooks from the 1st rank is explained by the cross-capture of white pawns on the queenside. For example, after b2xc3, the rooks exit along the open b-file, followed later by c2xb3. (Cross-captures on the ab-files would also free the rooks.)

Rebus 83b

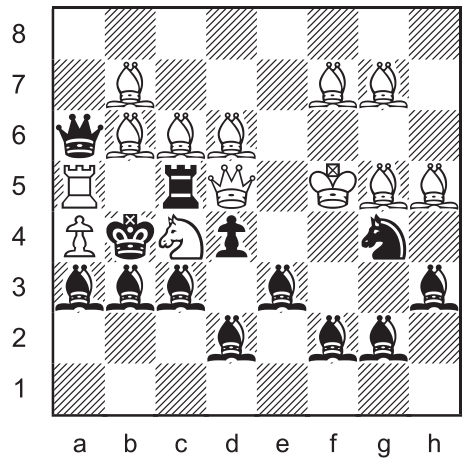
"*gurdy-hurdy*"



H = queen
U = bishop
R = rook
D = king
Y = knight
G = pawn

caps = black

last move: ?



(13 + 13)

The only difference in this twin position is that Y/d7 is now on g4. Not surprisingly, much of the analysis is similar.

D = ♔ HDR ≠ ♔ Same argument as in 83a.
Y ≠ ♔ If Y = ♔
U ≠ ♕♗ Both kings in check (b3 h5).
U ≠ ♖ Both kings in check (c3 g5).
U ≠ ♘ Triple check (a3 d2 e3).
U ≠ ♙ Both kings in check (b3 h5).
U = Ø? No piece can be assigned to U.

H = ♕ GR ≠ ♕ Impossible check (a4 or a5).
Y ≠ ♕ Both kings in check (c4 g4).
U ≠ ♕ Both kings in check (b6 f2).

R = ♖ GY ≠ ♖ Impossible check (a4 or c4).
U ≠ ♖ Both kings in check (b6 f2).

Now things get tricky.

GUY = (♗♘♙)

U = ♗ U ≠ ♘ Both kings in check (c6 e3).
U ≠ ♙ If U = ♙ No letter (GY) can be bishop.

If G = ♗, White is missing a light-square bishop, but all three missing white pieces were captured on dark squares (b6 f6 g5).

If Y = ♗, then G = ♘.
Impossible double check (d4 g4).

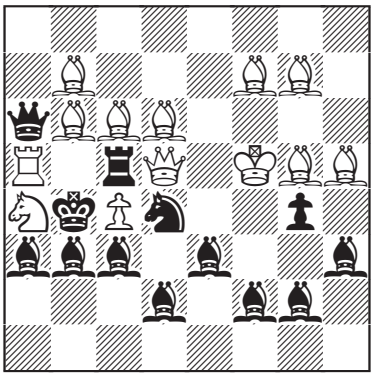
Rebus 83b *continued*

GY = (♘♙)

At this point an apparent impasse is reached. It seems that knight and pawn can be assigned either way to the remaining letters.

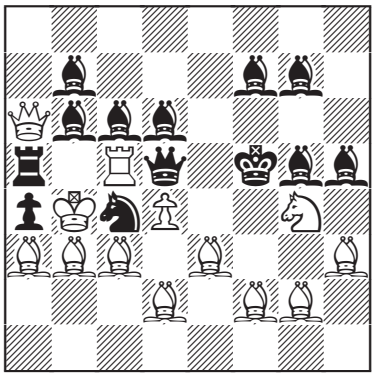
In the case of G = ♘, Y = ♙, uppercase must be black. Otherwise there is an impossible double check (d4 g4). But how are we to decide between the following three options?

A



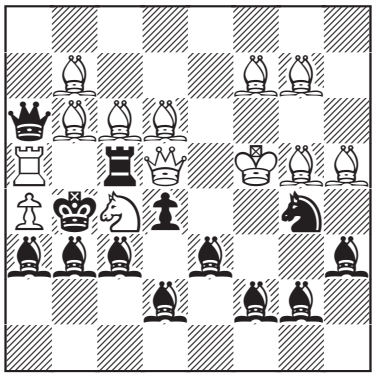
G = ♘ Y= ♙
caps = black

B



G = ♙ Y= ♘
caps = white

C



G = ♙ Y= ♘
caps = black

The essential piece of the puzzle is the *bishop ratio*.

The bishop ratio is useful in determining the legality of positions with multiple bishop promotions. It compares the number of light-square and dark-square promotions for each side. Promoted bishops and passed pawns are both part of the equation. A passer is considered light or dark based on the colour of its promotion square (assuming no further captures).

In all three positions, both sides have 8 bishops and 1 passed pawn. To calculate the ratio, we first subtract the four original bishops. That leaves one side with 3 light / 3 dark promoted bishops and the other side with 2 light / 4 dark. Adding the passed pawns to the count gives the following ratios:

	white	*black*
A	4 light / 3 dark	2 light / 5 dark
B	2 light / 5 dark	3 light / 4 dark
C	4 light / 3 dark	3 light / 4 dark

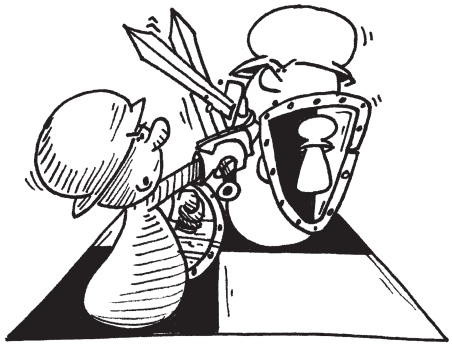
As explained on the next pages, the only legal ratio is position C.

Rebus 83b *continued*

Both sides are missing 3 pieces (RNp). Their capture is exactly sufficient to account for 14 pro-passers (12 promotions + 2 passers). That is, the only captures made were those that created pro-passers.

A ‘pawn x officer’ capture can create two pro-passers, one for each side. Both promote on the same colour square (light or dark).

A ‘pawn x pawn’ capture can create three pro-passers, two for the capturing side. All three promote on the same colour square.



In these positions, the two ‘pawn x pawn’ captures take place in two separate sectors. A *sector* is two adjacent files. The four ‘pawn x officer’ captures take place on the remaining four files, which may or may not be adjacent, but whose promotion squares are equally light and dark. This means that the number of light-square and dark-square promotions resulting from ‘pawn x officer’ captures is necessarily the same for both sides.

Any difference in the bishop ratio for the two sides occurs solely by means of ‘pawn x pawn’ captures. If one side has more pro-passers of a particular colour, then the two ‘pawn x pawn’ captures necessarily created pro-passers of opposite colours. In that case, there can be at most a difference of one pro-passer of either colour. For this reason, position A is illegal. White has two more light pro-passers than Black.

In position B, Black has three light pro-passers to White’s two. The difference of one can be explained by the two ‘pawn x pawn’ captures, which could create 2 light / 1 dark for Black and 1 light / 2 dark for White. However, it is impossible for the four ‘pawn x officer’ captures to generate just one light pro-passer for each side. They can only create an even number (0, 2, 4). The total ratio for Black could be 2 light/ 5 dark or 4 light/ 2 dark, but not 3 light/4 dark. Position B is therefore illegal.

Rebus 83b *continued*

Position C is legal. For example, the white h-pawn captured the black g-pawn; the black f-pawn captured the white e-pawn; the white ab-pawns captured officers on the ab-files; the black cd-pawns captured officers on the cd-files.

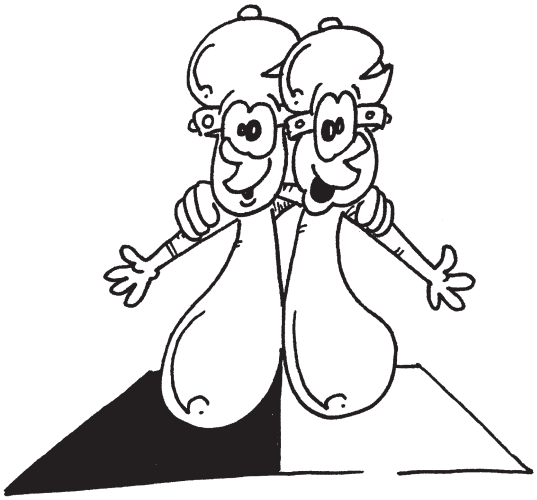
G = ♗

Y = ♘

caps = black

This problem was actually composed six years ago, but somehow never found its way out into the world.

A similar rebus dedicated to Andrei Kornilov, the mastermind behind the bishop ratio, is given in *ChessProblems.ca Bulletin 8* (April 2016, problem EE-11). For more on the bishop ratio, see the article “New Directions in Chess Rebuses” in *Problemas 15* (July 2016).



Until next time!