

Philidor's lozenge and the 120 Horizontal Positions of H. Rey

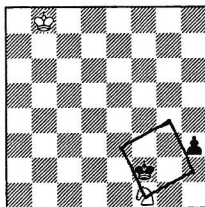
by Harrie Grondijs

Philidor's Lozenge

The equilibrium of 'positional draws' may rest on a spectacular balancing act of tactical manoeuvres. Or, it can be based on the internal weakenings that pertain to certain move pairs. In such cases the drawing mechanism is invoked by creating threats against the weakening aspect of such moves in alteration. The manoeuvres themselves are simple but the way they are lined up is surprising and complex. The GBR-class 406. forms a beloved laboratory for implementing ideas in this respect (read KNIGHTS AHEAD! and Alain's article in this issue).

Yet another group of positional draws is formed by fundamental chess manoeuvring that somehow draws a regular pattern on the board: the element of repetition is made explicit. To this group belong the perpetual knight chases, the dance around adjudged squares, drawn opposition themes in general, and a striking drawing method that is known as the Philidor's Lozenge (PL):

diagram 1



The knight prevents the pawn's promotion no matter how far away the white king is. We present this ending step by step demonstrating the learning process Black is subjected to (White must always get it right the first time).

1. Nh2 blocks the pawn;
1. ...Kg2 chases the king away from its blockading position;
2. Ng4 from here the knight will capture the pawn should it advance;
2. ...Kf3 chases the knight away but gives up control over the blockading square;
3. Nh2 returns to blockading square;
3. ...Kg2 a fresh start;
4. Ng4 Kg3 chases the knight away and keeps guard over the blockading square;
5. Ne3 anticipatory defence, should the pawn advance then 5. ...Nf1† and 6. ... Nxh2 draws;
5. ...Kf2 chases the knight away but gives up guard over the square from where the advancing pawn can be captured;
6. Ng4 from here the knight can capture the pawn should it advance;
6. ...Kg3 another fresh start;
7. Ne3 Kf3 chases the knight away and keeps guard over the blockading square;
7. Nf1 the knight has progressed to a 'new' square from where it captures the pawn should it advance;
8. ...Kf2 chases the knight away;
8. ...Nh2 blockades the promotion pawn.

Here we are back at the beginning. We note that against Philidor's *lozenge* h2-g4-e3-

f1 the black king can try all the squares in the *rectangle* f3-g3-g2-f2 (the king's square) but to no avail. I hope that the following observations of characteristics of the PL will stimulate composers for generating ideas that will implement further expansions of these 'thoughts'.

I. At any point of the lozenge White has two potential other 'save' squares on the lozenge. The black king can take out only one of the two adjacent squares at a time.

II. It seems as if the weakenings that the king moves impose on the black position, are in fact helping White. However, we find that if the knight is forced to move each time (e.g. when the king is incarcerated), so no extra weakenings are incurred, there is still no win for Black. His best chance seems to be to step out of the rectangle at square g1. Now we realize there is relative strength and weakness in each of the squares on the knight's lozenge in combination with the position of the king. Stepping out of the field on g1 after 1. ...Kg2 2. Ng4 Kg1 the knight must let go off the guard of h2 by force of Zugzwang, but, on account of an imperfection in Black's waiting move, can regain position with 3. Ne5!

III. We conclude that Black can never win by 'skipping' a move alone (for instance, with a move by an otherwise unimportant pawn).

IV. The knight is confined to its lozenge, the king can wander about (limited only by the distance of the white king). Thus, it may come to the aid of another pawn that is being held in check by the enemy king.

V. With the move Kf3 Black creates a double threat: to capture the knight or to advance the pawn. The defence Nf1 parries both threats at the same time. By the same token: even if the knight on e3 would be guarded by the king from, say, d4, or by a pawn, the other threat remains intact and Nf1 is still forced.

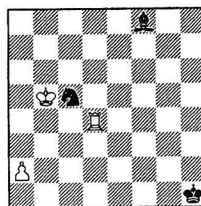
VI. Another magical square for Black is e2. The king can leave the rectangle with tempo gain when the knight is on f1.

VII. Black can try and try again, but White always has just a single correct move. Composers will appreciate this fact!

The 120 Horizontal Positions of H. Rey

On which exact date Commandante H. Rey was born or died - no one seems to know or care. In a wiser world one of these dates would be declared a national holiday for France. The man was like a black hole: his presence was felt through the gravitational force exerted on the most eminent composers and experts of his time, - but no one saw him. Bulletin No. 17 of the Fédération Française des Échecs featured the following study:

H. Rey, Bulletin FFE,
1926, +, 133.10
diagram 2



1. Rf4 (1. Rd8? Ne6 2. Rxf8?! draws says Thompson's infallible database) 1. ...Be7 (or 1. ...Bd6 2. Rf6 Be7 3. Rf7 etc.) 2. Rf7 Bd6 3. Kc6 Ne4 4. Kd5 (4. Rf1† Kg2 5. Re1 Kf3 6. Rxe4 Kxe4 =) 4. ...Ng5 5. Rf1† (5. Rh7†!?! wins just the same, Rey adds (!), but this is not true. After 5. ...Nxb7 6. Kxd6 Ng5 Thompson's db reveals that it's a draw) 6. Kxd6 Kxf1 7. a4 Ne4† (9) 8. Kc6 and wins, eg. 8. ...Nf6 9. a5 Ng6 10. a6 Ne7† 11. Kb7 Nf5 12. a7 Nd6† (reaching the Philidor Lozenge, but too late) 13. Kc6 winning.

In conjunction with this solution Rey submitted an article about the ending knight and pawn for publication in the same magazine. In this article Rey presents his findings in a systematic tabular form.

Rey distinguishes *triangular* positions and *horizontal* positions. For this article we forget about the triangular positions, - they will perhaps be treated separately. Rey's conclusions concerning the horizontal positions were laid down in two tables. Here's the first one:

TABLE I

position of the white King	b-Line	c-Line	d-Line	e-Line
1. rank	a4 (11)	a5 (4) b5 (4)	a4 (6) b5 (4) c5 (4)	a2 (13) b4 (5) c5 (4) d4 (5)
2. rank	a5 (4)	a4 (11) b5 (4)	a4 (8) b5 (4) c5 (4)	a4 (5) b5 (4) c4 (5) d5 (4)
3. rank	a5 (9)	a5 (4) b6 (2)	a4 (10) b5 (4) c6 (2)	a4 (11) b4 (5) c5 (4) d6 (2)
4. rank	a5 (7)	<u>a5</u> (8) b5 (7)	a4 (9) b6 (3) c5 (7)	a4 (5) b5 (4) c6 (3) d5 (4)
5. rank	a4 (8)	a5 (5) b4 (8)	a2 (10) b5 (5) c4 (4)	a4 (12) b2 (6) c5 (4) d4 (5)
6. rank	a4 (7)	a2 (10) b5 (5)	a4 (7) b4 (6) c5 (5)	a2 (10) <u>b4</u> (5) c4 (5) d4 (5)
7. rank	<u>a5</u> (4)	a2 (8) b5 (4)	a4 (6) b4 (6) c5 (4)	<i>a4</i> (6) b4 (6) c4 (5) d5 (4)
8. rank	a5 (5)	a4 (6) b5 (5)	a4 (8) b5 (4) c5 (5)	a4 (9) b5 (4) c5 (4) d5 (4)

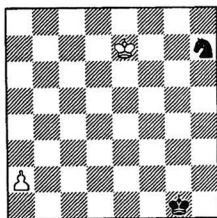
TABLE I should be read as follows:

- The table shows all the pawn's positions from which White wins, provided White holds the move;
- The white king is systematically moved from the 1. rank to the 8. rank, and from the b-line to the e-line;
- The knight is always positioned three squares to the right of the king (horizontally, as is the case in the diagrams 3 and 6-12 that follow);
- All the possible pawn's positions to the left of the white king are indicated;
- The knight's king is 'far away' but not on a square where it could be in check should the pawn promote (and thus take away the chance for the knight to capture the queen with a check);
- Between brackets and small are added the number of moves until 'conversion' (ie. promotion) indicated by Thompson's database.
- The bold positions are corrections found by Chéron;
- The italic position is by N.D. Grigoriev;
- The underlined positions are contributed by M. Fila;
- The double underlined position is a final correction left to be unearthed by Thompson's Database. In this case Rey (and his critics) thought that the pawn might be one rank lower and still win.

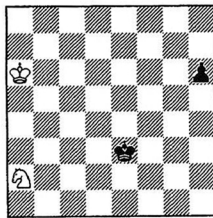
To this I add that, should you feel inclined to verify these results, you must take good care to put the knight-king on a square where it won't be in check the moment the pawn promotes, nor should it be able to support the knight when it should require access to a square guarded by the enemy king.

Consider the italic position in the table and push the pawn back to the second rank, from where Rey thought it might still win (*diagram 3*):

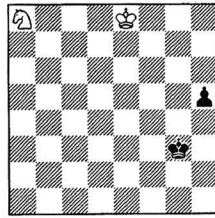
H. Rey, *Bull. FFE* 1926, 3.10
diagram 3
'The Pearl'



N. Grigoriev, *Izvestia*,
1932, =, 1.01
diagram 4



F.J. Prokop,
Casopis, 1925, =, 1.01
diagram 5



This position was given by Rey with a separate diagram and solution, as an example of the difficulty of such analysis, without reference to a direct connection with his study. 1. a4 Ng5 2. Kd6 (if 2. a5 Nf3 3. a6 Nd4 =) 2. ...Nf3 3. Kd5 Nh4! 4. a5 Nf5! 5. Kc6 Nd4† 6. Kb6 Nf5 =. In his article Rey had in fact mentioned 3. ...Nh4!, but continued 4. a5 Nf5! 5. Kc6 Ne7†?? instead of 5. ...Nd4†!

In his TRAITÉ D'ÉCHECS (an excerpt was printed in the Bulletin some months after Rey's article) Chéron gives his first correction: White Ke5 pawn a2, Black Kh1 Nh5 yields a draw: the black king eventually stalemates the white king on a8.

Many years later, in his NOUVEAU TRAITÉ COMPLET D'ÉCHECS (1952), Chéron published Rey's results again, and comments on our *diagram 3* with the following words: 'L'énoncé de cette étude était, d'après Rey: Les blancs jouent et gagnent, mais l'étude a été démolie par le problémiste hollandais Mees qui démontra que les noirs font nulle (TRAITÉ, page 477)¹.'

In fact the drawing method that Chéron refers to, had been demonstrated first by Grigoriev in 1932 (see *diagram 4*):

1. Nb4 h5 2. Nc6 Ke4 - now the position is the same as for the Rey position after the third move by White with reversed colours - 3. Na5! h4 4. Nc4 Kf3 5. Ne5† (not 5. Nd2† Ke2 6. Ne4 h3 7. Ng3† Kf2 and wins) 5. ...Kg3 6. Nc4 h3 7. Ne3 arrives at the Philidor's lozenge (PL) and draws.

But Grigoriev in turn was anticipated in part by the miniature that F. Prokop published in 1925 (*diagram 5*):

1. Nb6 h4 2. Nc4 - creating the Grigoriev position after White's 6th move!

It can be pointed out that the Grigoriev is not identical to Rey's position - although the solutions overlap from the third move onward. Thus, it would indeed seem to some that W. Mees would have been the first to point out the correct solution.

But look at the following position that I found on a routine search of the studies data

base and look at the date! (*diagram 6*): the Rey position with the colours reversed, and with the correct stipulation and solution!

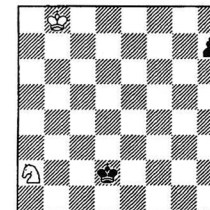
Fila's Role

M. Fila was a Czech endgame expert, who wrote several articles for CESKOSLOVENSKY SACH, on the subject of what today are considered 'computer endings', like rook versus bishop, and rook and pawn versus rook. He composed studies that illustrate his points. Had he learned from Grigoriev, or had he found the bug in Rey's analysis by himself?

I consulted the article from which this position originates in CESKOSLOVENSKY SACH (1934).

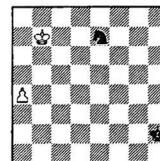
From what I understand, Fila mentions Rey and Chéron, but the word Grigoriev is not featured. I guess Fila truly considered the solution to be his own invention! Where required, he gives due credits to all the other diagrams in his article, goes out of his way for completely transcribing the Rey tables, and, last but not least, does not append an exclamation mark to the 3. Na5 move! His article went unnoticed by the Western experts. Both Chéron and Selman (MANUSCRIPT ON GBR 1.01/3.10, 1968) didn't know his work nor did they discover some of his subtle corrections on their own accounts. None of Fila's findings has been revoked by Thompson.

M. Fila
Ceskoslovensky Sach
1934, BTM =, 1.01
diagram 6

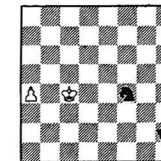


That the magic of the Philidor's lozenge can be put to work to achieve counter-intuitive, if you wish paradoxical, effects, can be illustrated not just with the Rey/Grigoriev position, but by several other positions, that were misjudged by Rey, by Chéron, and Selman (*diagrams 7, 8, and 9*).

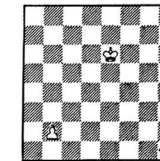
M. Fila, *Ceskoslovensky Sach* 1934,
=, 3.10
diagram 7



Thompson's *Data-base* (original), =,
3.10
diagram 8



M. Fila, *Ceskoslovensky Sach* 1934,
=, 3.10
diagram 9



Solution diagram 7: 1. a5 Nf5 (1. ...Nd5 2. a6) 2. a6 Nd6+ PL =, or 2. Kc6 Nd4+ 3. Kb6 Nf5 4. a6 Nd6 PL =.

Solution diagram 8: 1. a5 Ng6 - looking for the PL - 2. a6 Ne7 3. Kc5 Nc8 PL =.

Solution diagram 9: 1. b4 Ng4 (1. ...Ng8? 2. b5 wins) 2. b5 Nf2 (2. ...Ne3 3. b6 wins) 3. b6 Nd3 (3. ...Ne4 4. Kd5 Nf6 5. Kc(d)6 wins) 4. Kd5 Nb4+ =.

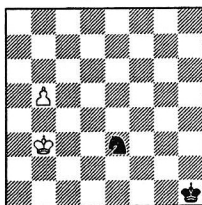
Rey drew up another table, TABLE II, that was ignored by Chéron and Selman (maybe, this can be accounted for by the fact that Rey does not state explicitly that also in this case again the knight is always on the third square to the right of the king):

TABLE II

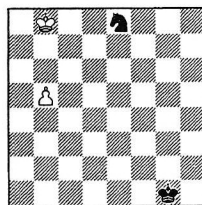
Position of the white King	a-line	b-line	c-line	d-line	e-line
1. Rank	a5 (4)	b5 (4)	c5 (4)	d5 (4)	e5 (4)
2. Rank	a5 (10)	b6 (2)	c6 (2)	d6 (2)	e6 (2)
3. Rank	a5 (9)	<u>b6</u> (2)	c6 (2)	d6 (2)	e5 (5)
4. Rank	a6 (2)	b6 (3)	c6 (3)	d6 (3)	e6 (3)
5. Rank	a6 (6)	b7 (1)	c7 (1)	d7 (1)	e7 (1)
6. Rank	a7 (1)	b7 (1)	c7 (1)	d7 (1)	e7 (1)
7. Rank	a6 (6)	-----	-----	-----	-----
8. Rank	a6 (7)	<u>b5</u> (7)	<u>c7</u> (2)	<u>d7</u> (2)	<u>d7</u> (2)

As for Table I doubly underlined corrections 'found' by Thompson's Database. Thus Rey analyzed 120 horizontal positions in total. Except for the b-line cases (*diagram 10 and 11* below) the Thompson corrections are rather trivial.

Thompson's Database
(original), =, 3.10
diagram 10



Thompson's Database
(original), =, 3.10
diagram 11



Solution diagram 10: 1. b6 Nf5 (1. ...Nd5? 2. b7 wins) 2. Kc4 (or 2. b7 Nd4+ 3. Kc4 Nc6 =) 2. ...Nd6 =.

Rey was a born optimist. In all the cases in which he stands corrected the pawn must be brought forward to guarantee the win. *Diagram 10* is the only exception to the rule. Rey had thought that the pawn had to be on b6 to secure a win, but the computer puts him in the wrong:

Solution diagram 11: 1. b6 Kf2 - the knight is already 'ideally' located because knight

moves lose faster - 2. Kb7! Nd6+ 3. Kc7 Nb5+ 4. Kd7 and the pawn cannot be stopped.

Conclusions

- Rey has been confused with Saavedra. Here, he features in the role of Barbier, not seeing the truth when it's right before your eyes... (see *diagrams 3 and 6*) Rey looked at the correct move but thought it would result in a draw, the way Barbier thought that promotion of the pawn would only draw.
- Grigorjew published his study in 1932 in IZWESTIA, in the course of which the correct continuation of the Rey position is shown.
- Grigoriev in turn relied on a manoeuvre that Prokop had shown in 1925, one year before Rey's article.
- M. Fila was the first who used the exact position of Rey and demonstrated the drawing method. He also indicated two other corrections for Rey's investigations.
- Thus: Rey published the position first (as did Barbier), Fila found the correct solution, as did Rey (or, if you wish, Saavedra), but found himself anticipated by Grigoriev.
- Thompson's Database provides absolute truth and beauty, both are only for human eyes to see. I put it that, if one understands the proportions of Philidor's Lozengue well enough, all these solutions can be found 'meaningfully', 'over the board'. But always (with diagram 3/6 as the most paradoxical case) the knight must play away from the battlefield and this is counter-intuitive. It seems, none of the experts Rey, Selman, or Chéron trusted enough in the power of creative insight. In the end the artistic interest of Grigoriev, Prokop, and Fila showed the way.

A Surprise

Finally, we return to Rey's original study (*diagram 2*) after White's seventh move. One might think that this study inspired Rey for undertaking the systematic investigation of his 120 positions. The actual fight leading up to the exchange of rook against bishop then becomes the thematic content of his study, the remainder an analytical coda. But from the fact that Rey deeply investigated other theoretical endings, like rook against rook and two pawns, it might also have been the other way around: Rey being a constructivist, Type C composer, and the study a by-product from hard scientific work.

Quite possibly, it is a bit of both: After the seventh move a position has been reached that might have turned up on Rey's board from either one of two positions tabulated in Table I: (a) wKd5, pa2; bKf1, Ng5 (*diagram 12* below) or (b) wKe7, pa2; bKf1, Nh7 (*diagram 3/6*). From *diagram 3* the moves leading up to the position after White's seventh move in the study would be: 1. a4 Ng5 2. Kd6. In *diagram 12* to reach that same position we must allow White 2 moves: a4 and Kd6 before Black's response.

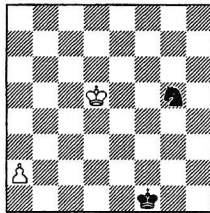
It's here that Rey may have gone wrong. He (correctly) declared the position of *diagram 12* as won. Without giving it much further thought he then assumed that an extra move (Kd6) would only improve matters for White, *when in fact it spoils it all*. Seeing that the position of *diagram 3* yields the same position: he filled in that slot in

his grid as well: ^x~~4~~.

So (one or the other reader may have found me out immediately, and the other readers will forgive me for having misled them on this account, to get my story going) nobody put it explicitly to this day, but Rey's *study* is incorrect!

Take one more look: after White's seventh move Black draws. Of course: **7. a4 Nf3!**
'What's the problem?'

Thompson's Database
(original), +, 3.10
diagram 12



Today, starting from complete and proven tables, composers can start pondering about the mycelium that connects Rey's 120 positions underground, and start drawing careful conclusions, until one day a complete and detailed map of the terrain can be drawn ...by the computer, and we may verify its findings, take off our hats, and put them in a shrine: for all times.