Chess Endgame News

Article

Published Version

It is advisable to refer to the publisher's version if you intend to cite from the work. See [Guidance on citing](#).

www.reading.ac.uk/centaur

CentAUR

Central Archive at the University of Reading

Reading's research outputs online

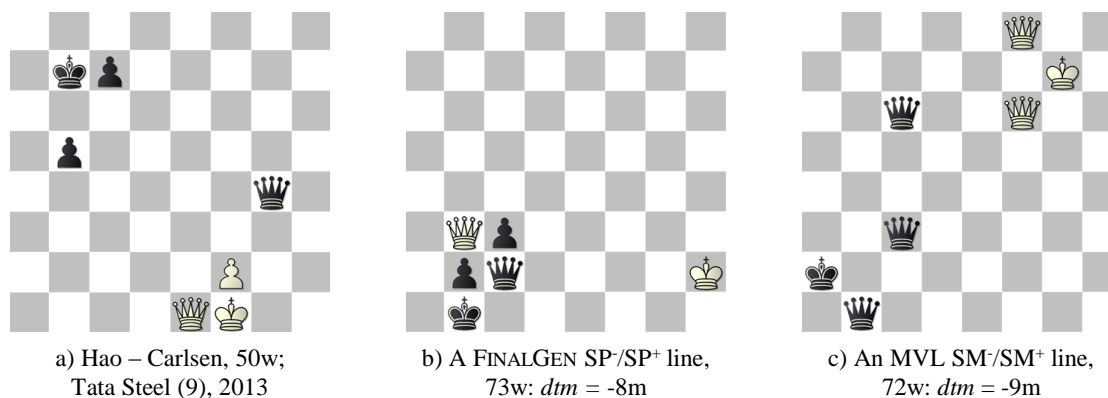# CHESS ENDGAME NEWS

G.M^cC. Haworth[1]

Reading, UK

The name of Magnus Carlsen is everywhere - reasonably so given his record FIDE ELO rating of 2872, his wins at the London Chess Classic 2012, Tata Steel 2013 and the FIDE Candidates' tournaments, and his consequential status as World Championship challenger and favourite. At Wijk aan Zee, Hao and Carlsen reached a Queen ending with five passed pawns but Carlsen won without drama or even a pawn conversion. Two silicon endings take different routes. FINALGEN (Romero, 2012), given its initial constraint of 'at most one piece per side', also finds a two-Queens win. In contrast, the Lomonosov tables (MVL, 2012), with a freedom and fearlessness born of complete EGT knowledge, show a quintet of Queens skirmishing briefly on the main road to mate.

Hao-Carlsen, Tata Steel 2013 (9), ECO C44: 8/1kp5/8/1p6/6q1/8/5P2/4QK2 w, Fig. 1a: **50. Qe5 Qc4+ 51. Kg2 Qc6+ 52. Kf1 b4 53. f4 b3 54. f5 Ka6 55. Qa1+ Kb6 56. Qh8 Qc1+ 57. Kg2 Qc2+ 58. Kh1 b2 59. Qb8+ Ka5 60. Qa7+ Kb4 61. Qb7+ Ka3 62. Qf3+ Qb3 63. Qa8+ Qa4 64. Qf3+ Ka2 65. Qd5+ Ka1 66. Qe5 c5 67. Resigns** 0-1.

Romero FINALGEN line, SP⁺/SP⁻, *dtp* = -25:[2, 3] **50. Qe5" Qc4+" 51. Kg2" Qc6+" 52. Kh3"** {diverging from the game} **Qf3+" 53. Kh4" Qxf2+"** {KQKQPP, *dtm* = -29} **54. Kg5** ({SM⁺/SM⁻} 54. Kg4 Qg2+" 55. Kh4 Qc6" 56. Kg4 Qc4+" 57. Kf5 b4" 58. Kg6 b3" 59. Kh5 Kb6" 60. Kh6 Qc1+" 61. Kg7" b2" 62.Qd4+" Kb5" 63. Qd7+" Qc6" 64. Qd3" Kb4 65. Qd4+" Kb3 66. Qd1" Ka2" 67. Qe2" Qc3+ 68. Kh6 Qa5!" 69. Qe6+ Ka1" 70. Qe7 c5" 71. Qe5 Qa3" 72. Qe6 b1=Q" {*dtm* = -10}) **54. … Qb6 55. Kf5 Qc6" 56. Qb2" Kb6" 57. Kg4" Qe4+ 58. Kh3 b4" 59. Kh2 c5 60. Qf6+ Kb5" 61. Qf7" Qc2+ 62. Kg3 Qd3+" 63. Kh2 b3" 64. Qe8+ Kc4" 65. Qa4+ Kc3" 66. Qa5+" Kb2" 67. Qa4 c4 68. Qa7" c3 69. Qg7" Kc2" 70. Qg4 b2" 71. Qa4+" Kb1 72. Qb3 Qc2+** {*dtm* = -8, Fig. 1b} **73. Qxc2+" Kxc2"" 74. Kg3 b1=Q"** {*dtm* = -6} 0-1.

MVL line, SM⁺/SM⁻, *dtm* = -31: **50. Qc3" b4" 51. Qd3 Kb6" 52. f3" Qf4 53. Kg2" Qd6" 54. Qe3 c5" 55. f4" Qd5+" 56. Kg3" Ka5" 57. Kh4 c4" 58. Qa7" Kb5° 59. Qb8+" Ka4" 60. Qe8+" Kb3" 61. Qe1" Qd3" 62. f5" c3" 63. f6" c2" 64. Kg5" Qc3 65. Qc1" Ka2" 66. Kg6 b3" 67. f7" b2" 68. Qf4" Qc6+" 69. Kg7" c1=Q" 70. f8=Q" Q1c3+" 71. Q4f6 b1=Q"** {KQQKQQQ, Fig. 1c} **72. Qg8 Qbb3" 73. Qxb3+" Kxb3"" 74. Qxc3+" Kxc3""** {*dtm* = -6} 0-1.

a) Hao – Carlsen, 50w;   b) A FINALGEN SP⁻/SP⁺ line,   c) An MVL SM⁻/SM⁺ line,
Tata Steel (9), 2013   73w: *dtm* = -8m   72w: *dtm* = -9m

Figure 1: Three positions related to the finale of Hao-Carlsen, Tata Steel, Round 9, 2013.

'MVL' completed their 4-3 and 5-2 DTM(ate) EGTs with a flourish in August 2012 when left alone with their university's supercomputer during the Moscow holidays.[4] MVL also provided an SM⁻/SM⁺ line for the KBPPKNP position 2n5/7k/5B1p/2K4P/6P1/8/8/8 w (Bryant, 2012) which had proved to be a 'CZ' Cyclic Zugzwang (Haworth, 2012),[5] i.e., a position where the loser can force the winner back to the same position but with loser to move. Team member Vladimir Makhnychev admitted to being 'pretty much frightened' by the position and line. 'I was already saying good-bye to the 100TB of our results and thinking of new tests for 7-man generator when Victor [Zakharov] mercifully indicated to me that the colors [of the sides to move] are different.'

---

[1] The University of Reading, Berkshire, UK, RG6 6AH. email: guy.haworth@bnc.oxon.org.

[2] SP⁺/SP⁻ ≡ White is maximising Depth to Pawn-conversion or mate, and Black is minimising it.

[3] Usual notation: " ≡ only optimal move, "" ≡ only value-preserving move, and ° ≡ only move.

[4] Some ChessOK products (2013) currently provide free access during 2013 to a subset of these Lomonosov EGTs.

[5] Haworth and Rusz (2011) are data-mining for sub-6-man CZs using evolved versions of FREEZER and FINALGEN.
   However, Bryant's position is by far the deepest CZ known with a DTC/M/Z-zugdepth of 36 moves, 71 plies.

BK#	Endgame	EG GBR	FEN position	DTC	1 of ..	Note
4.01	KQPKRPP~	1300.12	4r2Q/8/K6p/5k2/8/8/p6P/8 w	78	1	maxDTC KQKRP (1-0, wtm) = 79
4.02	KRPPKQP~	3100.21	k1K5/6Pq/3PR3/8/6p1/8/8/8 w	61	1	a '50m draw'; maxDTC KRPKQ (1-0, wtm) = 9
4.09	KRPKBPP~	1300.12	4b3/2kp2p1/5R2/8/8/2K5/7P/8 w	86	2	a '50m draw'; maxDTC KRKBP (1-0, wtm) = 21
4.10	KBPPKRP~	3100.21	8/2B4k/8/K7/7P/1p5r/1P6/8 w	49	23	23 very similar positions; maxDTC KBPKR (1-0, wtm) = 13
4.17	KRPKNPP~	0103.12	8/R2pp3/8/2n5/4k3/2K5/7P/8 w	82	6	6 similar positions; maxDTC KRKNP (1-0, wtm) = 43
4.18	KNPPKRP~	0301.21	8/8/1r6/8/1pPK3N/8/1P5k/8 w	38	3	3 almost identical positions; maxDTC KNPKR (1-0, wtm) = 18
4.25	KRNPKRB~	0431.10	4r3/1P6/6R1/5k2/1K5b/8/8/1N6 w	260	?	a '50m draw', in fact the DTZ-deepest P-ful position known
5.01	KRPKPPP~	0100.13	R7/3p4/8/8/1k6/3p4/3Pp3/K7 w	30	7	7 similar positions; maxDTC KRKPP (1-0, wtm) = 25
5.02	KPPPKRP~	0300.31	8/8/5p2/PP6/6r1/1P6/4k3/2K5 w	36	1	maxDTC KPPKR (1-0, wtm) = 25
5.11	KBPKPPP~	0010.13	k7/8/7p/6pp/8/8/2B3P1/K7 w	64	6	one move short of a 50m-draw; maxDTC KBKPP (1-0, wtm) = 4
5.12	KPPPKBP~	0030.31	6b1/7k/2p5/K7/8/P7/6PP/8 w	39	4	4 similar positions; maxDTC KPPKB (1-0, wtm) = 18
5.20	KNPKPPP~	0001.13	8/3pp1p1/8/8/k7/8/3P4/K3N3 w	55	3	3 very similar positions; maxDTC KNKPP (1-0, wtm) = 14
5.21	KPPPKNP~	0003.31	2n5/4p1k1/8/8/6P1/P6P/1K6 w	40	5	5 similar positions; maxDTC KPPKN (1-0, wtm) = 30

Table 1: the 12 maxDTC and 1 maxDTZ positions in Bourzutschky and Konoval (2012b, 2013).

BK#	Endgame	EG GBR	Pos.	first 7-man position	Val.	not …	but …	res.	conc.	date, ECO, players
4.03	KRPPKQP	3100.21	58w	6R1/1q6/4k3/7p/8/7P/5P2/6K1 w	=	58. Rg3?	58.h4!!	=	4.0	1959, C86, Karaklajic-Witkowski
4.04	KQPKRPP	1300.12	53b	1Q6/8/3K1k2/2P1p3/8/7r/5p2/8 b	1-0	54. Kc7	54.Kc6!!		0.5	1971, B48, Tseitlin-Suetin
4.05	KRPPKQP	3100.21	76w	8/8/2P5/4p3/P3q3/8R/2R5/1K4k1 w	=	76. c7??	a5!!	0-1	0.5	2007, B97, Short-Naiditsch
4.11	KRPKBPP	0130.12	58w	8/5kp1/2pK4/1b5R/8/6P1/8/8 w	1-0	59. Rf5+??	Ke5!!	=	0.5	1967, D36, Zhukhovitsky-Zhidkov
4.12	KRPKBPP	0130.12	64b	8/5b1R/1p2k3/7p/5K2/8/2P5/8 b	=	64…b5	…h4!!	1-0	0.5	1985, C19, Gurgenidze-Psakhis
4.13	KBPPKRP	0310.21	45w	6k1/5p2/8/1P6/8/8/1r4KP/5B2 w	=	45. Kg3??	Kf3!!	0-1	0.5	1993, B33, Dvoirys-Yakovich
4.19	KRPKNPP	0103.12	60w	7R/8/5n2/3pK1k1/7p/8/6P1/8 w	1-0	60. Rd8??	R(a/c)8!	=	0.5	1968, E98, Panno-Evans
4.20	KNPPKRP	0301.21	60b	7r/P4k2/6p1/1KN3P1/8/8/8/8 b	=	61…Rg8??	…Rd8!!	1-0	0.5	1974, A29, Uhlmann-Lehmann
4.21	KNPPKRP	0301.21	53w	8/8/6p1/3N1k2/1p6/2P5/3K4/6r1 w	=	54. c4	Nb4!		1.0	2007, C92, Stellwagen-Nikolic
4.26	KRNPKRB	0431.10	64w	8/1P1R4/4N1k1/8/4K3/1r4b1/8/8 w	1-0	DTC-concessions: m73-143		1-0	0.0	2008, C78, Carlsen-Shirov
4.27	KRNPKRB	0431.10	58b	8/1k6/8/1PN2r1/3K3R/8/2b5/8 w	=	71…Rf5?	…Bh1	0.5	1.0	2012, B30, Anand-Gelfand, Rapid-2
5.03	KPPPKRP	0300.31	52w	8/r4p2/8/7P/5PK1/5P2/2k5/8 w	=	52.h6?	Kg5!!	0-1	0.5	1940, C90, Turn-Keres
5.04	KRPKPPP	0100.13	55b	5R2/k1p1K3/8/p7/1p1P4/8/8/8 b	=	58.Rb1?	Rf8!!	0-1	0.5	2003, E15, Karpov-Anand
5.05	KRPKPPP	0100.13	50b	7R/p7/3k2K1/2p5/6P1/3p4/8/8 b	1-0	51.g5?	Kg5!!	=	1.5	2006, A84, Hoffmann-Wintzer
5.13	KPPPKBP	0030.31	53w	2b3k1/p1P5/8/8/1P1K4/8/P7/8 w	1-0	55.a4?	Kc6/a3/b5	1-0	1.0	1897, C60, Charousek-Caro
5.14	KBPKPPP	0010.13	54w	8/8/4k1p1/6P1/p1p3K1/2B5/8/8 w	1-0	55.Ke3?	Bb2!!	1-0	1.0	1955, A14, Denker-Owens
5.15	KBPKPPP	0010.13	56b	8/K7/6p1/P6p/6k1/6p1/5B2 b	=	58.Res.	Bxh3+!!	0-1	0.5	2007, B48, Motylev-Morozevich
5.22	KNPKPPP	0001.13	57b	8/8/5pp1/3N3p/3P4/7k/3K4/8 b	1-0	58.Ke3?	Kd3/Ne3+	1-0	1.0	1974, A12, Hecht-Hurme
5.23	KNPKPPP	0001.13	50b	8/p3N3/1p1K3k/7p/8/1P6/8/8 b	=	56…a4?	h2/K(f4/f5/g5)	=	1.0	1987, D88, Knaak-Georgiev
5.24	KNPKPPP	0001.13	67b	8/4N3/7p/1p4pk/3K4/1P6/8 b	=	67…Kg4??	…g4!!	=	1.0	1997, B31, Tseshkovsky-Ivanovic
5.25	KNPKPPP	0001.13	53w	8/8/8/3P4/p1k2k2/Pn6/7P/8 w	=	53…Na5+?	…Kg4!!	=	1.0	2000, A15, Bruk-Tsesarsky

Table 2: the 21 games with 7-man errors selected for Bourzutschky and Konoval (2012b, 2013).

BK#	Endgame	EG GBR	Pos.	first 7-man position	HH#	Stip.	val.	not …	but …	date, composer(s)
4.06	KRPPKQP	3100.21	2b	8/p6P/P7/8/8/4R2k/1q6/7K b	5521	=	0-1	3…Qg7	…Qe5!	1909, Enderlein
4.07	KQPKRPP	1300.12	1w	2Q5/k6r/1p6/p7/3PK3/8/8/8 w	32933	1-0	1-0	7.Kf6	Qc6+!	1962, Khenkin
4.08	KQPKRPP	1300.12	1w	5Q2/5p1k/6p1/6K1/6P1/6P1/8/5r2/8 w	50883	1-0	1-0	2. Qh3	Qh2!	1982, Khenkin
4.14	KBPPKRP	0310.21	3w	7K/1P6/6rB/4k2p/7P/8/8 w	13342	1-0	=	---	4…Rg6!!	1929, De Villeneuve-Esclapon
4.15	KRPKBPP	0130.12	1w	1R1b4/5k1p/8/8/3K4/8/6Pp/8 w	40678	=	0-1	1…Kg8	…Kg6	1973, Sadovsky
4.16	KBPKRP	0310.21	1w	8/5K2/8/1P6/P5B1/1p6/1r5k/8 w	43611	=	0-1	2…Rg2	…Kg3	1976, Asaba & Kralin
4.22	KNPPKRP	0301.21	1w	8/2pk1N2/P7/8/8/8/P4r2/K7 w	20314	1-0	=	7…Rxd6+	…Rf8!	1941, Kok
4.23	KNPPKRP	0301.21	1w	K3Nk2/4pr2/8/2P1P3/8/8/8/8 w	45235	1-0	=	1…Kxe8	…Rf1	1977, Pogosyants
4.24	KRPKNPP	0103.12	5w	R7/8/8/2k5/1p6/2n5/pP6/4K3 w	49403	1-0	=	5…Nb1+	…Ne4+	1981, Liburkin
5.06	KPPPKRP	0300.31	1w	8/8/8/3pr3/2P5/3KP3/4P3/3k4 w	41631	=	0-1	2…Rc4	…Re6!	1974, Asaba
5.07	KPPPKRP	0300.31	5w	8/8/4pP2/1r6/3PK3/3P4/4k3 w	62904	=	0-1	5…Rf4	…Rb6!	1995, Ibragimov
5.08	KPPPKRP	0300.31	6w	8/8/4pP2/3r4/3PK3/3P4/6k1 w	56345	=	0-1	6…Rf4	…Kg2	1988, Forsberg
5.09	KPPPKRP	0300.31	2b	5K2/P7/P7/k3r3/p7/1P6/8/8 b	43070	1-0	=	8…Rxa6	…axb3!	1975, Maksakov
5.10	KRPKPPP	0100.13	1w	8/8/1P2K2R/p5k1/8/4pp2/8/8 w	67539	1-0	=	4…Kxh5	…Qc3+	2000, Maricic
5.16	KBPKPPP	0010.13	1w	8/8/1pk5/1p6/1K1P4/7p/B7/8 w	3843	=	0-1	2…Kxd5	…Ke5!	1897, Larsen (v., Michelet, 2005)
5.17	KBPKPPP	0010.13	1w	8/2K5/1p5p/4p3/8/3P4/5B1k w	38009	=	1-0	2…Kf3	…Kg3!	1969, Bondarenko & Kuznetsov
5.18	KPPPKBP	0030.31	2b	8/b7/5pP1/5P2/2k4P/8/2K5 b	41296	=	0-1	8…Kxf5	…Bg7!	1973, Kakovin & Motor
5.19	KPPPKBP	0030.31	4w	k7/8/1P1P4/p7/5Pb1/8/7K/8 w	60136	=	0-1	6…Bd7	…Bc8!	1991, Prigunov
5.26	KNPKPPP	0001.13	2w	8/1N6/2P5/3p2p1/K2k4/8/2p5/8 w	2894	1-0	=	2…Kxc5	2…Ke5!!	1885, Jespersen
5.27	KNPKPPP	0001.13	13b	7K/2p5/3pNp2/8/1k6/8/7P/8 b	11779	1-0	=	14…d5	14…c4!	1927, Somov Nasimovich
5.28	KPPPKNP	0003.31	7b	3k2n1/6P1/2P2p2/7K/P7/8/8 b	73946	=	0-1	8…Kc7	…Ke8!	2007, Afek
5.29	KNPKPPP	0001.13	4b	8/pP6/8/2NK1p2/k7/8/5p2/8 b	49720	1-0	1-0	6.Kc6	dual 6.b8=Q	1981, Novikov

Table 3: the 22 faulted studies selected for Bourzutschky and Konoval (2012b, 2013).

The excellent Bourzutschky-Konoval series (2006, 2011a/b, 2012a/b, 2013) is now concluded. It highlighted a selection of positions studied using their 7-man DTC(onversion) EGTs. The 56 record, game and study positions chosen for Parts 4 and 5 are listed here in, respectively, Tables 1-3 with annotation and notes by MB-YK and this author.[6,7] The relevant EGTs, computed with the familiar P=Q conversion constraint denoted by '~', are for K(B/N/P)PPKRP, KPPPK(B/N)P, KRNPKRB and KRPPKQP.[8]

The maxDTC or maxDTZ positions BK4.02/09/25 feature three endgame phases longer than 50 moves. BK4.02 involves an amazing escape after first 23 and then 31 consecutive checks. BK.25 is not a maxDTC position with $dtc = 265$ but it is the DTZ-deepest P-ful position known. It is even deeper than the record-depth 6-man position, Stiller's KRNKNN 6k1/5n2/8/8/5n2/1RK5/1N6 w, which has maxDTC/Z = 243 and maxDTM = 262. Table 1 includes maxDTC figures showing the varying effect of removing a Pawn from each side.

Over the board, the occasional half-point is conceded but it is still impressive that this happens so rarely at the top level. BK4.26 has Carlsen and Shirov conceding DTC-depth in handfuls but the game-result is the same as the original '7-man' theoretical value. After BK4.03, the game ended when Black agreed a draw in a won position. BK4.27 is the title-deciding Anand-Gelfand KRNPKRB position previously discussed (Haworth, 2012).

From the studies, BK4.24 identifies a previous dual as the only solution but Liburkin's aesthetics, and therefore the study's quality, do not survive intact. BK5.29 features a dual in the study rather than a cook. While the usual EGT-effect is to discover flaws, it is a pleasure to note that a famous Behting study[9] which recently came under suspicion has in fact been proved sound with the help of Bourzutschky's KNNPKQP EGT (van der Heijden, 2012). This and some 9,950 other studies could be examined with the Lomonosov EGTs.

My thanks to Eiko Bleicher (2013), Marc Bourzutschky, John Bryant, Yakov Konoval, Victor Zakharov and the MVL team, Pedro Pérez Romero, Árpád Rusz, and Emil Vlasák for their contributions reported here.

References

Bleicher, E. (2013). http://www.k4it.de/index.php?topic=egtb&lang=en Nalimov EGT look-up service.

Bourzutschky, M. and Konoval, Y. (2006). 7-man Endgame Databases. *EG*, Vol. 11, No. 162, pp. 493-510.

Bourzutschky, M. and Konoval, Y. (2011a). News in Endgame Databases. *EG*, Vol. 17, No. 185, pp. 220-229.

Bourzutschky, M. and Konoval, Y. (2011b). News in Endgame Databases (part 2). *EG*, Vol. 17, No. 186, pp. 321-330. ISSN 0012-7671.

Bourzutschky, M. and Konoval, Y. (2012a). News in Endgame Databases (part 3). *EG*, Vol. 18, No. 188, pp. 122-131.

Bourzutschky, M. and Konoval, Y. (2012b). News in Endgame Databases (part 4). *EG*, Vol. 18, No. 190, pp. 316-326.

Bourzutschky, M. and Konoval, Y. (2013). News in Endgame Databases (part 5). *EG*, Vol. 19, No. 191, pp. 18-26.

Bryant, J. D. (2012). http://www.youtube.com/watch?v=2h_b0puS8Vk KBPPKNP position analysis.

ChessOK (2013). http://chessok.com/. Lomonosov EGT access via HOUDINI 3 (PRO) AQUARIUM et al.

Haworth, G. M^cC. and Rusz, A. (2011). Position Criticality in Chess Endgames. In: *Advances in Computer Games 13, ACG 2011*. LNCS 7168, Springer. ISBN 978-3-642-31865-8.

Haworth, G. M^cC. (2012). Chess Endgame News. *ICGA Journal*, Vol. 35, No. 2, pp. 90-93.

MVL team (2012). https://plus.google.com/100454521496393505718/posts, esp. 2012-04-06 about the team.

Romero, P. P. (2012). http://www.mtu-media.com/finalgen FINALGEN: download, tutorial and examples.

van der Heijden, H.M.J.F. (2010). http://www.hhdbiv.nl/. HHDBIV, ENDGAME STUDY DATABASE IV.

van der Heijden, H.M.J.F. (2012). Famous Behting study cooked and saved! EG, Vol. 18, No. 190, pp. 307-8.

---

[6] 'conc.' ≡ total points conceded in the sub-8m-endgame; 'HH#' ≡ study index number in van der Heijden (2010).
[7] Two errors in *EG*: BK4.08 should have the bR on f2, not f1. BK4.11 should start on move 59 rather than move 58.
[8] Endgames visited overall ranged from the improbable but possible KQQQKQQ (!) to the most likely, KRPPKRP.
[9] Behting (1906), HHdbIV #4728, 8/8/7p/3KNN1k/2p4p/8/3P2p1/8 w: draw. **1. Kc6! g1=Q 2. Nxh4! Qh1+ 3. Nhf3! =.**