



## Chess Tests: Bizarre Positions 71-75

(c) Valentin Albillo, 2020



Last update: 05/03/98

*See the Notes on Problem Solving*

### Overview:

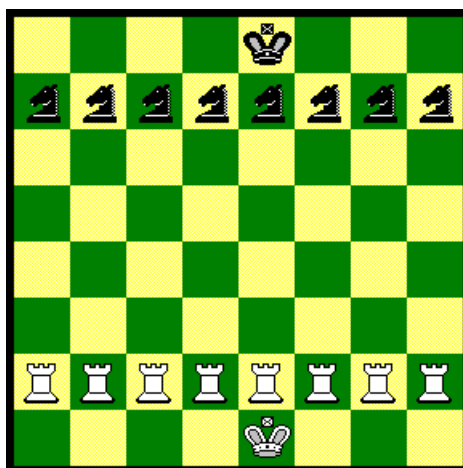
**Bizarre Positions** is an amazing Suite Extension where you'll find only absolutely weird positions nowhere else to be found ! These positions would never arise in a proper game, but that doesn't mean they hold no interest, far from it !

As you will see, they can *visibly demonstrate* why a major piece (a Rook, say) is more valued than a minor one (say a Knight or a Bishop). You will also be able to *see with your very eyes* why having the move is truly important and why White has some inherent advantage because of this.

For us Computer Chess fans, you'll see that some of these positions *stress the chess engines to their limits*, and even can help *discover latent bugs*. On the other hand, only chess programs are ideally suited to analyze most of these positions, as they are too **bizarre** for a human player to unravel.

In short, I hope you'll like them and find them **novel** and **refreshing** !

### 71.- Proposed by Valentin Albillo, 1997



FEN: 4k3/nnnnnnnn/8/8/8/RRRRRRRR/4K3/ w

*White to play and win: 1. Rc2xc7*

### Results

Program	CPU/Mhz	Hash table	Move	Value	Plys/Max	Time	Notes
Chess Genius 1.0	P100	320 Kb	Rc2xc7	Mate9	6/18	00:05:30	seen at 2:32
<b>PANEK</b> Chess Genius 5.0	PII/266	8 Mb	Rc2xc7	Mate9	5/17	00:00:24	
<b>PANEK</b> Chess Genius 5.0	PII/266	8 Mb	Rc2xc7	Mate8	6/18	00:01:02	
<b>PANEK</b> Chess Genius 5.0	PII/266	8 Mb	Rc2xc7	Mate7	7/19	00:03:10	shortest mate

Rebel Decade 2.0	P100	512 Kb	Re2xe7+	Mate9	8/17	00:18:58	seen at 18m 1s
Crafty 12.7	P100	6 Mb	Re2xe7+	Mate9	9/17	00:19:49	seen at 16:56

## Notes:

A Rook is a major piece and thus has always been considered far stronger than a minor piece like a Knight, for instance, no doubt about it. **How about testing it for real ?**

In this bizarre position, White has only Rooks while Black has only Knights. As it happens, all 8 Knights can do little to defend Black against the powerful Rooks: **White plays and mates Black in 9 moves or less.**

In fact, there are **several solutions** for a mate in 9, and it can be proved that it's indeed a *mate in 8* or less, maybe even a mate in 7, though I haven't proved that yet. A possible *Principal Variation* for an hypothetical mate in 7 goes like this, but I don't know if all Black responses are the best:

1. **Re2xc7 Nb7-d6; 2. Rh2xh7 Na7-c6; 3. Rd2xd6 Ng7-f5; 4. Rd6xd7 Nf7-e5;**
5. **Re2xe5 Nc6xe5; 6. Ra2-a8+ Ne7-c8; 7. Ra8xc8++**

**Chess Genius 1.0** with its usual small hashtable but its great programming, finds quickly the mate in 9 while looking at only 6 full plies, the search extensions do the rest. It even sees that it's a mate in 9 in nearly half the time it requires to actually stop the search and play it across the board.

**Crafty 12.7**, with a much larger 6 Mb hashtable needs to look at 9 full plies, but it does find a different move that also gives mate in 9. It takes nearly *four times longer* than CGI.0 but then nobody's perfect. It looks at 36.595.934 positions, but only evaluates 432.539 of them.

**Rebel Decade 2.0** behaves almost exactly like **Crafty 12.7**: it finds the same move evaluated too as a mate in 9, and takes nearly the same time, though looking at one ply less, 8 plies. It had to examine *23.340.325 positions* to find the mate.

**Chess Genius 5.0** needs a ply less than CGI.0, 5/17, to find the same mate in 9, and does it in an incredibly short time, many times faster than **Chess Genius 1.0**, not to mention **Crafty 12.7**. Going one ply deeper, at 6/18, it discovers a shorter *mate in 8*, still much faster than the other programs.

But most amazingly, one ply more, 7/19, and it discovers the shortest possible *mate in 7*, and even so, nearly *two times faster* than CGI.0's mate in 9, and *6 times faster* than Crafty's. **Ed Panek** let it go yet another ply deeper, 8/20, which took 9 min. 38 sec., but alas, no shorter mate is possible.

If you want to have a look at the *mate-in-7 Principal Variation* and some other interesting comments, see the **Addendum** below. On the other hand, if you are interested or want to check your favourite program, here's **Crafty's** analysis:

```

depth  time  score  variation
5->   1.98  24.721  Rxc7
6->   6.73  25.020  Rxc7
7->  32.43  28.008  Rxc7 Nhf6 Rxa7 Nbc5 Rxg7 Nfe4 Ra8+ Nd8
8->   2:16  28.304  Rxc7 Nbd6 Rxh7 Nac8 Rhxg7 Kd8 Rbc2 Nc4
9    16:56  Mat09   Rxe7+ Kxe7 Rxf7+ Kxf7 Rxd7+ Ke6 Rgxc7
      Nd5 Rce2+ Kf5 Rdf7+ Nhf6 Rhf2+ Nf4
      Rxf4+ Kxf4 Rxf6#
9->  19:49  Mat09   Rxe7+ Kxe7 Rxf7+ Kxf7 Rxd7+ Ke6 Rgxc7
      Nd5 Rce2+ Kf5 Rdf7+ Nhf6 Rhf2+ Nf4
      Rxf4+ Kxf4 Rxf6#

time: 19:49  cpu:100%  mat:18  n:36595934  nps:30753
ext-> checks:3979005  recaps:0  pawns:0  lrep:447691
predicted:0  nodes:36595934  evals:432539
endgame  tablebase->  probes done: 0  successful: 0
hashing-> trans/ref:11%  pawn:0%  used:w99%  b99%

Crafty will mate in 9 moves.
```

## Addendum:

**Ed Panek** sent the following comments with his result for **Chess Genius 5.0**:

"... [the *mate-in-7 Principal Variation* is:]

**e2xc7, b7d6, h2xh7, d6f5, f2xf5, a7c6, g2xg7, f7e5, h7h8+, e7g8, h8xg8+, d7f8, g8f8++**

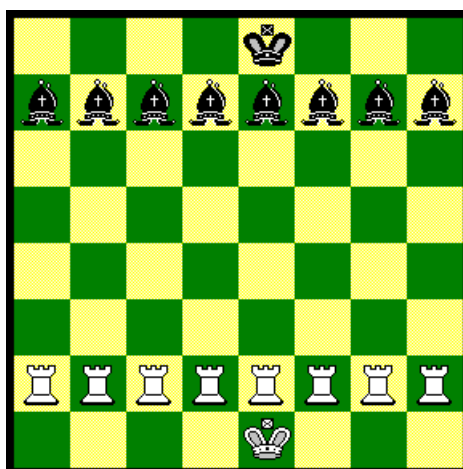
Apparently the problem is that Black must defend against the pin on e7 knight, and prevent the Rooks from storming the flanks.

**Note:**

**Genius** does not see mate until 24 seconds ... till then it has a +30 advantage :) . This is what **Richard Lang** (the author of **Genius**) calls a "cook" to find mate :) . This is what is improved over earlier versions of **Genius** ..."



72.- Proposed by Valentin Albillo, 1997



FEN: 4k3/bbbbbbb/8/8/8/RRRRRRRR/4K3/w

White to play and win: 1. Ra2xa7

Results

Program	CPU/Mhz	Hash table	Move	Value	Plys/Max	Time	Notes
Chess Genius 1.0	P100	320 Kb	Ra2xa7	+37.45	8/20	05:02:18	can't see mate
<b>PANEK</b> Chess Genius 5.0	PII/266	16 Mb	Ra2xa7	Mate10	7/19	00:32:45	sees Mate11 at 25m
<b>PANEK</b> Chess Genius 5.0	PII/266	16 Mb	Ra2xa7	Mate8	9/21	02:47:22	shortest mate
Rebel Decade 2.0	P100	512 Kb	Ra2xa7	+26.86	9	01:42:02	can't see mate
Crafty 12.7	P100	6 Mb	Rc2xc7	Mate12	12/23	08:24:35	sees mate

Notes:

In **Test 71** above we saw a convincing demonstration that Rooks are in fact stronger than Knights, forcing a mate in 9 moves or less (in fact, in 8 moves and maybe even in just 7).

But perhaps Bishops can defend their King more efficiently. As a matter of fact, a Bishop can be considered as a kind of "Rook of the diagonals", and being four of each color, they can make double (quadruple!) attacks on a given point.

To test the point, in this bizarre position White has only Rooks, Black only Bishops. We will see that actually, Bishops defend their King better than Knights, presenting much more resistance to the Rooks. But in the bitter end, **resistance is futile**: White plays and **mates Black in 12 moves** or less. Maybe in as little as *8 moves* !.

**Chess Genius 1.0** does what it can with this difficult position but its small hashtable does it no good for this kind of combinatorial positions where each side has a lot of possible, very similar moves. After looking at 8/20 plies taking a very long time, it *does not see the mate*. To accomplish that, it would need to look at least 3 plies deeper, and that would take an inordinate amount of time.

**Crafty 12.7**, with its larger 6 Mb hashtable, is capable of looking at 12/23 plies using only 60% more time than CGI.0, but this is just sufficient to discover a forced *mate in 12 moves*. This time **Crafty's** large hashtables and comprehensive search extensions outperformed CGI.0 ostensibly, allowing it to search extremely deep along selected lines, in a necessarily large but quite reasonable amount of time.

**Rebel Decade 2.0** fails to find any mate. After looking at 9 plies, and examining *133.669.180 positions*, it finds the correct move but fails to recognize it as a mate.

**Chess Genius 5.0** once again steals the show. It goes on looking deeper and deeper, until, by the time it reaches 7/19 plies in 25 min., it sees a *mate in 11* with *1. Ra2xa7*. 7 min. later, still at 7/19 plies, it finds a shorter *mate in 10* with *1.Rc2xc7*.

But for the best result it needs to look still two plies deeper, 9/21, where it finds the shortest *mate in 8* in 2h 47m 22s. Continuing the search to 10/22 plies takes 3h 34m 29s, and going still further, to 11/23 plies takes 10h 14m 28s, but no shorter mate is possible. For additional comments and the *Principal Variation*, see the **Addendum** below.

For the sake of completeness, as usual, here's a resume from **Crafty's** analysis:

depth	time	score	variation
4->	1.21	18.018	Rxf7 Kxf7 Rxg7+ Kxg7 Rxe7+ Kf6 Rhxh7
5->	2.57	18.018	Rxf7 Kxf7 Rxg7+ Kxg7 Rxe7+ Kf6 Rhxh7
6->	8.10	18.279	Rxf7 Kxf7 Rxe7+ Kf6 Rxc7 Bxg2 Rcx d7

```

7-> 54.07 20.870 Rxa7 Bxb2 Rxd7 Bhe4 Rxe7+ Kd8 Rxf7 Bxb2
8-> 3:05 21.044 Rxa7 Bxb2 Rxc7 Bd3 Rxb2 Bde6 Rh8+
Bg8 Rxb7 Bxe2
9-> 43:21 23.731 Rxa7 Bxb2 Rxc7 Bhe4 Rxb2 Bbc6 Rh8+
Bf8 Rb8+ Ke7 Rxc6
10-> 100:34 28.175 Rxc7 Kf8 Rxf7+ Kxf7 Rxd7 Bc3+ Rxc3
Bhe4 Rxb7 Bxb7 Rxe7+ Kf6 Rxb7
11-> 288:01 30.897 Rxc7 Bgd4 Rxa7 Bxf2+ Rgxf2 Kf8 Rxh7
Kg8 Rxf7 Bh4+ Rxh4 Kxf7 Rcx7+ Kf8
12 504:35 Mat12 Rxc7 Bgd4 Rxe7+ Kxe7 Rxd7+ Kxd7 Rxf7+
Ke6 Rh6+ Kxf7 Rxb7+ Ke8 Re6+ Kf8 Rdf2+
Bxf2+ Rgxf2+ Bxf2+ Rxf2+ Bf5 Rxf5+
Kg8 Re8#

```

Crafty will mate in 12 moves

### Addendum:

Ed Panek sent the following comments with his result for Chess Genius 5.0:

" ... [the mate-in-8 Principal Variation is:]

```

a2xa7, h7f5, c2xc7, f7e6, g2xg7, e8f8, d2xd7, f8xg7,
d7xe7+, g7f6, e7xe6+, f6g5, c7g7+, f5g6, g7xg6++

```

*In this position, as opposed to the Knights vs Rooks [Test 71], there is a tangible threat to the Rooks immediately. However, the Rooks pose an immediate pin on e7 again while the Bishops have no pin against the White King ... it is only a question of calculating which Bishop to pick off first to achieve the fastest mate :) ..."*

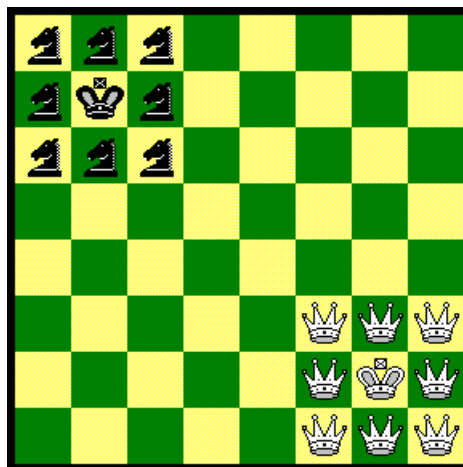
Also, just for the record, here are the results when 8 Rooks battle eight other pieces in this arrangement. Notice that 8 Rooks win against 8 Rooks, clearly demonstrating the non-trivial advantage of being *first* to move. The *mate in minus 5* means that even though the side with the Rooks moves *first*, the *Queens* are the ones to give mate in 5 moves !

### 8 Rooks against:

8 Pawns	8 Knights	8 Bishops	8 Rooks	8 Queens
Mate in 4	Mate in 7 (see Test 71)	Mate in 8 (see Test 72)	Mate in 15 or less	Mate in minus 5



### 73.- Proposed by Valentin Albillo, 1997



FEN: nnn5/nkn5/nnn5/8/8/5QQQ/5QKQ/5QQQ/ w

*White to play and win: Qg3-g7*

### Results

Program	CPU/Mhz	Hash table	Move	Value	Plys/Max	Time	Notes
Chess Genius 1.0	P100	320 Kb	Qg3-g7	Mate9	7/19	01:58:11	sees mate

<b>PANEK</b> Chess Genius 5.0	PII/266	16Mb	Qh3xc8+	Mate11	8/20	00:18:53	longer mate
<b>PANEK</b> Chess Genius 5.0	PII/266	16Mb	Qh3xc8+	Mate9	9/20	04:48:00	shorter mate
Rebel Decade 2.0	P100	512 Kb	Qf2-a2	+51.20	8	03:27:28	doesn't see mate

### Notes:

In **Test 71** above, we saw how 8 Rooks could easily defeat 8 Knights, giving *mate in 7*, at most. Having 8 Queens instead of 8 Rooks against the Knights in that same arrangement results in an even faster defeat, as the Queens are able to give a *mate in 2*.

But a large part of the disadvantage comes not from the fact that the Knight is much weaker than the Queen or the Rook, but from the fact that the stronger side *moves first* and further the Knights are *not protected* in the initial arrangement so that Black loses several of them before they can protect themselves.

To test this, let's see what happens given the initial position of this Test. Here, each Knight is well protected by other Knights and by the King. Even though they have to fight 8 Queens, they can offer far more resistance, so that in this position White can only give **mate in 9** or less.

Just for comparison, and to help appreciate Knights as they deserve, if exchanging in this same position the Knights for Bishops then White can give *mate in 2*, while exchanging the Knights for Rooks allows White to give *mate in 3*. So the Knights defend their King *much* better !.

There's something in this position that's *very interesting* for testing purposes, and it's the fact that, due to the symmetric nature of the arrangement, there exist **two** identically winning moves, with the exact same evaluation, each one the *mirror* of the other with respect to the large diagonal.

Thus, all pruning, refutations, etc., have to deal with the inconvenient fact that there's one other move which *cannot be refuted* because there are two identical co-best moves ! This doesn't make it any easier to find the best move, but much *harder* as there are two of them indistinguishable from one another.

**Chess Genius 1.0** finds a *mate in 9* after looking at 7/19 plies, which is nearly the minimum number of plies a program needs to look at to recognize a mate in 9 (17). It takes a long time, increased by the symmetrical, non-refutable solution (1. Qf2-b2).

Quite oddly, **Chess Genius 5.0** needs to look one ply deeper to see any mate at all, at 8/20 plies, and even then it finds one of the correct moves (not the one found by CGI.0), but evaluates it as a longer *mate in 11*. Letting it search still another ply deeper, 9/20, it finds the very same move, but this time correctly recognized as a shorter *mate in 9*.

Why it needs two more plies than CGI.0, and more than *double the time* even though it runs in a computer 3 or 4 times faster, and with a much larger hash table, really beats me !. See the **Addendum** below for further comments and the *Principal Variation*.

Finally, freeware **Rebel Decade 2.0** *fails* to find the mate. Even though it searches one ply deeper than CGI.0 taking nearly double the time, it does not find any of the correct moves and also does not evaluate the chosen move as a mate. It examined 156.344.214 positions, but to no avail.

### Addendum:

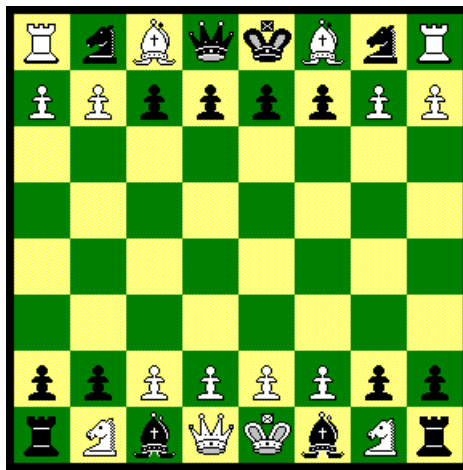
**Ed Panek** sent the following comments with this result for **Chess Genius 5.0**:

" ... [letting it continue to see if there's a shorter mate] no change after 8 hours and depth 9/20 and 5 move queries from depth 10/22 (almost depth 10) [so no shorter mate seems possible. The Principal] Variation is:

**h3xc8+, a7xc8, h2h8, c7d5, f3xd5, b6xd5, h8xc8+, b7xc8, h1h3+, c8b7,  
f1b5+, a8b6, f2xb6+, d5xb6, g1xb6+, b7a8, b6b7++**

[It was a] big problem for my computer... even though it is fast I let it run all day while I was at work (8 hours) and it could not get to depth 10 ... too many queens ..."





FEN: RnBqkBnR/PPppppPP/8/8/8/8/ppPPPPpp/rNbQKbNr/ w

**White to play and mate in 8: h7xg8=N !!**

### Results

Program	CPU/Mhz	Hash table	Move	Value	Plys/Max	Time	Notes
Chess Genius 1.0	P100	320 Kb	h7xg8=N	Mate8	6/18	00:03:13	shortest mate
<b>PANEK</b> Chess Genius 5.0	PII/266	8 Mb	h7xg8=N	Mate8	7/19	00:03:26	shortest mate
Rebel Decade 2.0	P100	512 Kb	h7xg8=Q	+17.86	8	01:15:05	can't see mate
Crafty 12.7	P100	12+5 Mb	h7xg8=Q	Mate10	9/19	01:08:50	longer mate
Crafty 12.7	P100	12+5 Mb	h7xg8=N	Mate7	9/13	01:22:57	<b>Bug !?</b>

### Notes:

Chess is a finely balanced game, where both players start from a symmetrical initial position, and White, having the first move, has thus a slight advantage. But not all symmetrical initial positions are so fair. In fact, one can be surprised by the amazing results one can get when starting from some altered initial positions.

For instance, in this Bizarre Position, "**Melee**", all pieces are on the same squares as on the standard initial position, except for the fact that their colors *alternate symmetrically* for Black and White. The resulting position is perfectly symmetrical, yet White can **mate in 8 moves**, starting with an amazing *non-checking underpromotion* to a Knight !.

**Chess Genius 1.0** finds the *mate in 8* after looking at 6/18 plies in a short time. Notice that recognizing a mate in 8 requires to look at 15 plies at least for certain variations, and CGI.0 is achieving this with only 6 plies of full-width search, plus 12 extra for relevant extensions. In this case, at least 9 extension plies are explored. The *Principal Variation* predicted is:

1. h7xg8=N Bc1xd2+; 2. Ke1xd2 f7-f6; 3. Ng8xf6+ Ke8-f7; 4. g7-g8=Q+ Kf7xf6;  
5. Rh8-h6+ Kf6-f5; 6. e2-e4+ Kf5xe4; 7. Qd1-f3+ Ke4-e5; 8. Bf8-g7++

Surprisingly, **Chess Genius 5.0** needs to go *one ply deeper*, 7/19 to find the same shortest mate, and it takes slightly longer. This is surprising, because it's a far *newer* version, it's running in a machine at least *3 times faster*, and it's using a much *larger* hashtable. Nevertheless, it saw the correct underpromotion at a depth of 6/18, in just 45 sec. but evaluated as a *mate in 9*.

Just to make sure there wasn't a shorter mate, **Ed Panek** let it run till it reached an amazing depth of 17/29 *plies*, taking no less than 8 hours 17 min. and 15 seconds, for good. The move was still evaluated as a mate in 8, the very shortest mate possible.

**Rebel Decade 2.0** is the only program tested which *fails* to find any mate. It searches to a depth of 8 plies in nearly the same time that **Crafty 12.7** took to search 9 plies (more than an hour), and it finds the same move as **Crafty**, but fails to recognize it as a mate. It examined 60.527.375 *positions* in all.

**Crafty 12.7**, on the other hand, behaves *very oddly* with this position. First, though it uses a 12 Mb hashtable for transpositions, plus a 5 Mb hashtable for pawn structures, it needs to look as deep as 9/19 plies to discover an inferior move, 1. h7xg8=Q which it evaluates as a longish *mate in 10*, and does it more than *20 times slower* than the shortest mate in 8 found by **Chess Genius 1.0**.

But letting it search a little longer, still at 9/13 plies, it finally discovers the correct underpromotion to a Knight, 1. h7xg8=N, but evaluates it as a *mate in 7*, which *it is not* !. I searched the position with several programs, and even coded a special exhaustive mate search, and I can confidently state that it's a mate in 8, and *no mate in 7 or less* can be forced in this position. What gives ? Perhaps some **Crafty 12.7** evaluation bug ?. Seems likely.

Just for its possible usefulness in tracing the bug, here's an extract of **Crafty 12.7's faulty analysis**:

```

depth   time   score   variation
8->    2:05  17.252  hxg8=Q hxg1=Q Bxe7+ Kxe7 Qxd8+ Kd6
        Qf6+ Kd5 Nc3+ Kc4 Qf4+ Kc5 Qf5+ d5
        Qxd5+ Kb6 axb8=Q
        hxg8=Q!!
9       3:16    ++
9       68:50  Mat10   hxg8=Q Bxd2+ Kxd2 hxg1=Q Qxf7+ Kxf7
        g8=Q+ Kf6 Qg7+ Ke6 Qg6+ Ke5 Bg7+ Kd5
        Kc3+ Kc5 Qd4+ Kb5 Qb4#
9       82:51  Mat07   hxg8=N f6 Nxf6+ exf6 g8=Q Bxd2+ Kxd2
        axb1=N+ Qxb1 Qe7 Bg7+ Qf8 Qxf8#
9->    82:57  Mat07   hxg8=N f6 Nxf6+ exf6 g8=Q Bxd2+ Kxd2
        axb1=N+ Qxb1 Qe7 Bg7+ Qf8 Qxf8#

time:82:58  cpu:100%  mat:21  n:91285026  nps:18338
ext-> checks:17642216  recaps:40821  pawns:2743444  lrep:4872883
predicted:0  nodes:91285026  evals:486395
endgame tablebase-> probes done: 0  successful: 0
hashing-> trans/ref:15%  pawn:-26%  used:w99%  b99%

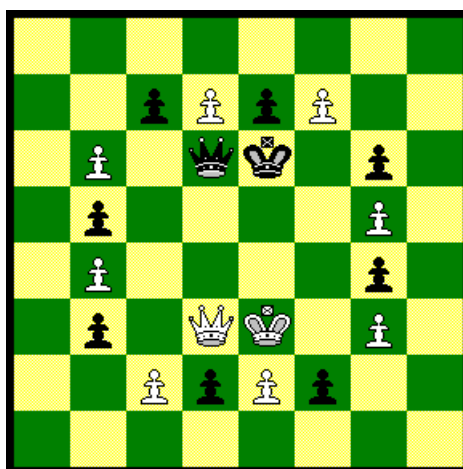
Crafty will mate in 7 moves.

```



**NEW** →

### 75.- "The Ring", proposed by Valentin Albillo, 1998



FEN: 8/2pPpP2/1P1qk1p1/1p4P1/1P4p1/1p1QK1P1/2PpPp2/8/w

White to play and mate in 12: 1. f7-f8=Q

#### Results

Program	CPU/Mhz	Hash table	Move	Value	Plys/Max	Time	Notes
<b>MARKEN</b> CHEST	Solaris/P166?	70 Mb	f7-f8=Q	Mate12	?	31:30:00	shortest mate
Crafty 12.9	P100	6+1 Mb	Qd3xd6+	+10.509	8/13	04:23:40	can't see mate
<b>PANEK</b> Chess Genius 5.0	PII/266	12 Mb	f7-f8=Q	No mate found	18/19	16:00:00	Special mate levels

#### Notes:

In this Bizarre Position, "The Ring", we have a *very unstable symmetrical position* where not only the Royal Couples are very near, but also there are a number of pawns about to promote. This is both an interesting, aesthetically beautiful position by itself, and also a good test of chess engines and special mate programs, as the number of possible promotions, underpromotions, and checking threats is *very large*.

**Crafty 12.9** cannot find the mate. It takes extremely long to perform even a very shallow search, more than 4 hours to reach 8 plies, and, as explained in the **Addendum** below, 30 full hours aren't enough to reach 9-ply depth. It selects 1. Qxd6+ evaluated at +10.509, no mate.

**CHEST** is a special-purpose chess program which specifically searches for mates. It was written by **Heiner Marxen**, **MARKEN**, who kindly ran this Bizarre Position and sent me the result. As you can see, **CHEST**, running under Solaris (Unix) and using a 70 Mb transposition table, could find the shortest, forced *mate in 12* with 1. f7-f8=Q in some 31 hours. See **Heiner's** interesting comments on both his program and the result in the **Addendum** below.

**Chess Genius 5.0** running on a powerful PII/266, and set to it's Special Mate Levels (not Infinite level), goes to 18/19 plies in 16 hours, but cannot find any mate in 9 or less. It suggest the correct move,  $1.f7-f8=Q$ , however, as the best candidate found.

### Addendum:

Here's an extract of **Crafty 12.9's** analysis:

depth	time	score	variation
2->	2.72	5.912	f8=N+ Kf7 Qxd6 f1=Q Qxg6+
3->	12.21	7.783	Qxd6+ exd6 f8=Q d1=N+ Kd2 Kxd7 bxc7 Kxc7 Kxd1 bxc2+ Kxc2
4->	36.87	8.467	Qxd6+ exd6 f8=Q d1=N+ Kd2 Kxd7 Kxd1 b2 Qf7+ Kc6 Qxc7+
5->	2:01	9.577	Qxd6+ cxd6 f8=Q d1=Q d8=Q f1=N+ Kf2 Qd4+ Kxf1 Qd1+ Kf2 Qd4+ Kg2 Qe4+ Kf2 bxc2 Qfxe7+
6->	10:20	10.179	Qxd6+ cxd6 f8=Q Kxd7 Kxd2 Kc6 Qxf2 b2 Qg1 b1=Q Qxb1 Kxb6
7->	28:14	10.175	Qxd6+ cxd6 f8=Q d1=N+ Ke4 f1=Q Qxf1 Kxd7 Qxd1 Kc6 Qd5+ Kxb6
8	263:40	10.509	Qxd6+ cxd6 f8=Q d1=N+ Kd2 f1=Q Qxf1 Kxd7 Qxd1 Kc6 Qg1 b2 Kd3

The attempt seems somewhat short, but I let it run till it reached *1800 minutes (30 hours)* without it printing *any more lines* (i.e.: it didn't reach 9 plies). As you can see, it does not find the mate, nor does it find the conjectured correct first move  $1.f7-f8=Q$  (this was found with old **Chess Genius 1.0**: it didn't see mate in 12, but when playing both sides it did deliver a mate in 11 without too much trouble).

### MARXEN

**Heiner Marxen** tried this position on his own special mate-searcher, **CHEST**, and was able to solve it, demonstrating that it is a mate in 12 (and no less) in some 31 hours. In his own words:

*"... I let **CHEST** run during the Christmas holidays, and it cracked "**The Ring**" ... it is a forced mate in 12, with  $1.f8=Q$  (as you already expected). No other key move leads to a forced mate in 12, and there is no way to force a mate in less than 12 moves.*

*Running on a P-166 (guessing) and using a 70MB transposition table, it needed ca 31.5 hours to be sure of the key move, and another 7.5 hours to print the top 7 plies of the complete solution tree ...*

*... although **CHEST** cracked this one, it was a really tough job, and there might have been some luck involved. This is the high end job **CHEST** can do in reasonable time on a fast machine. Some (arbitrary) statistics:*

```
searches in transposition table: ca 600 million
found in transposition table: ca 135 million
mate in 2 jobs: ca 202 million
mate in 2 computed (not in TT): ca 162 million
moves done/undone: ca 1300 million
```

*Some other 32-bit statistics counters did overflow (several times) ... Hope you enjoyed my analysis of "**The Ring**" (I did :-). So long!."*

