

Adams outclassed by HYDRA

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NEWS, INFORMATION, TOURNAMENTS, AND REPORTS

ADAMS OUTCLASSED BY HYDRA

London, June 21 to 27, 2005

*Communication by ChessBase and the Editor,
and Comments by John Nunn and David Levy*

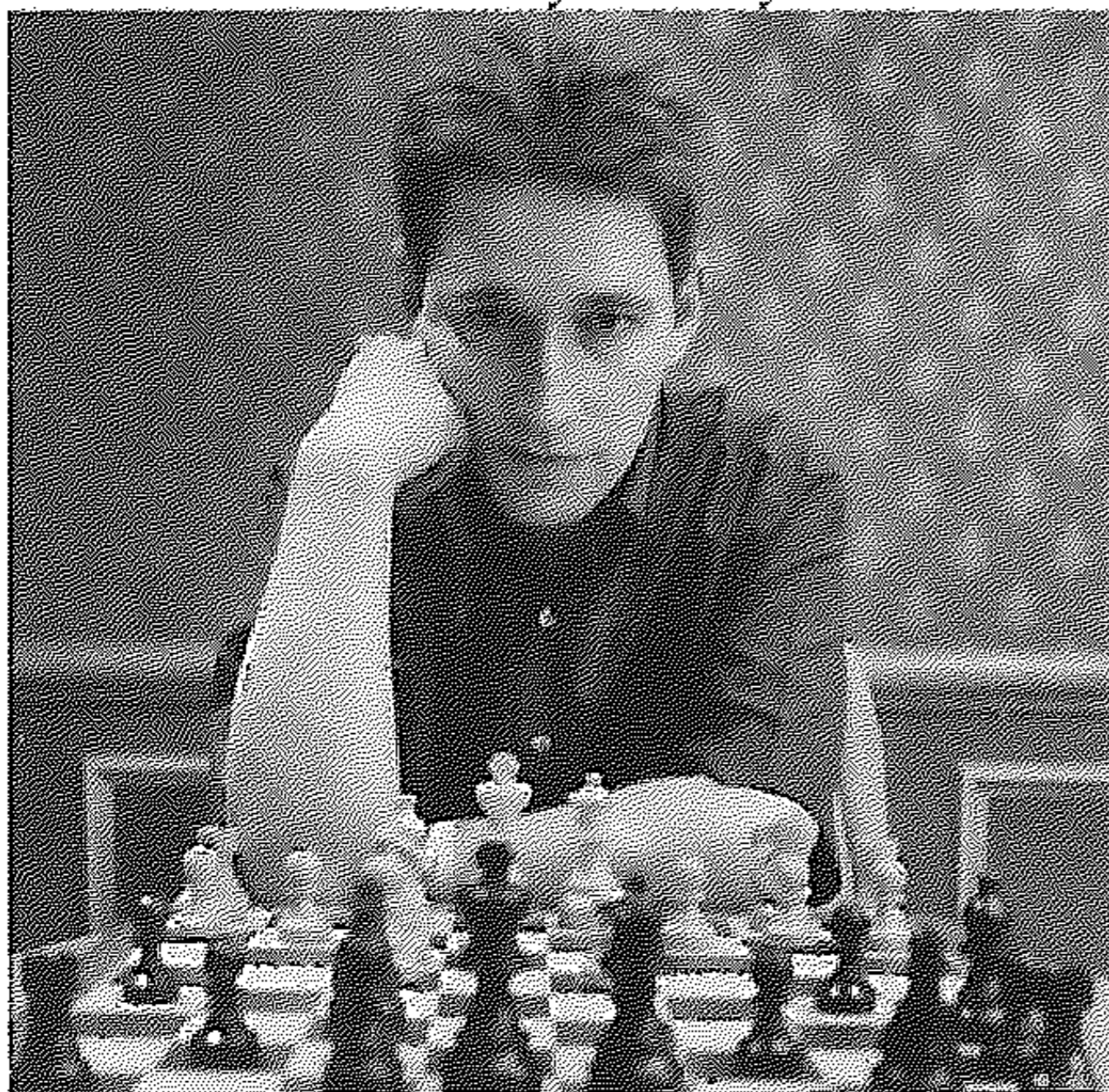
A new era has begun. From June 21 to 27, 2005 a remarkable human-machine match took place in London, England between IGM Michael Adams and the computer-chess engine HYDRA. The British Grandmaster lost five of the six games and managed to draw one game only. The result was an astonishing 5.5-0.5 victory for HYDRA. For his performance Adams received US \$ 10,000 of the total US \$ 145,000 prize sum. It was a humbling defeat for the human player.

The setting

The match can be seen as a follow-up of the matches played by Kasparov vs. DEEP BLUE (1996, 1997) and the more recently played matches between (1) Kasparov vs. DEEP JUNIOR (2002), (2) Kramnik vs. FRITZ (2002), (3) Kasparov vs. XD3 FRITZ (2003), and (4) the Bilbao matches (2004). All these matches have been reported in this Journal. The current match could be seen as a match comparable to Van Wely vs. DEEP JUNIOR (2004) (0.5-1.5) in Eindhoven, although the playing strength of the human Grandmaster Michael Adams might be considered somewhat higher than that of Van Wely. Obviously, the match was a test for both sides. The HYDRA team would like to prove that their brainchild is ripe for the competition against whatever opponent and Michael Adams would like to show that human Grandmasters still possess sufficient chess intelligence to play at a par with the strongest computers. This match has definitely ended the era of that idea.

The players

Photo by courtesy of ChessBase



Michael Adams

Grandmaster Adams (born on November 17, 1971) is considered the UK's best chess player of all time. He was first crowned British Champion at age 17 and has been the British player of the year an unprecedented eleven times since 1990 (1990, 1993-1996, 1998-2002, and 2005). He is currently ranked number seven on the World Rating List (Elo 2741). In 2002, he was for the second time on the third place.

HYDRA is named after the mythological seven-headed monster, famed for its invincibility. The HYDRA project is financed by the PAL Group, located in Abu Dhabi. The programming, the preparation, and the design have been performed by Chrilly Donninger, Ulf Lorenz, GM Christopher Lutz, and Muhammad Nasir Ali.

With a processing power equivalent to more than 200 standard PCs, the HYDRA computer is one of the world's most powerful chess computers. Housed in a secure server room in Abu Dhabi, HYDRA is a 64-way cluster computer – 64 computers are connected and operate as if they are a single machine. Each computer has an Intel Xeon 3.06 GHz. The cluster comprises 16 nodes of four computers, with each node boasting 32GB of memory. Each of the 64 processors in the cluster includes an FPGA (Field Programmable Gate Arrays) card from XiLinx, which are significantly faster than Pentium or Athlon devices.

HYDRA's processing power is as follows. In one second HYDRA analyses 200 million chess moves and chooses the best one. This includes projecting the game 18-40 moves ahead (6 more moves than DEEP BLUE).

The Match

It was one of the most lop-sided matches in recent times. In six games at regular time controls Adams succeeded in achieving a single draw – in game two with a clever save in an essentially lost position. In the other five games he was crushed by the machine. It led to the score result of 5.5 – 0.5 in favour of HYDRA.

Photo by courtesy of ChessBase



Adams vs. HYDRA

Two comments

Below we give two comments by Grandmaster John Nunn (taken from the ChessBase site) and by our President David Levy (taken from the ChessBase site, too, and followed by an additional thought titled *What Next?*).

Nunn: "The Adams-HYDRA match signals the approaching end of man-machine contests. Already, last year's event in Bilbao was a sign that things were looking bleak for the humans. In Bilbao, it was not so much the performance of HYDRA that was so impressive, but FRITZ's score of 3.5/4 against Ponomarev, Topalov, and Karjakin (twice). HYDRA, which made the same score, was running on its special-purpose hardware but FRITZ was running on a laptop computer from the local department store."

"Mickey was always going to have a tough job against HYDRA, and before the match I thought he would make 1.5 points. In the event he fared worse than I expected. HYDRA proved that if you have enough computing power, you can play very well not only in wide-open positions but also in quiet, semi-closed positions."

"There has been some criticism of Mickey for poor preparation, which has been compared unfavourably with that of Kasparov and Kramnik in their man-machine contests. But there is a big difference. Kramnik, for example, insisted on being given a copy of the program he was to play several months before the match. Of course, this makes it much easier to prepare. HYDRA has not played very much chess, and as it is a machine rather than a program, Mickey could not have a 'copy' to put under the microscope. Thus Mickey's task was much harder."

"I really cannot see much point in further man-machine contests under the present rules (in which the computer is allowed an unlimited opening book and access to endgame tablebases). However, even changing the rules would probably only delay the inevitable dominance of the machines. Let us get back to humans playing humans, which I for one find more interesting than man-machine contests."

David Levy: “Following HYDRA’s crushing victory over Mickey Adams, I would like to add something to John Nunn’s comments on what will now happen in human vs. computer chess.”

“Firstly, I feel that John’s estimate of when his son’s Logo brick will defeat a strong Grandmaster is somewhat optimistic – I believe that it will be several years later than John does before a “simple” (at that point in time) microprocessor has the necessary capability. But be that as it may, what is more important for the chess world is the question: Where does man vs. machine chess go from here? How can we continue to create interest in man vs. machine matches? Is there any point in future contests of this ilk?”

“Secondly, I am convinced that man vs. machine chess still has a long future, full of human interest. Of course, we must hope that the Pal Group can somehow convince Kasparov that he should play a match against HYDRA, a match for which there should be a rematch clause in the contract. This would truly be the mother of all chess matches – the strongest ever human player against the strongest ever computer. The chess world would be agog.”

“But no matter what the result, and no matter what the result of a rematch, we are clearly facing, very soon, a situation in which man vs. machine chess, as we currently know it, is no longer of any spectator interest, because soon the time will come, if it has not already arrived, when the gladiator will always be eaten by the lion. What then?”

“In my opinion the answer is simple – odds games. When the strongest human players have no chance at even games, let us give the human pawn odds. At the present time this would allow the very strongest human players to make a plus score against the programs, but this could perhaps be mitigated by speeding up the games. There is, undoubtedly, some rate of play, whether it is an average of 2 minutes per move, or 1 minute, or 30 seconds, at which pawn odds would be a fair match. As programs become stronger still, the rate of play could be slowed down, eventually reaching, say, 3 minutes per move (on average). When the best programs of the day can give the world’s strongest human player pawn odds at 3 minutes per move, we simply increase the odds to two pawns and reduce the rate of play again. This idea could, perhaps, also be employed in a new form of human vs. human chess – the handicap tournament. They have them in golf, why not in chess?”

“Thirdly, the comments I have seen thus far on Adams’ performance in the match all appear to omit to mention how well HYDRA played. To my mind HYDRA played like the Bobby Fischer we knew and loved in the 1960s and early 1970s. HYDRA’s style was as clear as crystal, its moves were direct, to the point, and rather devastating. Amidst all the negatives being uttered about this match, should we not be fair in our praise of the victor.”

HYDRA – Adams (1st match game)

1.e4 e5 2.Nf3 Nf6 3.Nxe5 d6 4.Nf3 Nxe4 5.d4 d5 6.Bd3 Nc6 7.0-0 Be7 8.Re1 Bg4 9.c3 f5 10.Qb3 0-0 11.Nbd2 Na5 12.Qc2 Nc6 13.b4 a6 14.Rb1 Bd6 15.h3 Bh5 16.b5 Na5 17.c4 dxc4 18.Nxc4 Nxc4 19.Bxc4+ Kh8 20.bxa6 bxa6 21.Ne5 (see diagram 1) c5 22.Bd5 Rc8 23.Be6 Rc7 24.Bxf5 Bxe5 25.dxe5 Rxf5 26.Qxe4 Bg6 27.Rb6 Rf8 28.Qe3 Rcf7 29.Rd6 Qa5 30.e6 Re7 31.Ba3 Rfe8 32.Bxc5 Qxa2 33.Rd2 1-0

Adams – HYDRA (2nd match game)

1.e4 c5 2.Nc3 e6 3.Nf3 Nc6 4.d4 cxd4 5.Nxd4 Qc7 6.g3 a6 7.Bg2 d6 8.Nxc6 bxc6 9.0-0 Nf6 10.Na4 e5 11.c4 Be7 12.Be3 Be6 13.Rc1 0-0 14.b3 Qb7 15.Qe2 Rfe8 16.h3 Rab8 17.Rfd1 Bf8 18.Kh2 h6 19.Rc2 Be7 20.Bc1 Qc7 21.Bb2 Nd7 22.Bc3 Nf8 23.Qe3 c5 24.Bb2 Bd7 25.Nc3 Ne6 26.Nd5 Qd8 27.f4 Nd4 28.Rf2 Bc6 29.fxe5 dxe5 30.Bxd4 cxd4 31.Qf3 Rf8 32.Qh5 f6 33.h4 Be8 34.Qf3 Bf7 35.Bh3 Rb7 36.h5 a5 37.Kg2 Qe8 38.Bg4 Bc5 39.Rh1 Qc6 40.Rb2 Rfb8 41.Bf5 Kh8 42.Rhb1 Qe8 43.g4 Qc6 44.Qd3 Bg8 45.Qd1 Qa6 46.Rd2 a4 47.Rdb2 Qa8 48.Kh2 Bf7 49.Kg2 Bf8 50.Kh2 Be8 51.b4 a3 52.Rb3 (see diagram 2) Ba4 53.b5 Qa7 54.Kg2 Qc5 55.Qd3 Bxb3 56.Qxb3 Ra8 57.Rd1 Qd6 58.Rc1 Qb8 59.Kf3 Bd6 60.Ke2 Bc5 61.Kd3 Qa7 62.Rb1 Qa5 63.Qc2 Qd8 64.Rh1 Qd6 65.Qb3 Re8 1/2-1/2

HYDRA – Adams (3rd match game)

1.e4 e5 2.Nf3 Nc6 3.Bb5 a6 4.Ba4 Nf6 5.0-0 Be7 6.Re1 b5 7.Bb3 d6 8.c3 0-0 9.d4 Bg4 10.d5 Na5 11.Bc2 c6 12.h3 Bc8 13.dxc6 Qc7 14.Nbd2 Qxc6 15.Nf1 Be6 16.Ng5 Bd8 17.Ne3 Bd7 18.a4 h6 19.Nf3 Rc8 20.axb5 axb5 21.Nh4 Nc4 22.Nxc4 bxc4 23.Ba4 Qc7 24.Bxd7 Qxd7 25.Nf5 d5 26.Ra6 Qb7 27.Rd6 (see diagram 3) Be7 28.Bxh6 1-0

Adams – HYDRA (4th match game)

1.e4 c5 2.Nc3 d6 3.Nge2 Nf6 4.g3 g6 5.Bg2 Nc6 6.d4 cxd4 7.Nxd4 Nxd4 8.Qxd4 Bg7 9.0-0 0-0 10.a4 Qa5 11.Qd3 Bd7 12.Nd5 Nxd5 13.Qxd5 Qxd5 14.exd5 Bf6 15.c3 a5 16.Re1 Rfb8 17.Bf1 b5 18.axb5 Bxb5 19.Bxb5 Rxb5 20.Rd1 Rc8 21.Ra4 Rcc5 22.c4 Rb3 23.Be3 Rc8 24.Bd4 Kg7 25.Kf1 Bxd4 26.Rxd4 Rxb2 27.Rxa5 f5 28.Ra7 Kf6 29.g4 (see diagram

4) Rb4 30.g5+ Kxg5 31.Rxe7 Rxe4 32.Rxe4 Rxe4 33.Rxh7 Kf6 34.Rd7 Ke5 35.Rg7 Rg4 36.f3 Rg5 37.Kf2 Kxd5 38.h4 Rh5 39.Kg3 Rh6 40.Re7 Kd4 41.Re1 d5 42.Rd1+ Ke5 43.Re1+ Kd6 44.Rd1 Rh5 45.Ra1 Ke5 46.Re1+ Kb4 47.Rd1 Ke4 48.Re1+ Kd3 49.Rc6 Rh6 50.h5 f4+ 0-1

HYDRA – Adams (5th match game)

1.e4 e5 2.Nf3 Nc6 3.Bb5 a6 4.Ba4 Nf6 5.0-0 Be7 6.Re1 d6 7.c3 Bg4 8.d3 Nd7 9.Be3 Bxf3 10.Qxf3 Bg5 11.Bxc6 bxc6 12.Nd2 0-0 13.Qg4 Bxe3 14.Rxe3 Rb8 15.b3 Nc5 16.f4 exf4 17.Qxf4 Ne6 18.Qf2 Rb5 19.Rf1 Rg5 20.d4 Rg6 21.a4 Rf6 22.Rf3 Rxf3 23.Qxf3 Qg5 24.Nc4 Qg6 25.h4 f6 26.Ne3 Re8 27.Nf5 h5 28.b4 Kh7 29.Ng3 e5 (see diagram 5) 30.d5 Nd8 31.Rb1 Nf7 32.bxc5 dxc5 33.Rb7 Re8 34.Ra7 Nd6 35.Rxa6 Re8 36.Re6 Nxe4 37.Qxh5+ Qxh5 38.Nxh5 Kh6 39.Rc6 Rd8 40.Rxe4 Kxh5 41.a5 1-0

Adams – HYDRA (6th match game)

1.e4 e5 2.Nf3 e6 3.d4 exd4 4.Nxd4 a6 5.Bd3 Be5 6.Nb3 Ba7 7.0-0 Ne7 8.c4 d6 9.Nc3 Nbc6 10.Qe2 0-0 11.Be3 e5 12.Rad1 Nd4 13.Bxd4 exd4 14.Nd5 Nc6 15.f4 Qh4 16.Nd2 Be6 17.Nc7 Rac8 18.Nxe6 fxe6 19.g3 Qe7 20.a3 e5 21.f5 Nb8 22.Kg2 Nd7 23.b4 Kh8 24.Be2 Nf6 25.Re1 Re7 26.Bb3 Rfe8 27.Re2 a5 28.Rfe1 Qe8 29.h3 a4 30.Ba2 Re7 31.e5 dxe5 32.bxc5 Rec7 33.Be6 Rd8 34.Qd3 g6 (see diagram 6) 35.Kh2 Qc6 36.Qf3 Rf8 37.g4 Qb5 38.Qg3 Qe2+ 39.Qg2 Qc3 40.Qg3 Rxc5 41.Qxe3 dxe3 42.Nf3 Nxe4 43.Kg2 Kg7 0-1

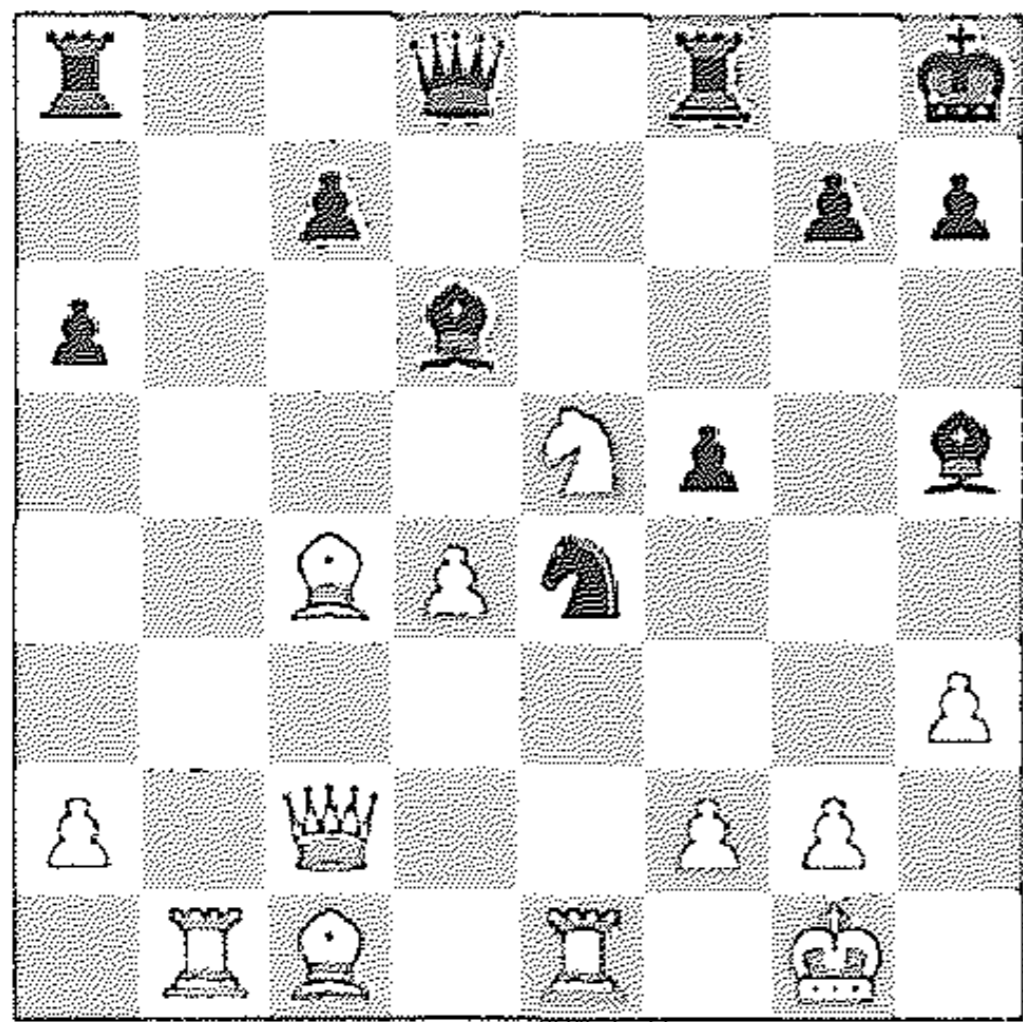


Diagram 1: After 21. Ne5.

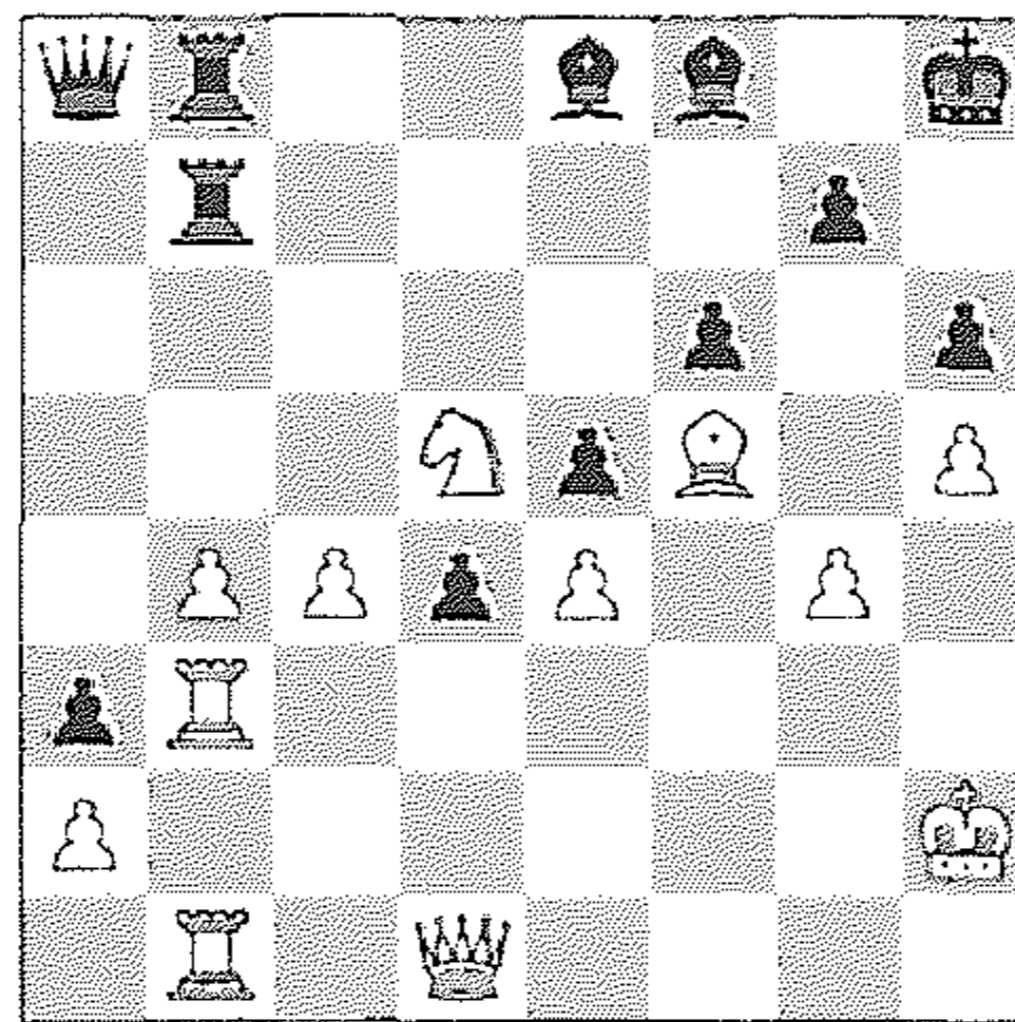


Diagram 2: After 52. Rb3.

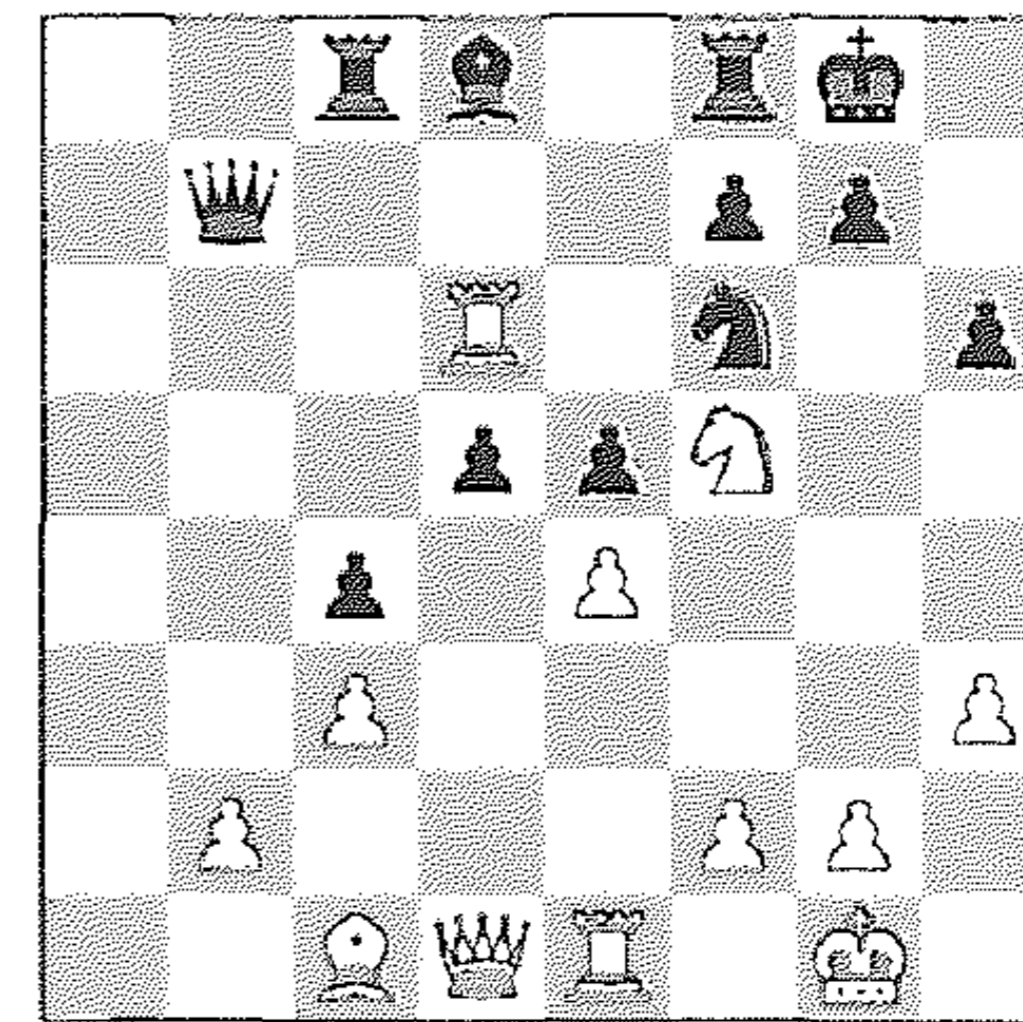


Diagram 3: After 27. Rd6.

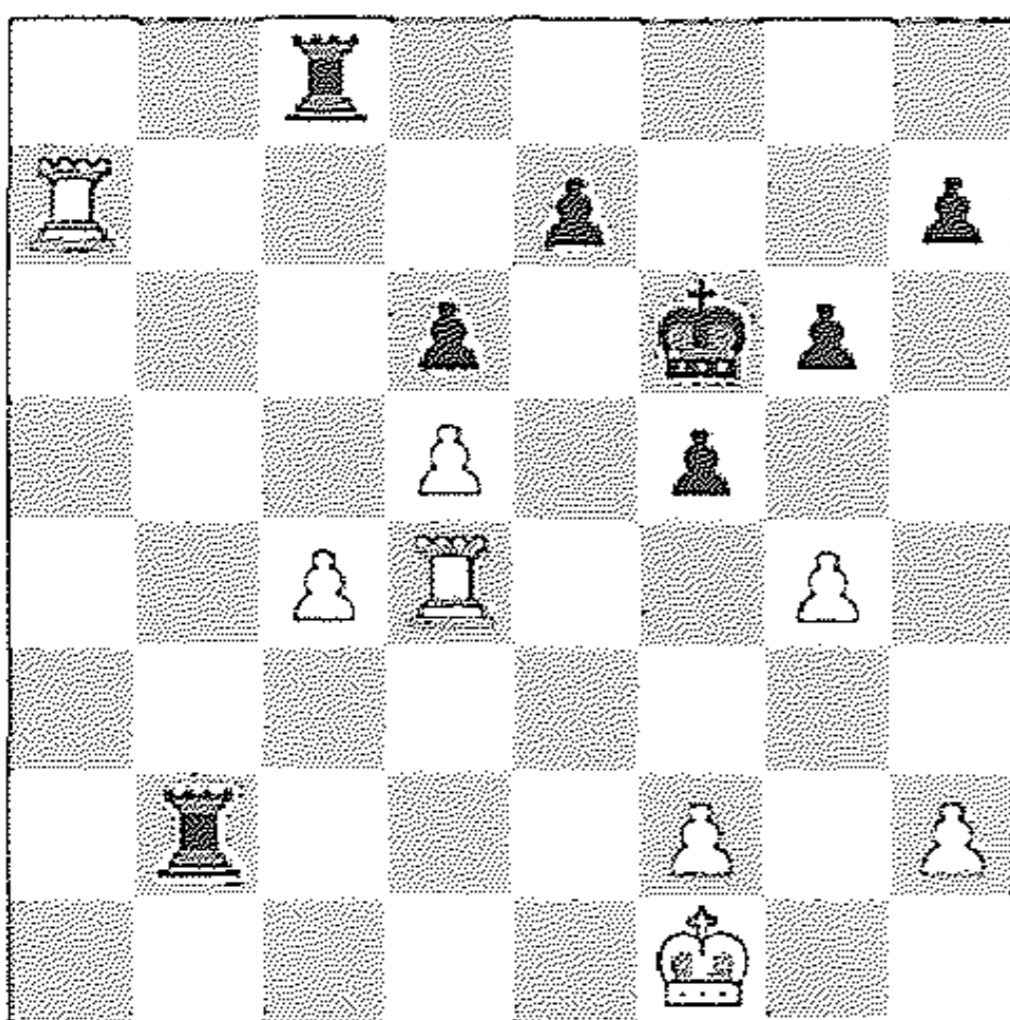


Diagram 4: After 29. g4.

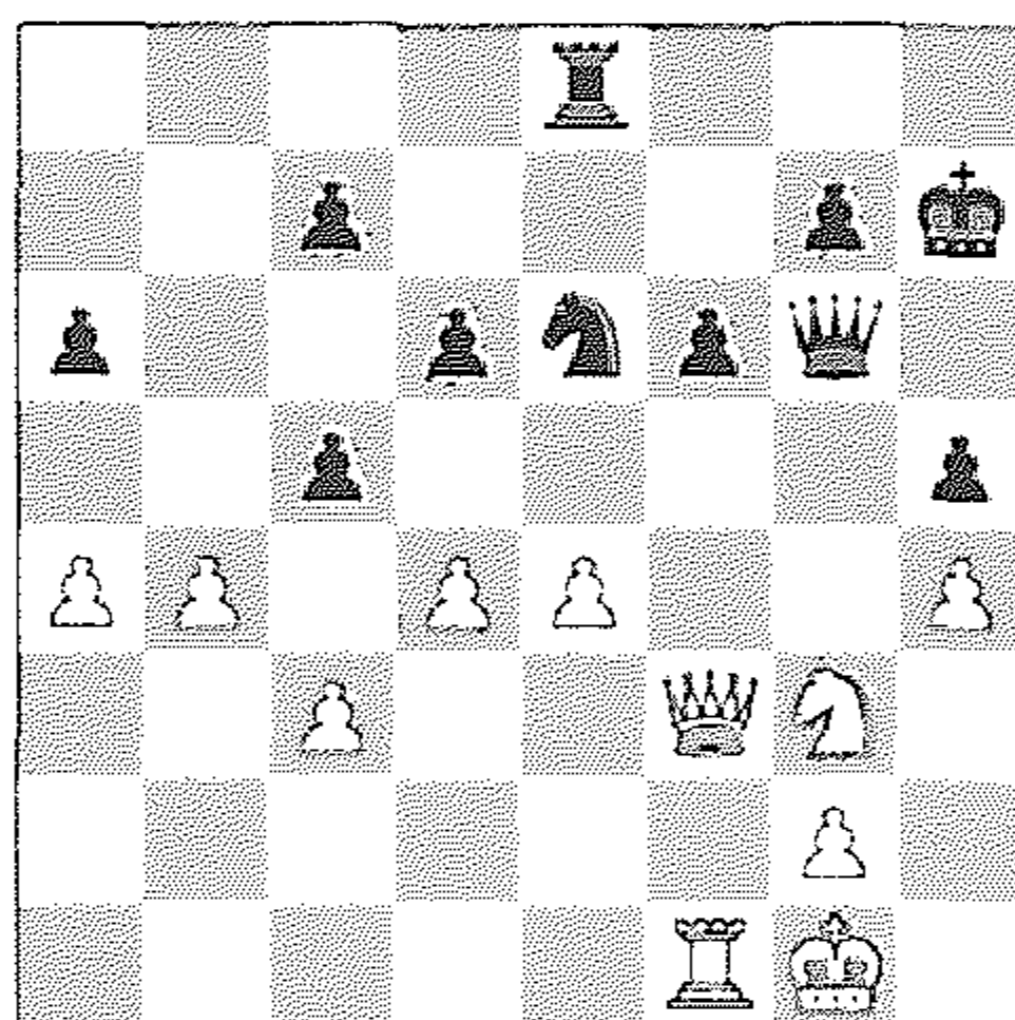


Diagram 5: After 29. ... e5.

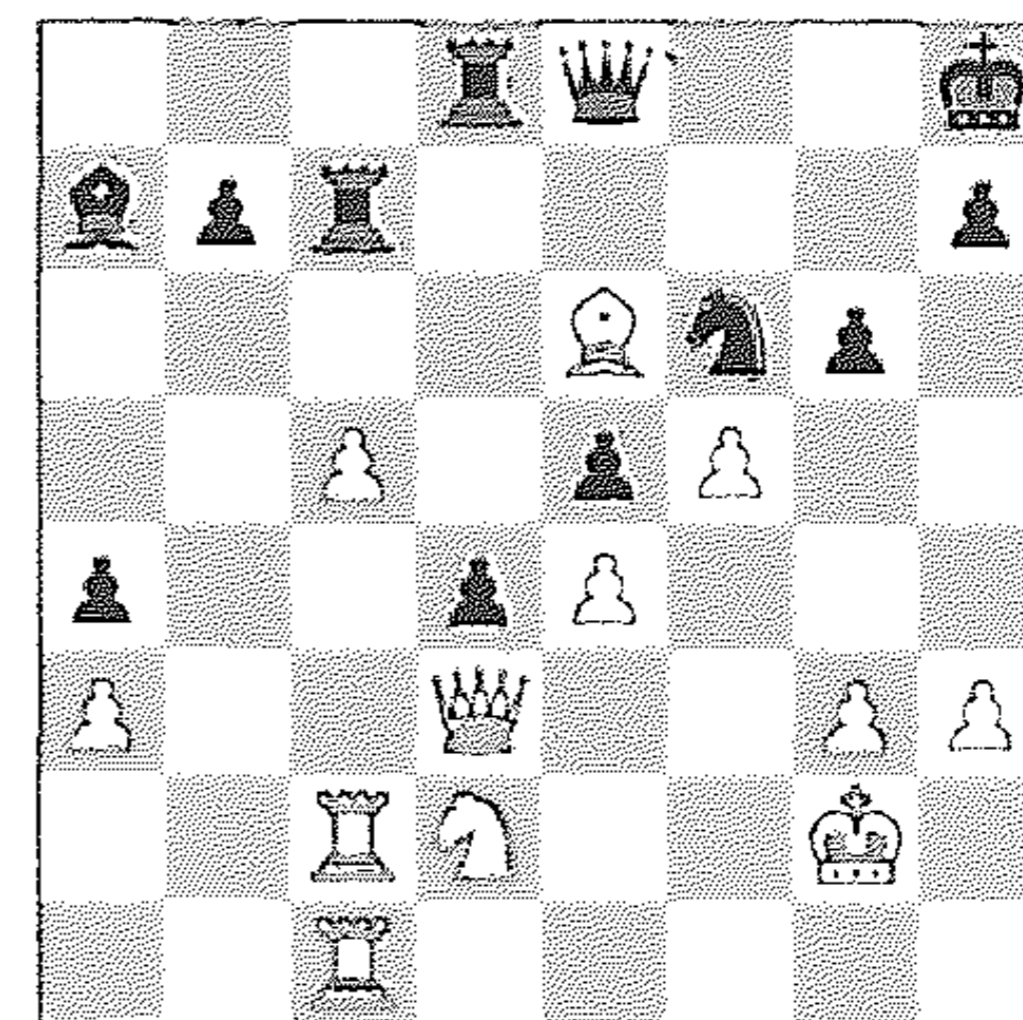


Diagram 6: After 34. ... g6.