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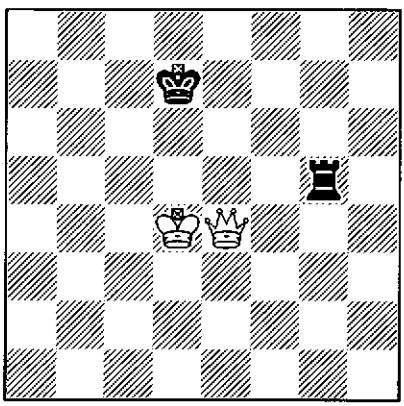
K + Q v K + R: the work of

Alfred Crosskill



White to play: how soon can you clinch the win?

K + Q v K + R: the work of Alfred Crosskill

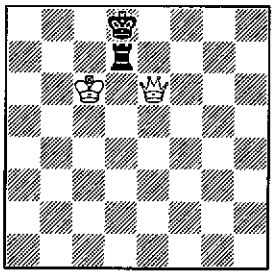
A curious feature of the "queen against rook" chapter of John Nunn's book *Secrets of pawnless endings* is the absence of any mention of Alfred Crosskill. His diagrams 65-9, 73, and 78-9, attributed either to "Euwe, 1958" or not at all, are all to be found in Crosskill's little book of 1895. I could not believe that John would have failed to acknowledge Crosskill's work had he known of it, so I assumed it had escaped his attention (John has since confirmed this), and the release of Harold van der Heijden's "Endgame study database 2000" has shown that he did not know of it either. It is of course entirely reasonable that John, having a definitive computer-generated analysis in front of him and wanting to write a practical guide, should have relied on Harold (20,000+ studies even then) and not have spent his own time searching the literature to see if Harold had overlooked anything. However, I think *BESN* readers will be interested in a description of Crosskill's work. We have become so used to seeking help from the computer that it is good to remember what was achieved unaided.

Crosskill's findings appeared in the book *An analysis of the chess ending King and queen against King and rook* (xii + 132 pp) which was published by Kegan Paul, Trench, Trübner in 1895. He wrote under the pen-name "Euclid", and I am indebted to the *Oxford companion* for the association. The book appears as "Edited by E. Freeborough", who was the author of a standard endgame treatise of the time, and this is of some relevance because the introduction starts as follows:

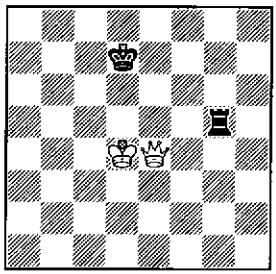
"This treatise had for its origin a Chess Ending which occurred some years ago in a game played between the Compiler and the Editor. The player of the White men had succeeded in making a Queen, and, after driving his opponent's King to the edge of the board, the position recorded in the accompanying diagram [see **1** opposite] was reached, with Black to move. In this situation it might be thought, by many Chess players, that Black was very nearly at an end of his resources, and that White had an easy victory. In the actual game, however, these anticipations were not realised. White expended much time and pains in finding a winning combination, and would have had more difficulty if his adversary had made the best moves. Subsequent examination showed that the latter could prolong the game, and retain the Rook on the board, against the best play, for twenty-six moves, counting from the position on the diagram. Both combatants were thus led to the conclusion that there was much to be learned in this Ending, and that Amateurs, like themselves, had generally little idea of the posibilities on either side. The view commonly held and expressed that there could be no practical diffiuclty in winning with the Queen against a Rook was therefore discarded as illusory. That the Queen could win, except in certain well-known cases, might still be accepted as an absolute fact, but whether she could always force the game in the requisite number of fifty moves, according to the laws of Chess, was a question not easy to answer.

"In the course of further examination so many remarkable positions were brought to light, and so many beautiful lines of play, that the Author was induced to classify and arrange them in the present work. It represents the result of much analytical labour, and has at least the recommendation of being original, and even unique in

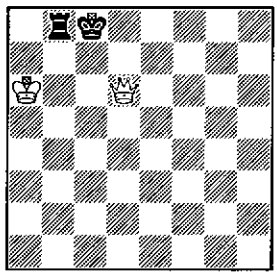
Chess literature. It is as thorough as circumstances permit, with due regard to the student's time and patience."



1 - Black to play

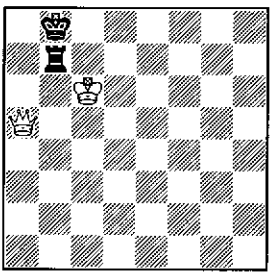


2 - White to play

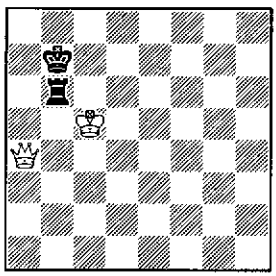


3 - White to play

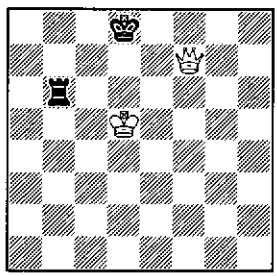
Crosskill then shows some elegant individual moves, and our front cover position **2** is particularly striking: "...the defence may be made to continue for eighteen to twenty moves if White commences by attacking Black's Rook with the Queen, but by playing Kc4 White can win in five moves." Here, as throughout, "win" means "give mate or capture the rook", and I am converting to our standard notation even within quotations. I find **3** less convincing. "All White's checks do nothing to forward the attack or end the game quickly, but the fine move 1 Qe5 leaves Black entirely without defence," writes Crosskill. True enough, rook or king go within three moves, but this is a mere problemist's flourish; the natural and obvious 1 Qe7 wins almost as quickly.



4 - either side to play



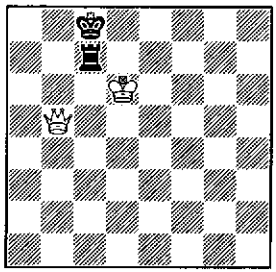
5 - either side to play



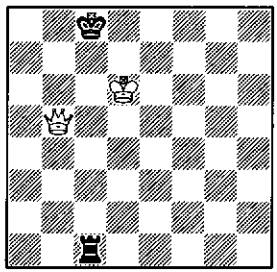
6 - White to play

Crosskill bases the body of the book on the "Philidor" position **4**, which he considers in turn in each possible position on the back rank and then down a row as in **5**. But his treatment of the last two cases (**5** with bK on f7 and g7) is noticeably cursory and he doesn't extend the analysis to cover the corresponding positions with the Black king on the sixth or fifth rank, so perhaps printing costs were beginning to bite. There follows an analysis, again somewhat cursory, of the position **1** which prompted the investigation, and an index of key positions.

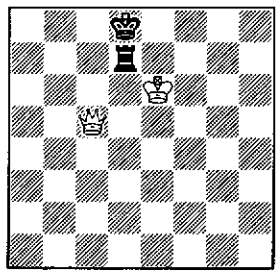
And what does Crosskill say about position **6**, John Nunn's 78, of which John has written that even if you don't study any other position in this ending you should at least look at this one? We shall see.



7 - either side to play



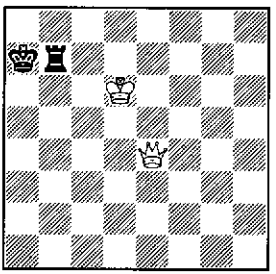
7a - after 1...Rc1



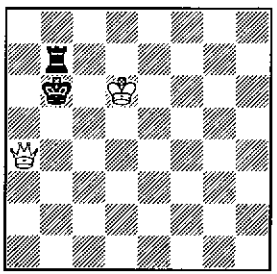
8 - Black to play

Crosskill starts with Philidor's **4** (see previous page) which is in all the textbooks. Black to play has to move his rook away, and White will soon pick it up; White to play, **1 Qe5+ Ka8/Ka7 2 Qa1+ Kb8 3 Qa5** and we have passed the move to Black.

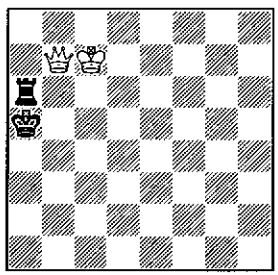
Next is **7**, where everything is one file to the right. White to play wins quickly by **1 Qa5** (1...Rd7+ 2 Kc6). If Black is to play, **1...Ra7** holds out longest, but the play is routine (2 Qe8+ Kb7 3 Qd7+ Kb8 4 Qd8+ Kb7 5 Qc7+ etc) and more interesting is **1...Rc1** (see **7a**). Here Crosskill says "White plays and wins in six moves" and plays **2 Qa4** to guard d1: "Checking on e8 or f5 delays the result". However, I have the copy that used to be Wallace Ellison's, and Wallace notes that **2 Qg5** forces the win one move sooner (2...Rd1+ 3 Kc6 and bR cannot return to c1, or 2...Rc7 3 Qa5 as before). Wallace's copy includes nearly forty such notes, most of them apparently made before the advent of the computer. The great majority deal with minor points and I have not examined them in detail, but they do suggest that Crosskill's work was not quite as optimal as its author believed.



8a - after 5 Qe4

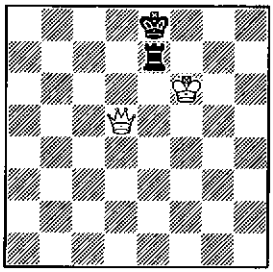


8b - 5...Kb6, after 6 Qa4

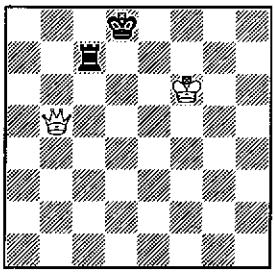


8c - 5...Ka6, after 9 Qb7

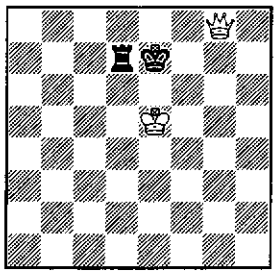
8 shifts the position one file further to the right, and now the two-square move **1...Rb7** gives White more trouble. Crosskill gives a win in 14 moves by **2 Qd6+ Kc8 3 Qc6+ Kb8 4 Kd6 Ka7** (other moves let White reach Philidor's position **4**) **5 Qe4** and we have **8a**. This is a standard winning position. White threatens 6 Kc6 and 5...Rb6+ 6 Kc7 won't help Black at all, leaving (a) **5...Kb6 6 Qa4** (see **8b**) with the elegant systematic manoeuvre **6...Rb8** (other moves soon lose bR) **7 Qb4+ Ka7 8 Qa5+ Kb7 9 Kd7** and White has pushed Black up a rank, and (b) **5...Ka6 6 Kc6 Rb6+ 7 Kc7 Ka5 8 Qa8+ Ra6 9 Qb7** (see **8c**) and again bR will soon be lost.



9 - Black to play

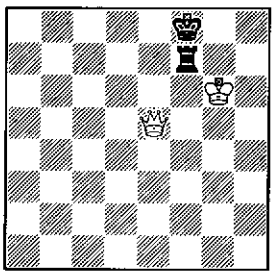


9a - after 2...Kd8

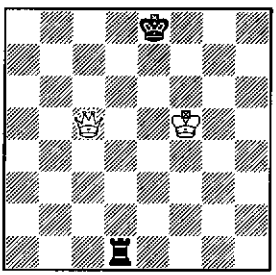


9b - after 5 Qg8

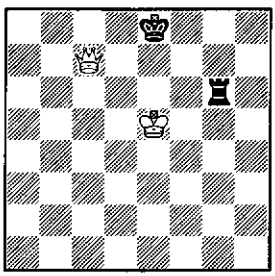
In **9**, Crosskill meets **1...Rc7** by **2 Qb5+**, remarking that 2 Qe6+ Kd8 3 Qd6+ Kc8 4 Ke6 wins as quickly but allows Black more variety of play. After **2...Kd8** (see **9a**) White cannot usefully play 3 Ke6 because of 3...Rc6+ (4 Qxc6 stalemate), hence **3 Ke5**, and **3...Ke7** gets the Black king away from the edge. But it avails him little, because **4 Qd5 Rd7 5 Qg8** gives **9b**. This recalls **8b** and allows the same systematic win: **5...Rc7** (still no sensible alternative) **6 Qg7+ Kd8 7 Qf8+ Kd7 8 Kd5** etc.



10 - Black to play

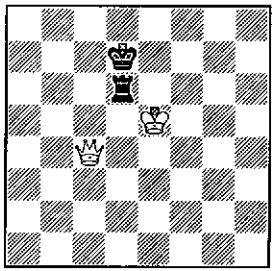


10a - after 3...Rd1

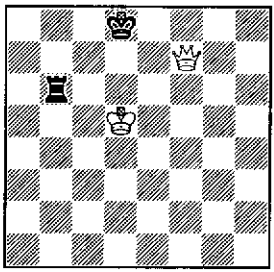


10b - after 6 Qc7

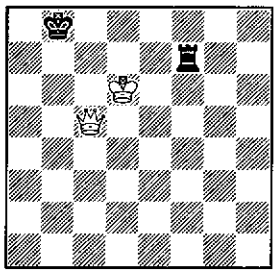
Play in **10** starts similarly, **1..Rd7 2 Qc5+ Ke8 3 Kf5**, and 3...Kf7 4 Qe5 Re7 5 Qh8 gives the systematic win though Crosskill finds a shorter alternative. More interesting is **3...Rd1** (see **10a**). When the equivalent point is reached from **9** (3 Ke5 Rc1 in **9a**) Crosskill gives an adequate if uninspiring line, but here he continues **4 Qc4 Rd6** (if 4...Rd7 then 5 Qg8+ Ke7 6 Ke5 gives the systematic win, though Crosskill again finds a shorter alternative) **5 Ke5 Rg6 6 Qc7** and we have **10b**. This is John Nunn's 78 but with Black to play, and Crosskill comments as follows: "This is one of the situations in which it is disadvantageous to have the move. Black, having to play, loses in eleven moves. White playing first would require fourteen moves to force the game." So Crosskill was aware of this key position, and indeed we shall encounter it with White to play in our next example. For the moment, however, we have Black to play, and Crosskill continues **6...Kf8 7 Qd7 Rg1 8 Qd3** ("White now prevents the return of Black's Rook to g6") **Kg7** (8...Kf7 9 Kf5 Kg8 10 Kf6 Rg7 11 Qd8+ etc) **9 Kf5 Kh8 10 Kf6 Rg7 11 Qh3+** and White will soon force the win. "This variation is a difficult one, and the manipulation of White's King and Queen requires careful attention, to carry the attack through in the fewest possible number of moves."



11 - Black to play

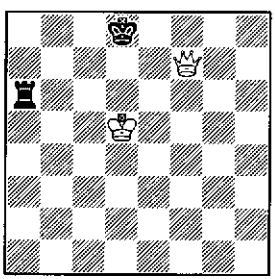


11a - 1...Rc3, after 3...Rb6

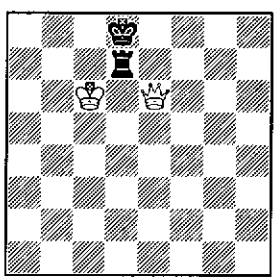


11b - after 8...Rf7

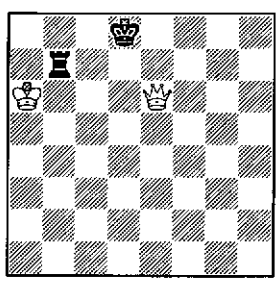
The more difficult incarnation of **10b**, with White to play, occurs during Crosskill's analysis of **11**. He treats 1...Rb6 as the main line, but in his introductory comments we find: "Among the many interesting situations which arise in the course of the analysis may be noted especially that after the third move in the Variation marked A..." This occurs after **1...Rc6 2 Qf7+ Kd8 3 Kd5 Rb6** (see **11a**), and it is interesting to compare Crosskill's comments with Nunn's (the play is identical until move 9). Crosskill: "White's strongest course is to draw back the Queen to a more attacking square. If 4 Kc5, 4...Ra6, and Black's position is improved." Nunn, to White's next move: "This is the unexpected move which is the key to success. Moving the queen away from its dominating position is so unexpected that you just have to know it. To be sure, there are other winning methods, but all of them require at least one counter-intuitive move, so why not get it over with at the beginning?" Play continues **4 Qf4 Kd7 5 Qa4+** (Nunn: "the point of White's play is that his queen can switch sides with gain of tempo") **Kc7 6 Qa7+ Rb7 7 Qc5+** (Nunn: "the third-rank defence has been broken and Black has been reduced to a rather feeble second-rank defence") **Kb8 8 Kd6 Rf7/Rg7/Rh7** and we have **11b**. Now Crosskill plays **9 Qd4**: "The above continuation wins sooner than 9 Qe5 Rc7, as given in Staunton's *Handbook*, p. 416; also in the *Chess Monthly*, Vol. 12 (1890) p. 10." But the pragmatic Nunn prefers **9 Qe5** ("Qd4 is one move quicker, but this is simpler"): a sensible selection of a mathematically non-optimal move even in a computer-based exposition.



12 - White to play



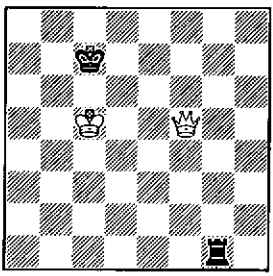
13 - Black to play (repeats **1**)



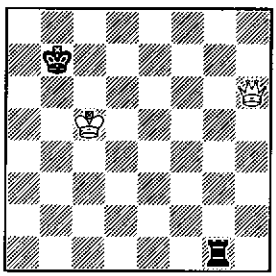
13a - after 4 Ka6

Nunn highlights **12** as another important position, and it also is given by Crosskill. Again the play is identical: **1 Kc5 Kc8 2 Qe7 Kb8 3 Kb5 Ra7 4 Qd8+ Kb7 5 Qd4**.

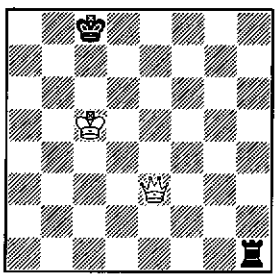
At this point, I had intended to give Crosskill's analysis of **1** (repeated as **13**), since this was the position which prompted the whole investigation, but this is the one case where the computer shows his analysis to have been significantly defective. White has blundered in bringing his queen to e6, since this gives Black a stalemate defence, and play starts **1...Rc7+ 2 Kb6** (2 Kd6 Rc6+, 2 Kd5 Rd7+) **Rb7+!** and White has to play **3 Ka6** to escape perpetual check (see **13a**). Having driven the White king so far away, Black might now be expected to play ...Re7 and then try to get his own king away from the edge, and once he has done this (which he can) White will have to restart the winning process almost from scratch. But for some reason Crosskill regards this as an inferior defence, and in his main line the Black king stays on the back rank until forced away towards the end of the play. There must have been an oversight somewhere.



14 - White to play



14a - 1...Kb7, after 2 Qh6

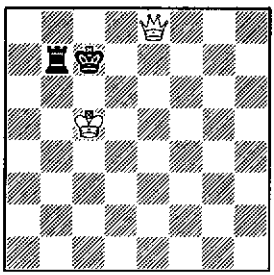


14b - 1...Kc8, after 3 Qe3

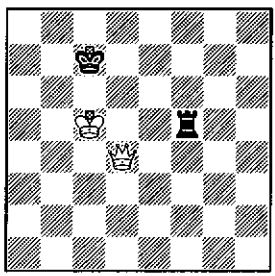
In contrast, **14** seems to me to show Crosskill at somewhere near to his best. The rook can often find a temporary shelter on the diagonal below the White king, since this gives him some protection against lateral-diagonal forks, but in practice the respite rarely lasts more than a move or two. Here, White plays **1 Qf4+**, and if **1...Kb7** then **2 Qh6** leaves the rook without a good check (see **14a**). King moves now lose quickly (2...Kc7 3 Qh2+, 2...K-- 3 Kc6 and the rook still has no checks) and if 2...Rd1/Re1 3 Qg7+ Ka6 then 4 Qb2 threatens mate and Black will soon succumb. Alternatively, Black can try **1...Kc8**, but White has **2 Qd4** chivvying the rook away, and if **2...Rh1** then **3 Qe3!** guarding both c1 and h6 (see **14b**). White now threatens Kc6, and if Black advances his king to prevent it there will soon be a fork. The key move in each line is a non-checking move, and 3 Qe3 in the second line strikes me as particularly impressive.

In **14**, as in **7a** and **10a**, Black has sought to defend by playing his rook to the far side of the board and then seeking to check White's king away from where it wants to be. White can always overcome this defence on an 8x8 board, but the methods used strike me as slightly unsystematic; can he always guarantee to overcome it on a larger board? Perhaps the time has come for a further examination by computer. Given that computers can now analyse six-man endings on an 8x8 board, the "state of the art" board size for a four-man analysis would now appear to be 22x22 and perhaps even 24x24, and a 16x16 board could be analysed on a machine little bigger than my own. Does any reader with use of a suitable machine feel like having a look?

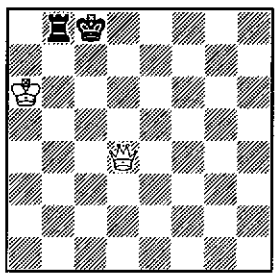
It has to be said that Crosskill's work on K + Q v K + R gives a mixed impression, and the reaction of many readers to his thickets of detailed analysis (much abbreviated here) will be to recall James Thurber's remark about the book which told him more about penguins than he wanted to know. The authors of *The Oxford companion to chess* preferred to represent him by his 1864 analysis of K + R + B v K + R, which I have earmarked for attention when our series "Some British studies from ..." gets back to the 1860s, and this judgement was undoubtedly sound. What a pity it was that he spent so much time trying to dot every i and cross every t in positions where Black was already relatively near to defeat, and left himself with no space (or no energy) to look properly and systematically at what happens earlier in the play.



15 - White to play



15a - 1...Rb2, after 3...Rf5+



15b - 1...Rb1, after 6 Rb8

15, which is Crosskill's frontispiece, illustrates his mastery and perhaps also his weakness. Crosskill presents this as "White to play and win in ten moves" with three pages of analysis, the main lines going **1 Qa8!** (his exclamation marks) **Rb1** (1...Rb2 2 Qe4 Rf2 3 Qd4 Rf5+ giving **15a**, and now 4 Kb4! Rf3 5 Qc5+) **2 Qe4 Rc1+** (2...Rb7 3 Qe8 and we are back at **15** with Black to play) **3 Kb5 Kd8 4 Qd4+ Kc8 5 Kb6 Rb1+ 6 Ka6 Rb8** (see **15b**) and now **7 Qe5!** leaving Black without resource. I can understand his pride in such a piece of analysis and in the elegant moves it contains, but there is a simple standard win by **1 Qc6+ Kb8 2 Qe4** and now we have **8a**. Crosskill's win is shorter, but is this a truly worthwhile contribution to chess endgame theory or merely a somewhat complicated curiosity?

Had John Nunn been aware of Crosskill's work, he would certainly have put "Crosskill, 1895" under the relevant diagrams, but I doubt if he would have made any significant change to his own presentation. A fair assessment would be that Crosskill, working by hand, produced much of a modern computer database with only one significant error (I am not worried by positions where he said "win in *n*" and we now know there is a slightly shorter win), whereas John started from a computer database and produced an exposition which tells a practical player how to win or how best to defend the ending should he need to do so. Logical exposition of this sort (in particular, practical advice to the defender) is absent from Crosskill. Yet Crosskill *did* discover the key positions later identified by John, in particular John's 78, and he found the right moves to deal with them; and I think John's comments on some of these positions, made in the light of the definitive computer analysis now available, are sufficient reason for us to honour Crosskill on his achievement.