

Chapter 7

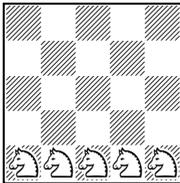
Three knight puzzles

These are not quite chess, but anything with a knight in it cannot be very far away.

7.1 (Burglar and five policemen)

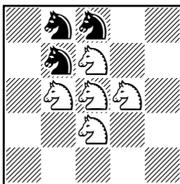
gives a position we shall see again :

On a 5x5 board, White has five policemen who start in a straight line at the bottom,

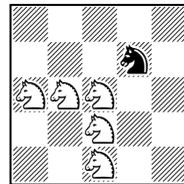


and Black has a burglar who may start anywhere. All men move as knights, but there is no capturing. Can White play to trap the burglar, or can the burglar run for ever?

The policemen should always win. They play to c4/b3/c3/d3/c2, which they can always do, and after Black has moved there are three cases :

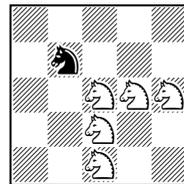


If Black is on b5, White plays N4a3, Black can only go to d4, and Ndc1



Black can only move to b5 or e2, and White plays to d4 and shuts him in.

If Black is on b4, White plays N4e3 and Nbc1, Black goes to d5/a2 and back to b4, and it's much the same :



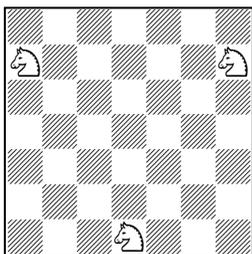
It's White's move, but no matter; White plays say Ned5, Black goes to a2, and Nb4 shuts him in.

If Black is on c5, simplest is N2a3. If Black goes to e4, Ndc5 forces him to d2, and we have the same pattern yet again. If Black goes to a4 it takes a little longer, but Nbc5 forces him to b2, and Nc2 followed by N2e3 once again sets up the familiar pattern.

56 *Fifty-one flights of chess fancy (and a few other frolics)*

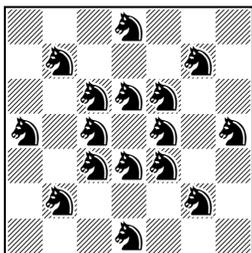
7.2 (Burglar and three policemen)

This time there are only three policemen on a 7x7 board, but they can move simultaneously. The policemen start from the position given below,



and the burglar is on a dark square away from a corner. The burglar moves first; can the policemen catch him?

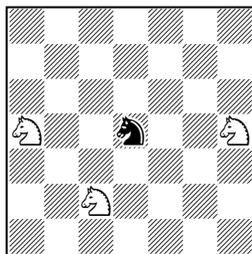
If he starts in the centre, he can be caught, but from any other non-corner square he can run for ever. He moves to one of the squares shown below :



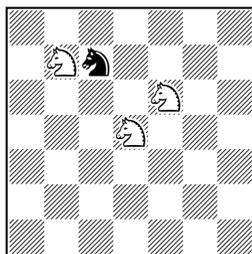
Now he always has four options, and the police can only block three of them.

However, if he starts in the centre, he cannot reach this group. His first move can threaten only one square in the group, c5, e5, c3, or e3, and White goes to c5, e5, and c3 or e3 as needed. Black

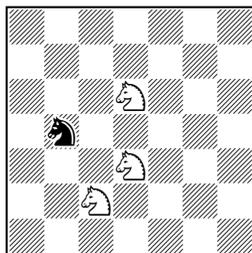
holds out longest by returning to d4, and White plays to a4/g4 plus a square which threatens d4, say c2 :



There are now two cases. Suppose first that Black keeps away from the side policemen, say by going to c6. The policemen play to b6/e5/d4 :

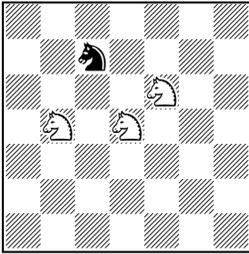


There follows b4 (holds out longest), d5/d3/c2 :



c6 (holds out longest), e5/b4/d4 :

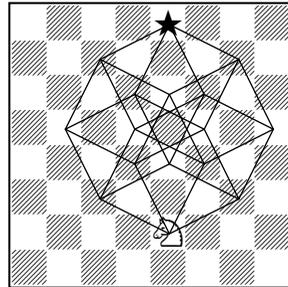
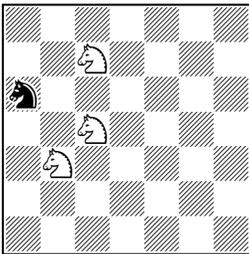
7.3 (after George Jelliss)



On an empty board, put a White knight on its home square g1. White aims to reach Black's palace, e8, but after each move Black can place a mine on any empty square. Who will win?

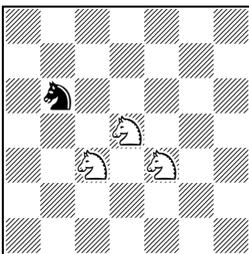
White can always succeed. He starts by playing **Ng1-e2**, after which he has 24 ways of reaching e8 in four more moves and each path consists of four moves in different directions :

a5, c6/c4/b3 (or e7, c6/d5/f5 with an equivalent position) :



b7, d6/a5/c5 and he's caught.

If from the position d4, a4/g4/c2 the burglar tries a square adjacent to one of the side policemen, say b5, the policemen play to d4/c3/e3 :



Black's best defence is to mine the squares c7/d6/f6/g7 next to his palace, but if White always moves *in a direction opposite to that from the Black palace to the square he has just mined*, he will breach Black's defensive wall just in time. For example, if Black mines **c7**, two left and one down from his palace, White moves two right and one up: **Ne2-g3**. If Black continues by mining **f6**, two down and one right, White moves two up and one left: **Ng3-f5**. If Black now mines **d6**, two down and one left, White moves two up and one right, **Nf5-g7**, and Black cannot place a mine on g7 because the White knight is already there.

Now d6 (which holds out longest) can be met by b5/c4/e4, and we have a 90-degree rotation of a position which we have already seen.