



THE PUZZLING SIDE OF CHESS

Jeff Coakley

LOYDS, VOIDS, and ASTEROIDS

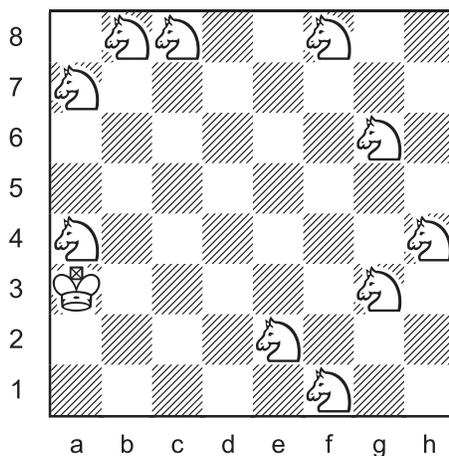
number 140

November 25, 2017

Starry, starry night. A sky full of chess pieces and a planetary chart.
Let the voyage begin. Our course is set ... for the Puzzling Side.



Triple Loyd 67

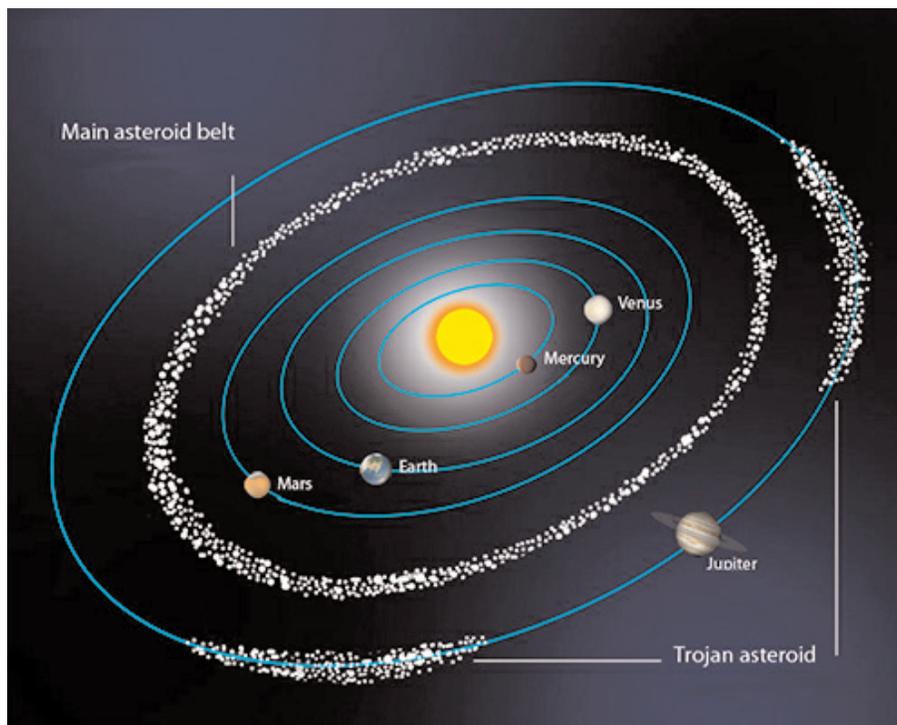


Place the black king on the board so that:

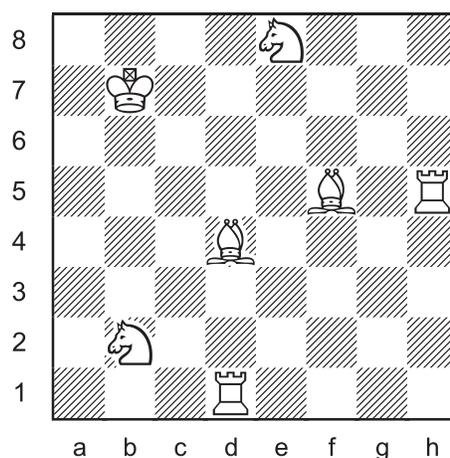
- A. Black is in checkmate.
- B. Black is in stalemate.
- C. White has a mate in 1.

There are more than a billion asteroids orbiting the sun between Mars and Jupiter. Space rocks floating through the cosmos, like the remains of a disintegrated planet, or the makings of a planet that never formed.

The smallest are the size of a pebble, but over a million asteroids have a diameter greater than one kilometre. Two hundred of these giant boulders are greater than 100 km across. The largest by far is Ceres at 950 km, one fourth the size of our moon.



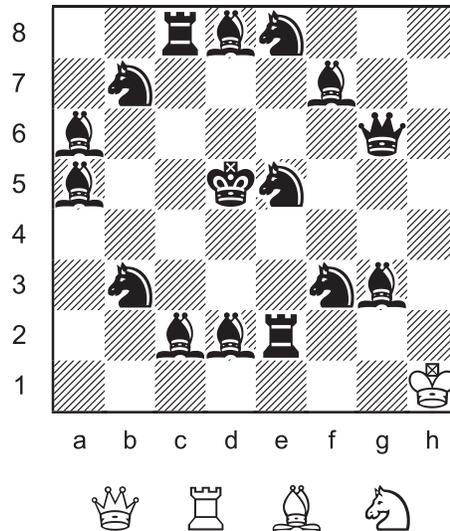
Triple Loyd 68



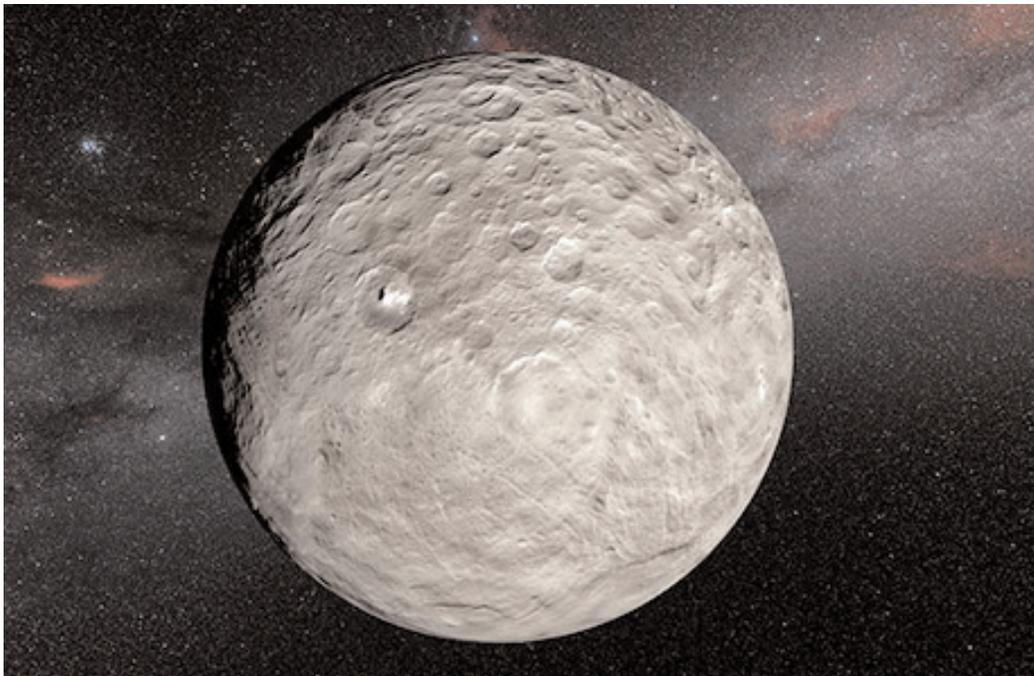
Place the black king on the board so that:

- A. Black is in checkmate.
- B. Black is in stalemate.
- C. White has a mate in 1.

Inverted Loyd 42



Place a white queen, rook, bishop, and knight on the board so that White has mate in 1.



The dwarf planet Ceres

Ceres was discovered in 1801 by Italian astronomer Giuseppe Piazzi. Named for the Roman goddess of agriculture, Ceres consists of rock and ice. That's right, folks, good old H₂O.

Originally considered a planet, it was later reclassified as an asteroid when similar objects were found in the same orbit. The term *asteroid* was coined by British astronomer William Herschel, from the Greek word 'asteroeides' meaning "star-like".

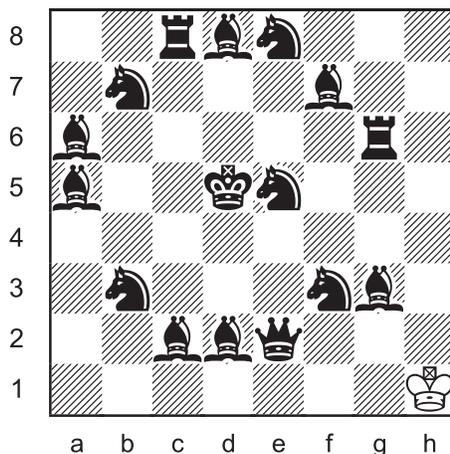
Science continues to expand its horizons, and its vocabulary. In 2006, the *International Astronomical Union* officially promoted Ceres to the status of *dwarf planet*, the same designation as Pluto, which failed to meet the new criteria for planethood.

A planet is a celestial body that circles the sun without being some other object's satellite, is large enough to be rounded by its own gravity (but not so big that it begins to undergo nuclear fusion, like a star) and has "cleared its neighborhood" of most other orbiting bodies.



The next puzzle is a twin to the previous inverted loyd, with rook/e2 and queen/g6 switching places.

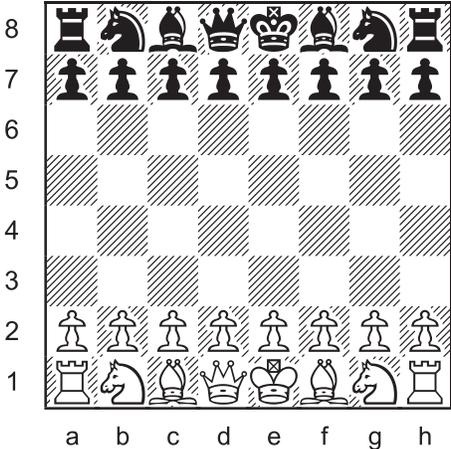
Inverted Loyd 43



Place a white queen, rook, bishop, and knight on the board so that White has mate in 1.

The goal in the following puzzle is to create a *knightless void*.
For three more *voids*, see columns 113,118,134.

Synthetic Game 33



Compose a game that ends
with all knights captured
before White's 6th move.

Five moves by each side, no knights left on the board.

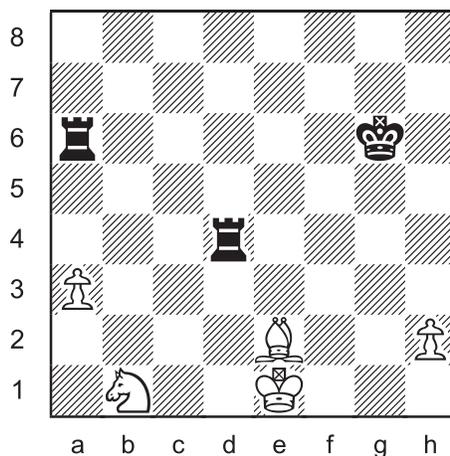


Most meteors (or “shooting stars”) are asteroids which have fallen out of orbit and entered the Earth’s atmosphere. If they hit the ground before burning out, we call them *meteorites*. The bigger the rock, the greater the impact.

So, you may ask, what do asteroids have to do with chess?
Surprisingly, more than you might imagine!

As noted earlier, the word asteroid means “star-like”. The following relatively simple maze features two chessboard *star-like manoeuvres*.

Chess Maze 19



Knight Maze in 16

Only the white knight moves. Find the shortest path to capture the black king, without taking any pieces or moving to a square attacked by a black piece.

This puzzle is a *Toronto style* chess maze. Captures are not allowed. For more details, see column 69.



Meteor Crater. Winslow, Arizona. Diameter 1.2 km.

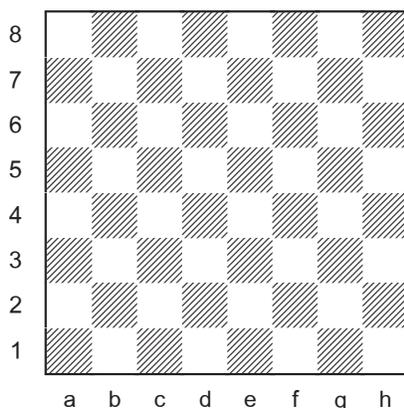
Star-like knight manoeuvres are not the only connection between asteroids and chess. There is also the name game.

Over 500,000 *minor planets*, most of which are asteroids, have been catalogued and assigned a number. 20,000 have also been given names, usually proposed by the person who discovered them, and often in honour of a famous Earthling.

Three asteroids are named after world chess champions! Alekhine, Karpov, and Anand have each been immortalized as a stellar object. Asteroids 1909, 90414, and 4538.

Also so honoured are Vladimir Nabokov, author and chess composer, and Francesc Vicent, Spanish player who wrote the first book of modern chess in 1495. *Libre dels jochs partits dels schacs en nombre de 100*. Asteroids 7232 and 78071.

Double Defensive Knight Loop Maximizer



Place the maximum number of knights on the board so that each knight is defended exactly twice.



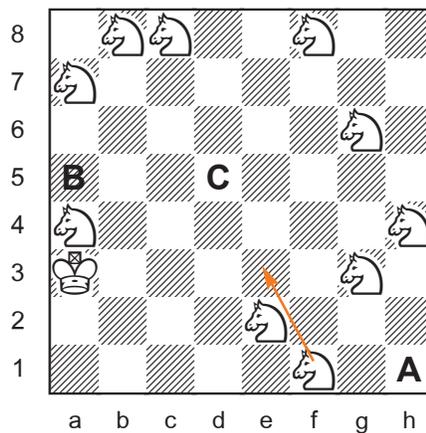
*Mr. Spock, Master of 3-Dimensional Chess, asteroid 2309
portrayed by Leonard Nimoy, asteroid 4864*

SOLUTIONS

All problems by J. Coakley, *Puzzling Side of Chess* (2017).
Inverted loyds 42 and 43 were previously published in May 2017
in the *Saturday Puzzles* column at *superproblem.ru*.

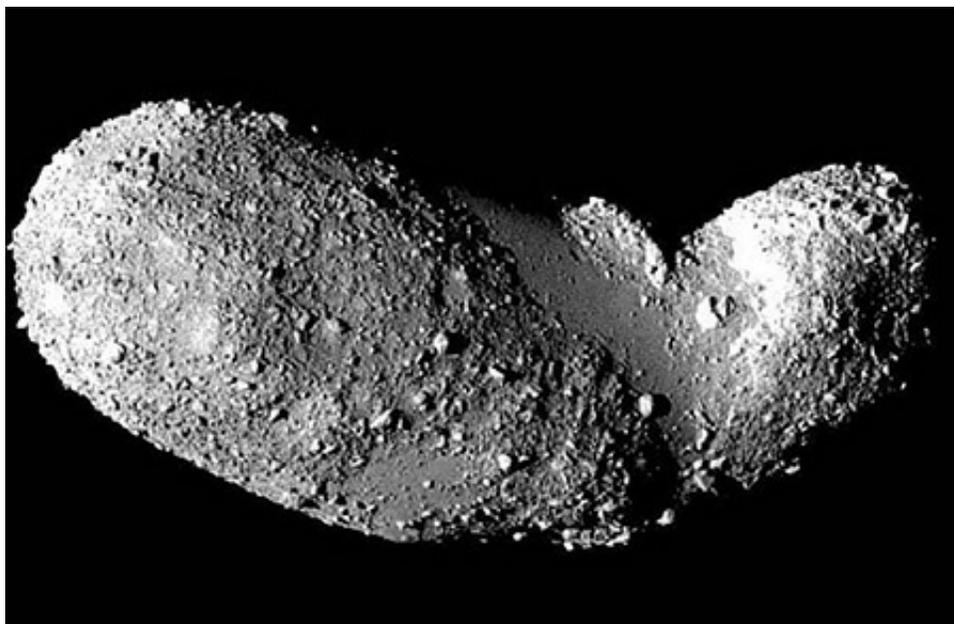
PDF hyperlinks. You can advance to the solution of any puzzle by clicking on the underlined title above the diagram. To return to the puzzle, click on the title above the solution diagram.

Triple Loyd 67



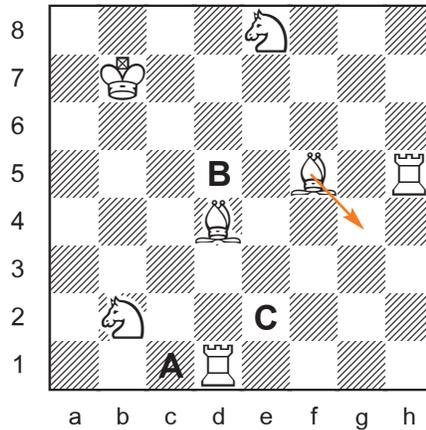
- A. Kh1#
- B. Ka5=
- C. Kd5 (Ne3#)

A perplexing array of knights.



Itowaka, nonspherical like most asteroids.

Triple Loyd 68



- A. Kc1#
- B. Kd5=
- C. Ke2 (Bg4#)



Ida and her moon Dactyl

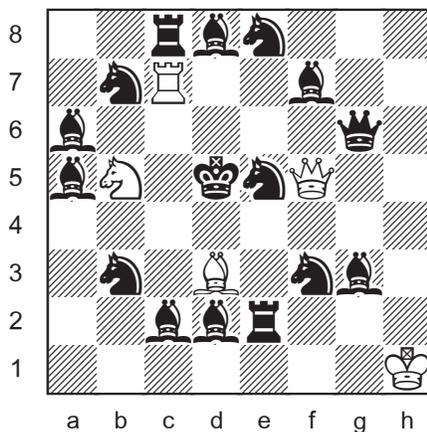
The only known asteroid with a satellite. (diameters: 31 and 1.4 km)

The Puzzling Side of Orbits

Normally we say that the moon goes around the earth. But from a cosmic gravitational perspective, it is more accurate to say that the earth and moon go around each other, and the two of them, an interlocked pair, revolve together around the sun.

The same logic, from a wider galactic point of view, can be applied to the solar system as a whole. In that case, we may boldly assert that the sun and earth revolve around each other! Copernicus and Ptolemy were both correct. Sort of.

Inverted Loyd 42

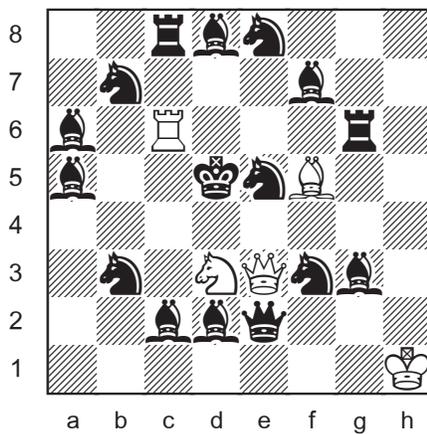


Qf5, Rc7, Bd3, Nb5 were added.

1.Bc4#



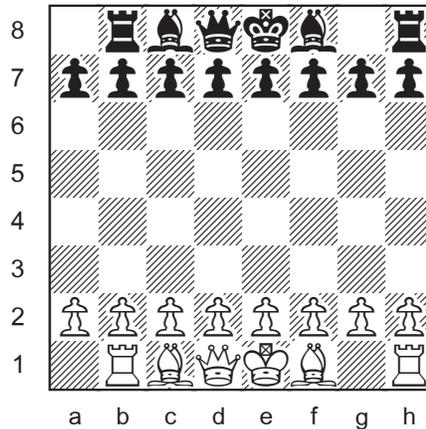
Inverted Loyd 43



Qe3, Rc6, Bf5, Nd3 were added.

1.Be4#

Synthetic Game 33



1.Nf3 Nf6 2.Nd4 Nd5 3.Nc6 Nc3 4.Nxb8 Nxb1 5.Rxb1 Rxb8

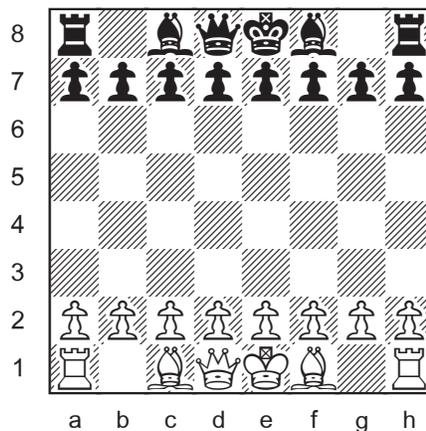
The solution is not unique. 2.Ne5 and/or 2...Ne4 can also be played. Note that the reflected approach with 1.Nc3 fails as 3.Nf6+ is check.

[August 2023: A different solution by Yakov Konoval is 1.Na3 e5 2.Nf3 Bxa3 3.Nxe5 Nc6 4.Nxc6 Ne7 5.Nxe7 Bxe7.]

A nearly identical puzzle, and perhaps more entertaining, is this non-unique proof game.

Longer Proof Game 42

(non-unique 6.0 moves)



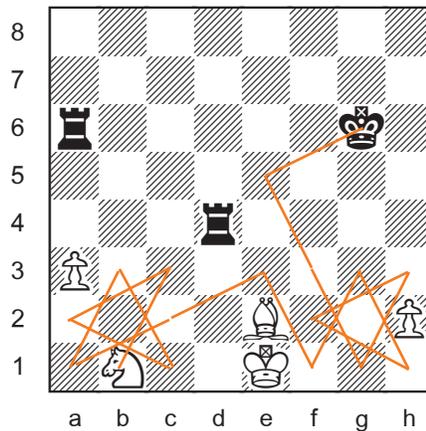
This position was reached after Black's sixth turn. How?



solution

same as above, plus 6.Ra1 Ra8

Chess Maze 19



Knight Maze in 16

Nb1-c3-a2-c1-b3-a1-c2-e3-f1-g3-h1-f2-h3-g1-f3-e5xg6

asteroid 1

asteroid 2

Do you see the stars?

Music of the Spheres

A lot of astronomers must be fans of rock 'n' roll. The list of asteroids named for rock bands and musicians reads like the Who's Who at the Hall of Fame. Here are some of the greats that have been "inducted" into asteroid heaven:

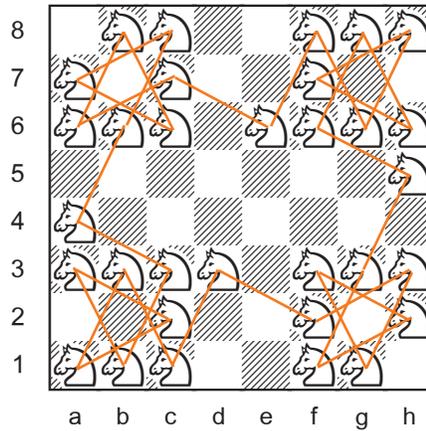
Beatles, Led Zeppelin, Pink Floyd, Rolling Stones, Creedence Clearwater Revival, Procol Harum, Simon & Garfunkel, Bee Gees, Motorhead, Yes, ZZ Top, and quite appropriately, Bill Haley and the Comets.

Jimi Hendrix, David Bowie, Elvis Presley, Chuck Berry, Buddy Holly, John Lennon, Paul McCartney, George Harrison, Ringo Starr, Bob Dylan, Eric Clapton, Roger Waters, Jimmy Page, Freddie Mercury, Mark Knopfler, Peter Gabriel, Brian Wilson, Bruce Springsteen, Jerry Garcia, Carlos Santana, Joe Satriani, and Frank Zappa.

Other musicians include Louis Armstrong, Frank Sinatra, Miles Davis, Billie Holiday, Mahalia Jackson, Stevie Wonder, Aretha Franklin, Enya, Luciano Pavarotti, Django Reinhardt, and any classical composer you can think of.

Rock on.

Double Defensive Knight Loop Maximizer



32 knights, each defended twice

A theoretical maximum, with four star-like knight clusters in a symmetrical formation.



PIECE ON EARTH