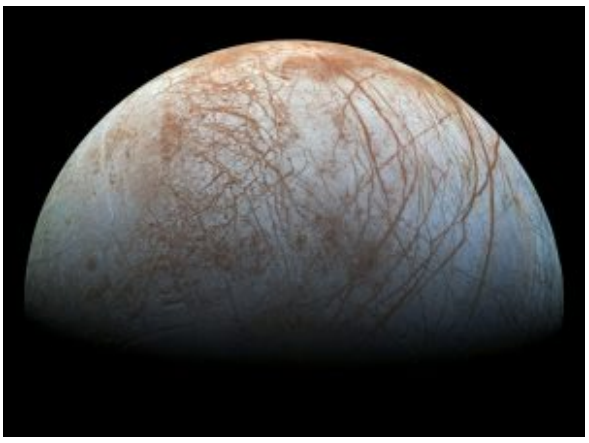
Star Guide: Jupiter's mysterious moons

By Tony Berendsen

Jules Verne (1828-1905) wrote adventure stories about a trip "From the Earth to the Moon" and a visit to "The Mysterious Island"; only two of his many science fiction adventures. His writings inspired the imagination, spurring interest in adventure and scientific exploration for many of us, including the rocket genius Robert Goddard and astronomer Edwin Hubble.

Verne's imagination has been surpassed by the science of the 21st century. We know so much more about the world today, and our capabilities of exploring the solar system with robots have yielded hints of other strange worldly places he never imagined.

On Jan. 7, 1610, Galileo wrote of his discovery of moons orbiting Jupiter, and 369 years later the Voyager 1 spacecraft passed by Jupiter imaging its four Galilean moons sending pictures back to Earth. Just as mysterious as the story of an undiscovered island from mind of Verne, scientists discovered future adventure for generations of explorers within the moons of Jupiter.



Galileo spacecraft image of

Europa. Photo/NASA

Imagine, a trip to Jupiter, 500 million miles from the sun, a planet so large the entire solar system would fit within its volume and an armada of 69 moons within its gravitational grasp. An adventurous voyage of this magnitude would surely merit space within the pages of one of Verne's books.

Jupiter's moons vary wildly in size and description, from regular to irregular. The irregular are 60 plus small satellites less than 160 miles in size orbiting in prograde and retrograde directions up to millions of miles from the planet. The regular are much closer, with two having orbital periods less than a Jovian day, and four as large as our own moon.

Io is the closest of the four largest we call the Galilean moons. It orbits Jupiter every 40 hours, and is a strange place with over 100 active volcanos, a thin atmosphere of sulfur dioxide, and mountains higher than Everest. Io has temperatures varying from 3,000 degrees near volcanos, to minus 202 in frozen fields of sulfur dioxide. An expedition to explore this place would be no less daring than being shot out of a cannon to the moon.

Yet, the most mysterious moon may be Europa. It's frozen icy crust is almost devoid of craters revealing dynamics renewing its surface by interaction with subsurface liquid water. Yes, water, maybe subterranean lakes and a hidden salty ocean where the wonder of life may exist beyond the bounds of the planet Earth?

NASA is considering a robotic mission to this distant place to fly by and capture water ejected from geysers they have found spouting from Europa's crust. What would they find within their sample? If life was found it would be as strange as one of Verne's fantastic tales come to life. Imagine the great burden of scientists on the mission team formulating a message

to the public telling them life is not constrained to the Earth alone.

And if we did find life, would humans want to venture to Europa to study the creatures that gave evidence we are not alone? Would we begin a 21st century legacy of Jules Verne with a trip to the mysterious moons of Jupiter?

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