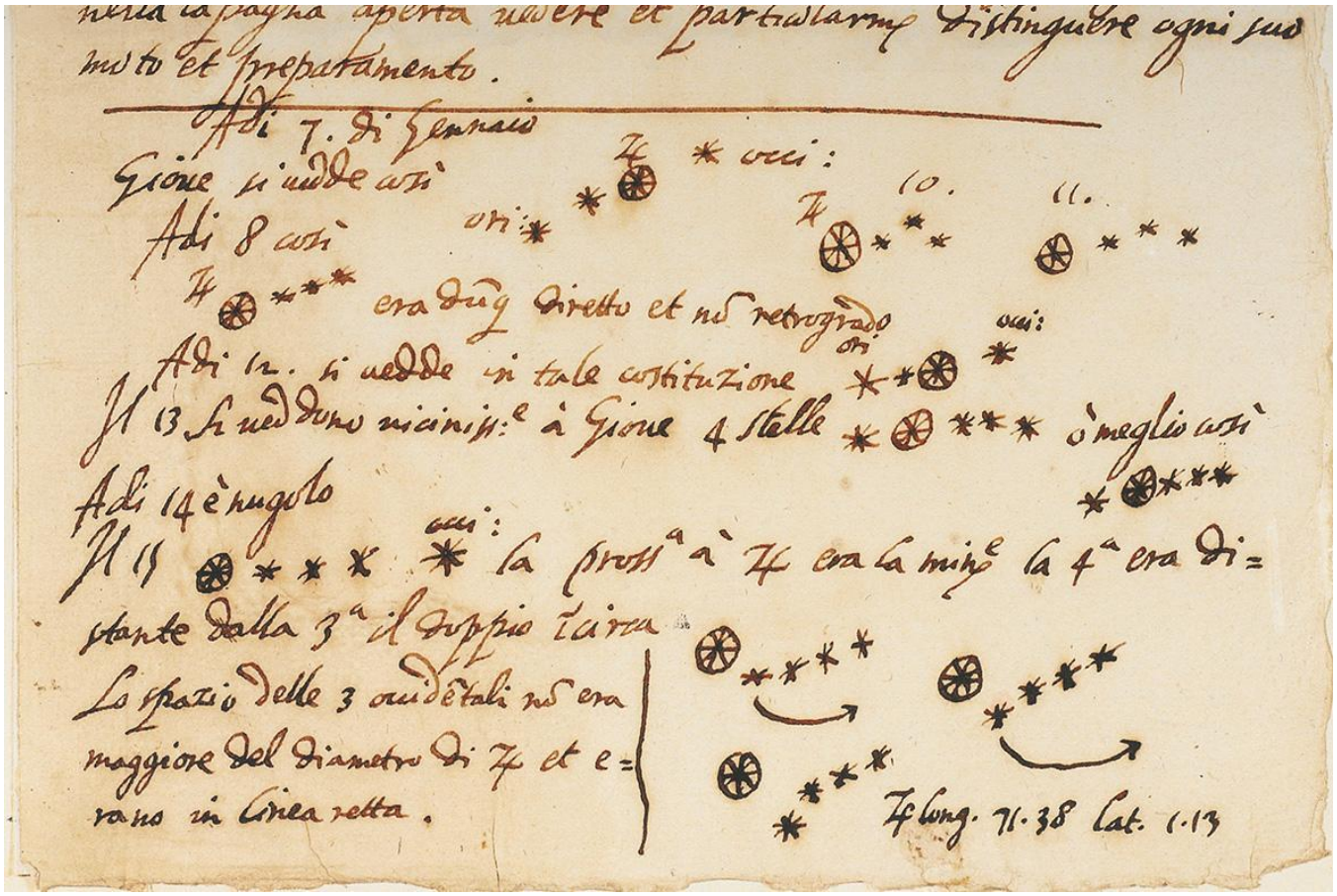
Sept. 2021 Astronomy Update for the Astronomy Valley

Editor's note: *Astronomy Update is provided by the Chippewa Valley Astronomical Society and is compiled by Dr. Lauren Likkel, an emeritus of the University of Wisconsin--Eau Claire department of physics and astronomy.*

Figure caption. Galileo Galilei observed Jupiter and saw 'stars' that changed position. He began recording what he observed and this is an image of some of his actual notes. It took some time for him to realize that he was seeing moons of Jupiter orbiting the planet. His results were included in his 1610 publication "Starry Messenger".

Photo Credit: *University of Michigan Library Special Collections*

"Jupiter as Galileo saw it"



By Lauren Likkel

Jupiter dominates the night sky this month, September of 2021. It was at its brightest last month, when it "reached opposition"– in the opposite direction from the sun. In that line-up, Jupiter is closest to Earth. Last month was the best time to see Jupiter, they said. But I would claim that this month is the best time – because as soon as it gets dark out, Jupiter is high in the sky. At opposition, Jupiter didn't even rise until sunset and only reached its

highest point in the sky at midnight. But now you can see Jupiter early in the evening. And yes, Jupiter is "that really bright star" in the southeast.

Through a telescope, the four brightest moons of Jupiter are easy to see. If you get a chance to look at Jupiter through a telescope, you might be as impressed as Galileo was when he turned a telescope on Jupiter in 1610. If you don't have a telescope, you could go to a Beaver Creek Reserve public telescope night.

The four bright moons of Jupiter were first documented by Galileo when he looked at Jupiter with a telescope. They are now called the Galilean Moons. Galileo originally called them 'stars' because they look like stars all in a line. Galileo was stunned to realize these were things orbiting Jupiter. The first several nights that Galileo looked at Jupiter, there were only 3 moons visible at a time! Sometimes, one of the moons is hidden behind the planet. Plus, if a moon passes in front of bright Jupiter, it can't be seen. And sometimes two moons are so close together that they look like one "star". You can see the moons change position in a couple of hours as they orbit Jupiter, or with one viewing enjoy checking if you can see all four Galilean moons.

The moon Io orbits in just 1.8 days. Because of the mutual gravitational influence, the moons Europa and Ganymede have orbital periods exactly twice and four times the period of Io, respectively. The Galilean moons are also tidally locked to Jupiter, as our moon is locked to Earth: showing only one face to the planet.

With a telescope with pretty good resolution, you might see the dark bands of Jupiter. These darker North and South "equatorial belts" are above and below the "equatorial zone". The equatorial zone through the center of Jupiter lines up with the moons. You might be lucky and be able see the Great Red Spot.

I hope you get a chance to see the moons of Jupiter. But even without a telescope, go look at the sky on the next clear night just to see that bright star and know that it is really Jupiter.

-- Lauren Likkel is a member of the Chippewa Valley Astronomical Society