

**BBC** STARGAZING WITH BINOCULARS: HOW TO DO IT RIGHT

#232 SEPTEMBER 2024

# Sky at Night

THE UK'S BEST-SELLING ASTRONOMY MAGAZINE

## MOONSTRUCK

Discover the wonder of our natural satellite  
**PLUS** Why we'll see a blue Moon this month

**SATURN AT  
ITS BRIGHTEST**

Where to find the  
Ringed Planet at  
opposition this  
month

**THE BRITISH WOMAN WHO  
HEADS UP NASA SCIENCE**

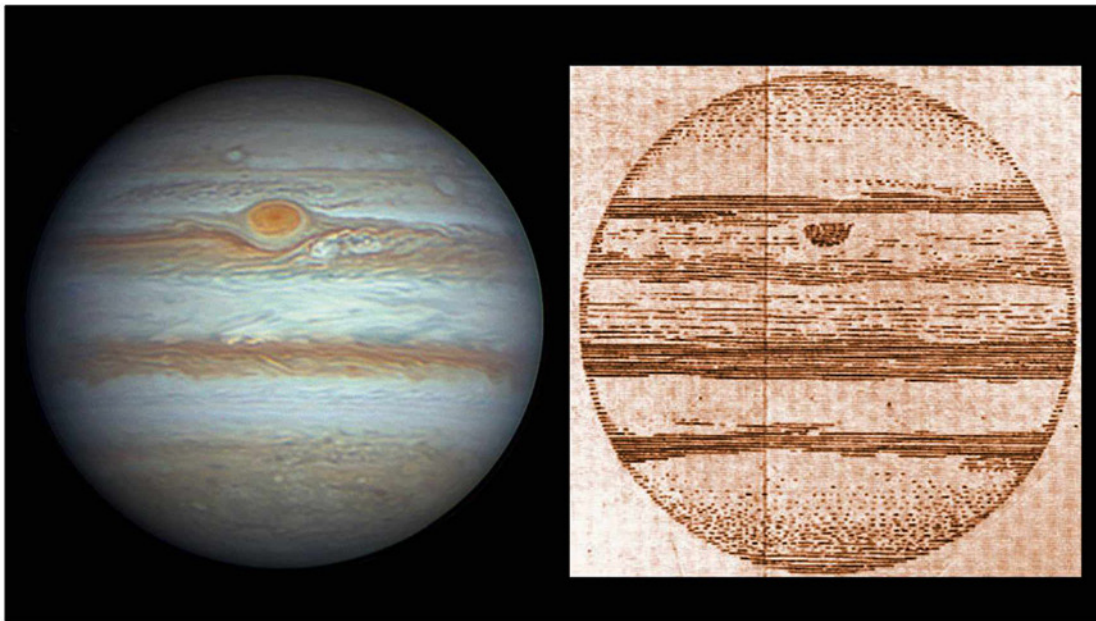
**THE DARING MISSION TO  
SAMPLE MARS'S MOONS**

**THE PLANETS RETURN TO OUR  
SKIES: YOUR 6-MONTH GUIDE**

**STUDY FINDS EVIDENCE  
OF LOST ASTEROIDS**

**ON TEST: HESTIA, A NEW  
TAKE ON THE SMART SCOPE**

# BULLETIN



▲ The Great Red Spot (left) and what Cassini drew in the 1600s (right) are likely to be different features



## Comment

by Chris Lintott

The Great Red Spot is the second most recognisable planetary feature behind Saturn's rings. I remember being gobsmacked when viewing the planet through Patrick Moore's 12.5-inch reflector, where the GRS seemed to have faded very nearly completely. More recently, the spot seemed to develop red 'flakes', which turned out to be gas being pulled into the eye of the living, breathing storm.

When it does fade away completely – which might happen in the next decade or so – it'll be a sad day for back garden observers everywhere. But this new research has a silver lining, suggesting a new spot will be along soon, just as our spot replaced Cassini's.

**Chris Lintott**  
co-presents  
*The Sky at Night*

## The rebirth of Jupiter's Great Red Spot

Is the giant storm we see today different to the one first seen in 1665?

**For almost two** centuries, astronomers have been arguing over whether the Great Red Spot we see on Jupiter today is the same feature as a similar mark first observed by Cassini in 1665. Now a new set of simulations may have settled the debate once and for all, suggesting our spot and Cassini's are two separate things.

After Cassini first noticed what he referred to as the Permanent Spot, he and others observed the feature continuously until 1713, when it vanished from the record for 118 years. Then in 1831, astronomers again started to see a clear, oval structure on the planet, at the same latitude as the Permanent Spot. This Great Red Spot (GRS) has been continuously monitored for over 190 years and is now known to be a huge vortex in Jupiter's upper atmosphere. However, it remained unclear whether the feature is the same as Cassini's Permanent Spot or a completely new weather system.

To find the answer, a team used observations of the planet from the last few decades – including those taken by the Juno probe currently in orbit – to create simulations of how the GRS formed. These investigated three different potential formation methods. Two of these methods – one where the GRS is the product of a giant superstorm; another

where it is several smaller vortices combined – didn't produce the kind of storm we see today.

The third method, however, took a look at instabilities caused by the fast-flowing jet streams that flow parallel to the band where the GRS resides, but in the opposite direction. In this case, the simulations did result in a system similar to the GRS.

The study then compared this simulation to historical records, tracking how the GRS has changed over time. In 1879, the GRS was around 39,000km (24,200 miles) at its widest, but now measures just 14,000km (8,700 miles) across. Comparing these changes with the simulations suggests the Great Red Spot first formed in the 19th century, long after the Permanent Spot seen by Cassini disappeared.

"From the measurements of sizes and movements, we deduced that it is highly unlikely that the current Great Red Spot was the 'Permanent Spot' observed by Cassini," says Agustín Sánchez-Lavega from the University of the Basque Country in Bilbao, Spain, who led the study.

[www.ehu.eus/en](http://www.ehu.eus/en)