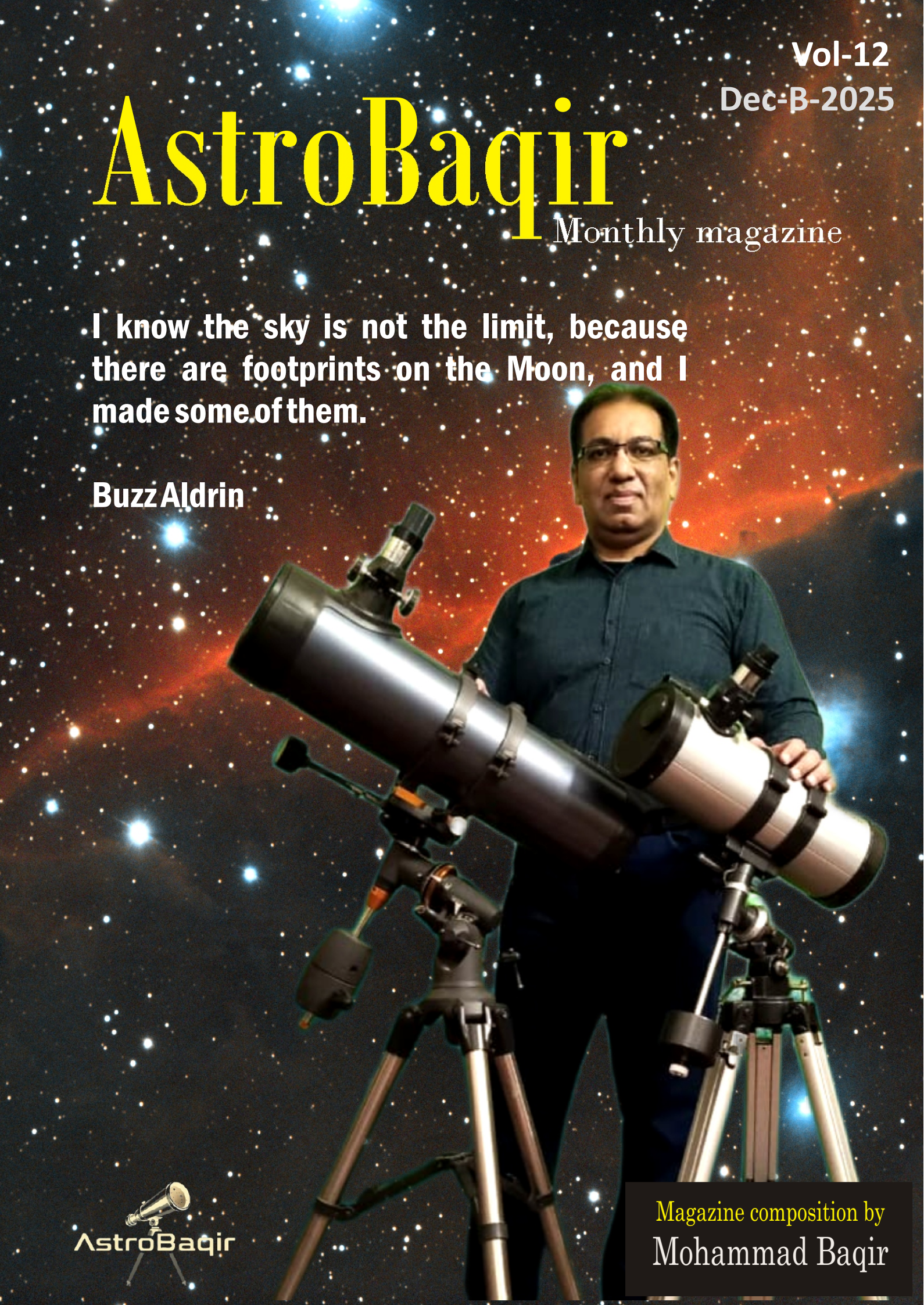
Vol-12
Dec-B-2025

AstroBaqir

Monthly magazine

I know the sky is not the limit, because there are footprints on the Moon, and I made some of them.

Buzz Aldrin



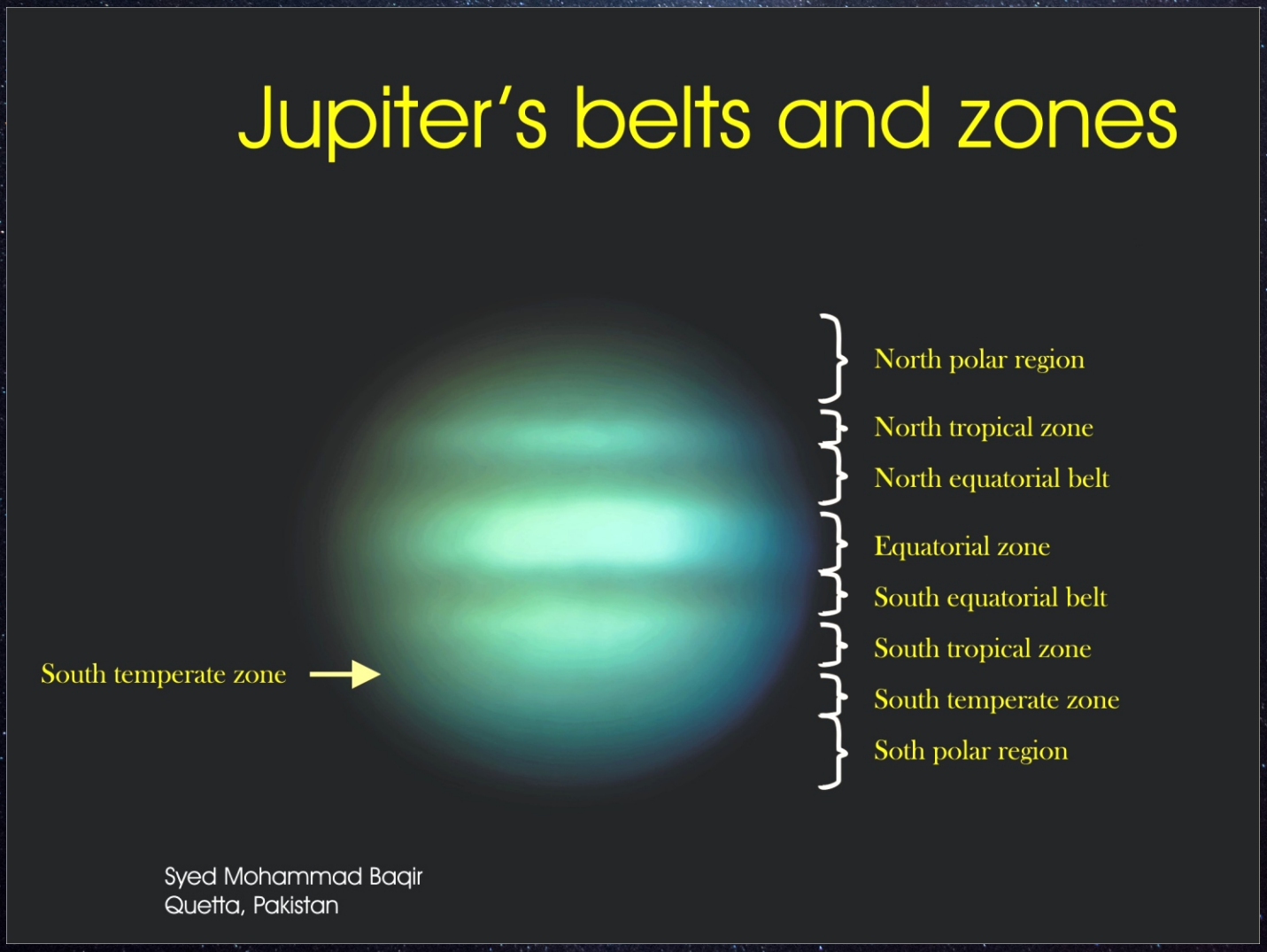
AstroBaqir

Magazine composition by
Mohammad Baqir

Jupiter's Belts and Zones

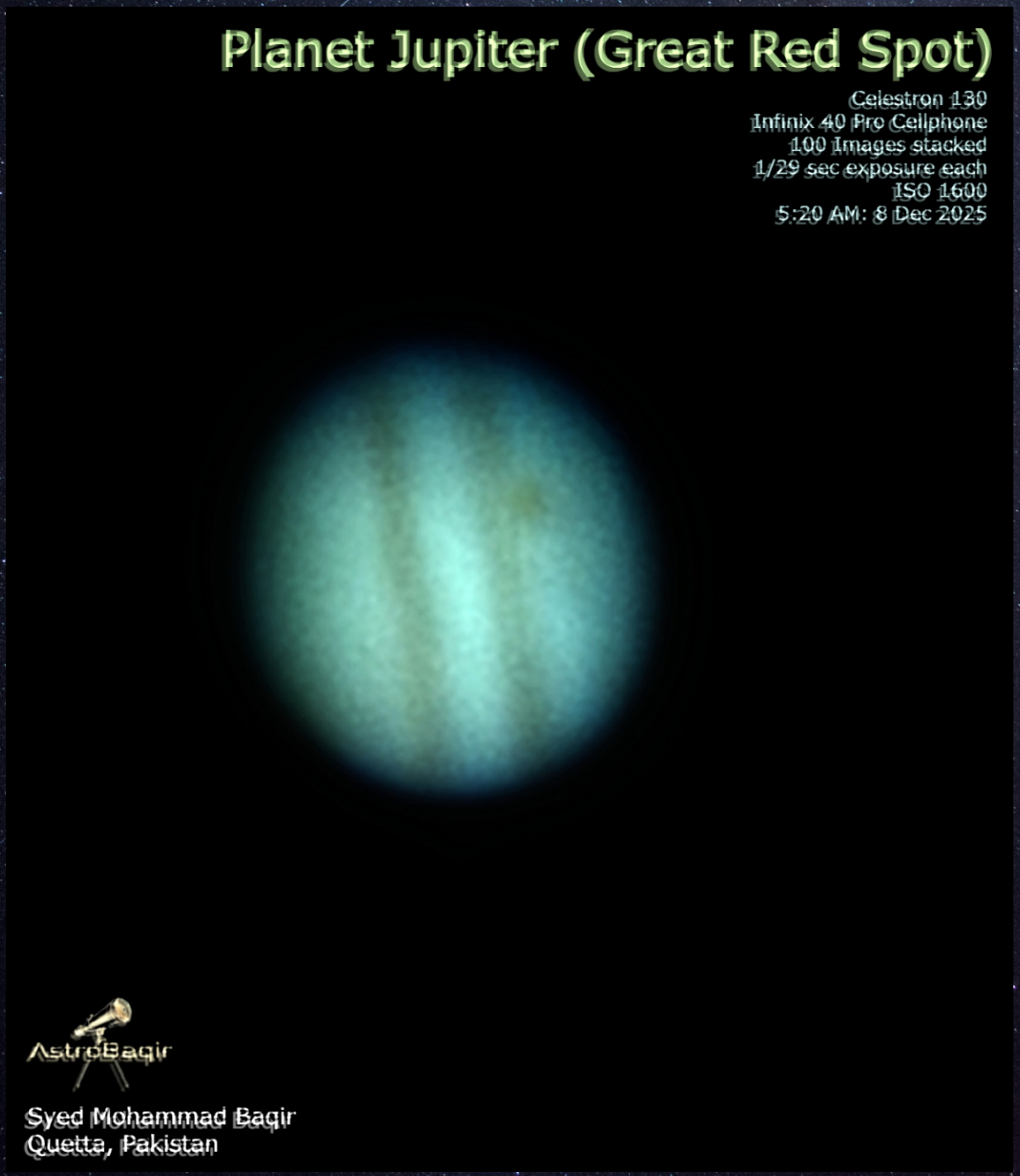
Jupiter's zones and belts are the most visible features of its atmosphere and are caused by powerful east–west jet streams. The light-colored regions, called zones, are areas of rising gas where clouds form higher and appear brighter. The dark bands, known as belts, are regions of sinking gas, allowing us to see deeper, warmer layers of the atmosphere.

These belts and zones alternate across the planet, parallel to Jupiter's equator, and can change in color, width, and intensity over time. Strong winds—reaching speeds of 400–600 km/h—flow along their boundaries, driving storms such as the Great Red Spot, which lies within the South Equatorial Belt. Together, Jupiter's belts and zones reveal a dynamic, constantly evolving atmosphere powered by the planet's rapid rotation and internal heat



Jupiter's red spot

Jupiter's Great Red Spot (GRS) is a colossal, long-lived storm located in the planet's South Equatorial Belt. It is a high-pressure anticyclone rotating counterclockwise, with wind speeds reaching ~400–500 km/h. The storm has been observed continuously since at least the 17th century, making it the longest-known atmospheric storm in the Solar System. Although it is gradually shrinking, the GRS is still large enough to engulf Earth. Its reddish color is thought to result from complex chemical reactions involving ammonia and hydrocarbons, altered by Jupiter's intense ultraviolet radiation.



Eskimo Nebula

The Eskimo Nebula (NGC 2392) is a striking planetary nebula located about 5,000 light-years away in the constellation Gemini. It formed when a Sun-like star shed its outer layers near the end of its life, creating a glowing shell of ionized gas. The bright inner region resembles a face surrounded by a fur-lined hood, giving rise to its popular name. At the center lies a hot white dwarf, whose intense ultraviolet radiation excites the surrounding gas, causing it to shine. The nebula's complex double-shell structure and fast-moving filaments reveal powerful stellar winds shaping the expanding material into this beautiful cosmic form

Crab Nebula

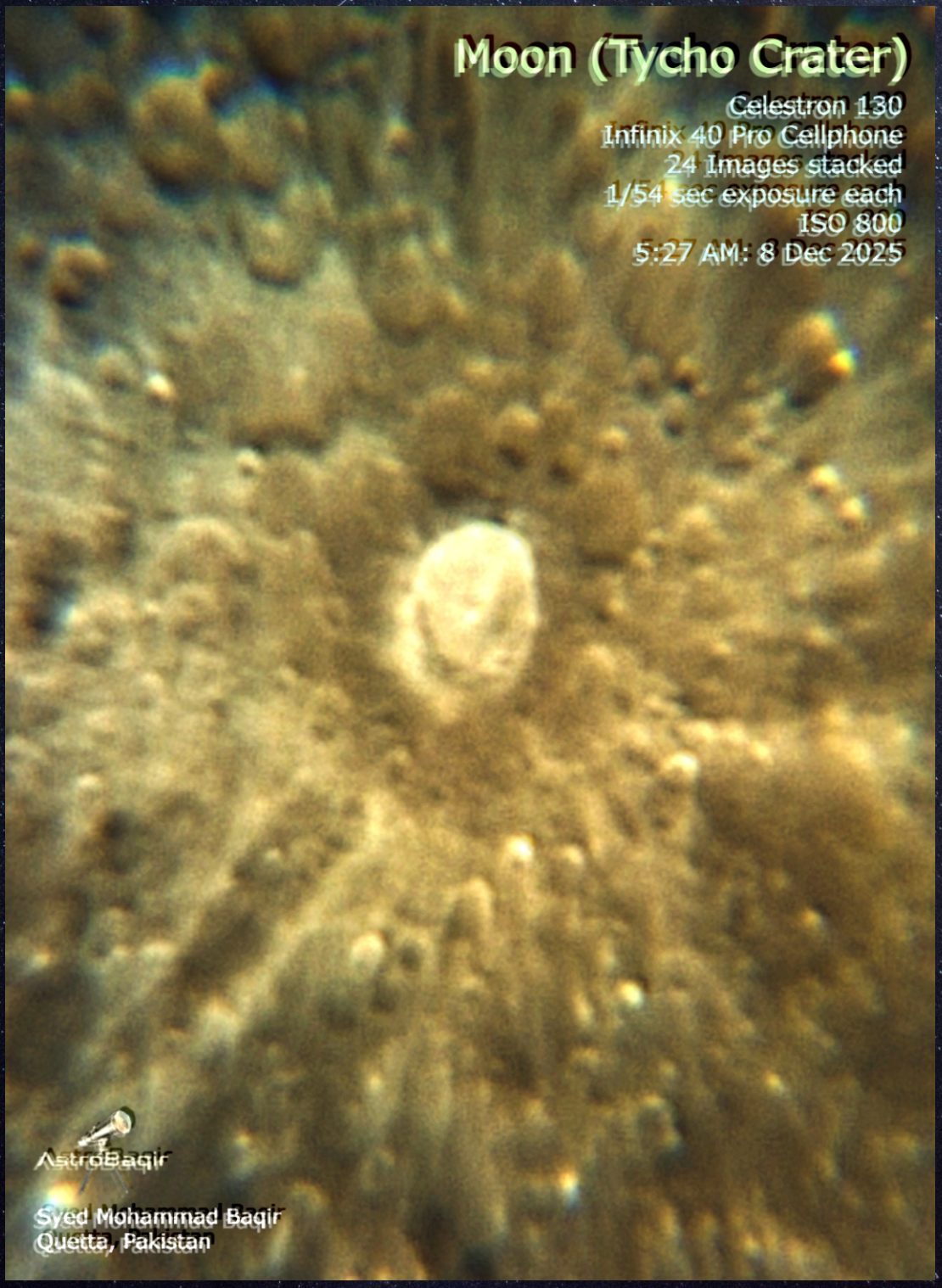
The Crab Nebula (Messier 1) is a famous supernova remnant located about 6,500 light-years away in the constellation Taurus. It is the expanding debris of a massive star that exploded in 1054 AD, an event recorded by Chinese and Islamic astronomers. At its core lies the Crab Pulsar, a rapidly rotating neutron star spinning about 30 times per second, which powers the nebula through intense magnetic fields and high-energy particle winds. The glowing filaments seen today are rich in hydrogen, helium, oxygen, and sulfur, making the Crab Nebula a key laboratory for studying stellar death, particle acceleration, and extreme astrophysical conditions.

IC 2162 Nebula

The IC 2162 Nebula is a faint emission nebula and star-forming region located in the constellation Monoceros, at a distance of several thousand light-years. It is part of a complex of hydrogen (H II) regions within the Milky Way, where newly formed, hot young stars ionize the surrounding gas, causing it to glow with a subtle reddish hue. Though challenging to observe visually, IC 2162 is a rewarding target for long-exposure imaging, revealing the quiet but ongoing process of stellar birth within our galaxy

Tycho Crater

Tycho Crater is one of the Moon's most prominent and spectacular impact craters, located in the southern lunar highlands. It is about 85 km in diameter and is relatively young, formed roughly 108 million years ago. Tycho is famous for its bright ray system, long streaks of ejected material that spread across much of the lunar surface and are especially striking during full Moon. The crater's sharp rim, terraced walls, and central peak indicate a powerful impact, making Tycho an important site for understanding lunar geology and impact processes



Reaching Magnitude 17.88 stars

Using 130 mm diameter telescope we can observe stars and objects as dim as magnitude 12.4. This time I used image stacking techniques and reached magnitude 17.88 which is a record for me.

End of Year 2025

A spectacular Astronomical Year of my life