

Dating van Gogh's *Moonrise*

Astronomical sleuths head to France to answer some nagging questions about a 19th-century painting.

By Donald W. Olson, Russell L. Doescher, and Marilyn S. Olson

ART HISTORIANS HAVE LONG agreed that Vincent van Gogh painted his spectacular *Starry Night* between June 16 and 18, 1889, in the town of Saint-Rémy-de-Provence in southern France. Evidence for pinning down the when and where of van Gogh's works comes largely from his own correspondence with his relatives and colleagues. Sometimes there are other clues within the works of art them-

selves. As astronomers, we have a keen interest when the paintings' subjects include objects in the sky.

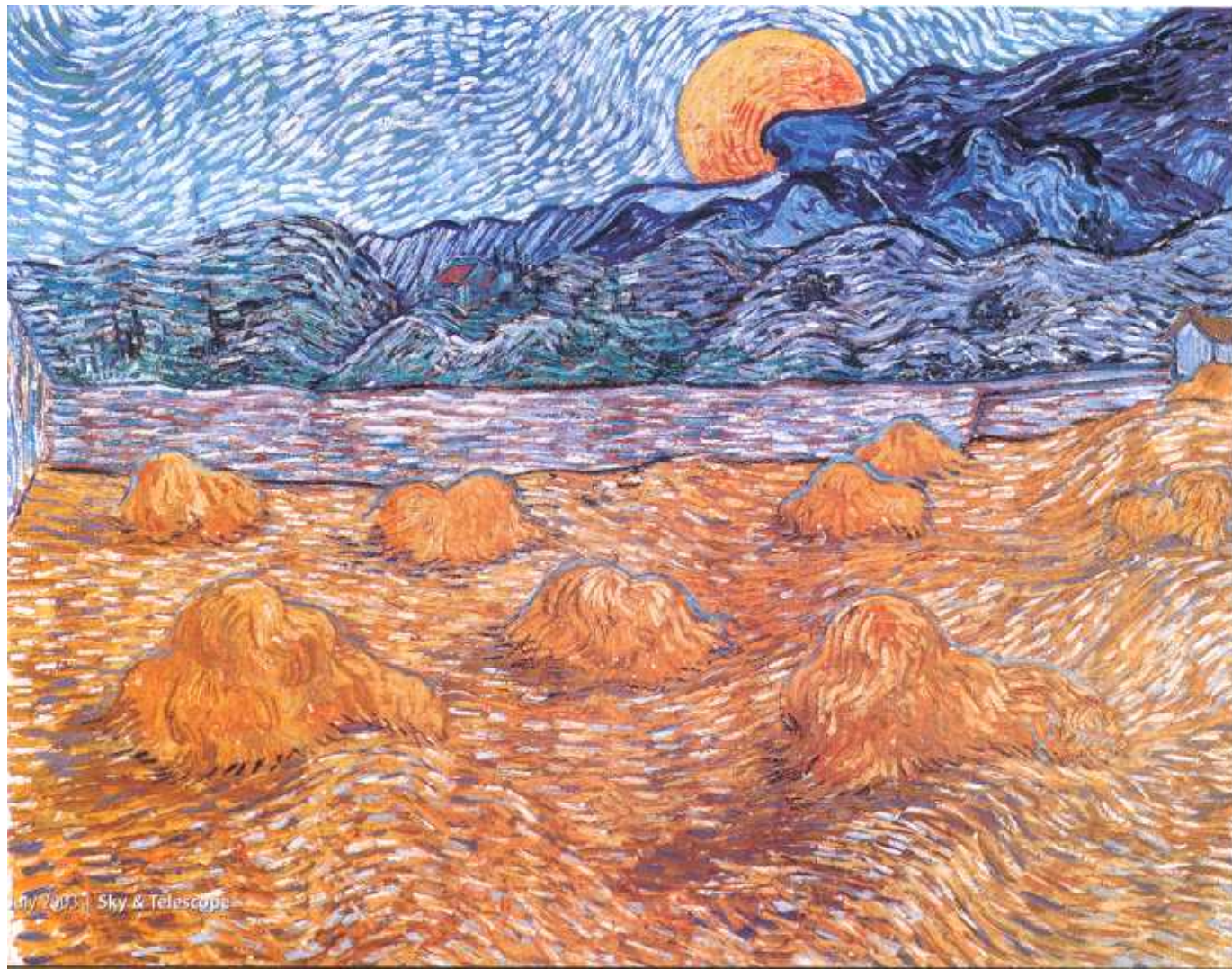
Previously, we identified Venus as the heavenly object in van Gogh's *White House at Night*, painted in northern France (*S&T*: April 2001, page 34). During our research for that project, we became interested in another astronomical painting from Saint-Rémy that had an uncertain date. This painting, known as F735,

shows wheat stacks in a field enclosed by a stone wall and, in the twilight sky, a prominent orange disk partly hidden behind a mountain range. Once again, astronomical calculations helped eliminate the ambiguity.

Van Gogh in Saint-Rémy

After suffering a series of medical crises while in the town of Arles, van Gogh moved to the hospital housed in the

Past art historians have been able to determine some details about this painting by Vincent van Gogh, but astronomers were able to pinpoint the timing of the scene. Once thought to show the setting Sun at Saint-Rémy-de-Provence, France, it is now known to be a rendition of a rising Moon.



Saint-Paul monastery at Saint-Rémy on May 8, 1889. By the time of his discharge on May 16, 1890, he had produced nearly 150 paintings and 140 drawings — works that reflected his interest in the natural light of southern France and the comfort and reassurance he found in nature. More than a dozen of these show similar views of the enclosed wheat field, with houses visible beyond the wall and the Alpilles Mountains rising on the right.¹

Van Gogh often looked at the sky from his room on the upper floor of the east side of the monastery, as he mentioned in a letter (no. 592) of late May 1889 to his brother Theo in Paris:

Through the windows with iron bars I see an enclosed wheat field . . . above which I see the sun rise in all its glory in the morning.

Another letter (no. 593), from the first week of June 1889, describes an observation of Venus:

This morning I looked at the countryside from my window for a long time before sunrise with nothing but the morning star which appeared very large.

The view across the enclosed field is thus generally toward the east, and painting F735 therefore depicts the rising (not setting) of a celestial body.

Sun? Moon? What Month?

Much as modern astronomers use Messier numbers, art historians refer to van Gogh's works by the catalog numbers assigned by Jacob-Baart de la Faille in his 1928 compilation, which inevitably contained some errors, as do all such monumental and pioneering works. For example, he listed F735 with the title *Sunset* and remarked that the “yellow-orange solar globe sinks behind the dark blue mountains that limit the horizon.” A 1937 catalog by Willem Scherjon and W. J. de Gruyter altered the title of F735 to *Rising Moon (Haycocks)* and placed it with the works from August or September 1889. In his revision published in 1939, de la Faille titled F735 *Moonrise* and favored September 1889. But the most recent (1970) edition of the de la Faille catalog,

¹ Readers can find images of van Gogh's paintings and the full text of his letters at www.vangoghgallery.com. The Saint-Rémy enclosed wheat field also appears in paintings F618, F650, F718, and F737, drawing F1552, and many others.



Left: In May 1889, van Gogh moved from Arles to Saint-Rémy-de-Provence to restore his health. He stayed for a year and created nearly 150 paintings, inspired by his surroundings.

Below: The overhanging cliff painted by van Gogh actually exists to the southeast of the Saint-Paul monastery in Saint-Rémy. The authors determined the altitude and azimuth of the outcropping by observing the Sun, Moon, and stars for six days. In this photograph the Moon is only faintly visible because the Sun was well above the horizon.



completed by a committee of experts after the author's death, assigns to F735 the title *Rising Moon: Haycocks* and gives the date as July 6, 1889.

All these scholars have used van Gogh's many letters to help determine the content and sequence of his paintings, and in this case the correspondence makes it certain that F735 shows a rising Moon. During the summer of 1889 van Gogh mailed an envelope containing two letters, one to Theo (no. 603) and another (now lost) written to the artist Paul Gauguin, with a sketch of a reaper cutting the wheat in the enclosed field. Vincent described to Theo several completed paintings and then went on to add:

I have one in progress of a moonrise over the same field as the sketch in the letter to Gauguin, but with wheat stacks replacing the wheat. It is dull yellow ochre and violet. Anyway, you will see it sometime soon.

During this same summer van Gogh's health took a downturn, and he produced almost no paintings for about six weeks. Did he paint the moonrise and write letter 603 before or after this hia-

tus? Unfortunately, the letter itself does not bear either a handwritten date or a postmark.

Letter 603, numbered by Theo's wife after her husband's death, is considered especially troublesome to date. All modern scholars agree that it must be moved in the sequence (that it does not fall between letter 602 of late August and letter 604 of early September), but they differ on exactly what date to give to letter 603 and thereby to the moonrise painting “in progress.”

Jan Hulsker, an authority on van Gogh's correspondence, noted in 1972, “The change in the sequence of these letters is not only important from the biographical angle, but also for the chronology of van Gogh's art for it means that the canvases referred to in 603 should be dated two months earlier.” Hulsker moves letter 603 to July 6th and dates the medical crisis from “about July 8 till about the middle of August.” A recent catalog by Hulsker (*The New Complete Van Gogh*, 1996) likewise dates F735 as July 6, 1889.

But Ronald Pickvance, curator of the Metropolitan Museum of Art's 1986 ex-

hibition “Van Gogh in Saint-Rémy and Auvers,” places the moonrise painting in the range of July 8–13. Pickvance favors a date of about July 14th for the letter (no. 603) that describes the moonrise canvas and July 16th for the onset of the crisis.

Can we use astronomical methods to date the moonrise painting directly, without relying on letter 603?

Possible Dates and Questions

We can be certain that van Gogh created F735 between May 8th, when he first arrived at Saint-Rémy, and late September, when he mailed the canvas to Theo in a batch of 10 paintings that also included the famous *Starry Night*.

The bright orange orb in F735 must be either a full Moon rising near sunset or a nearly full Moon rising in evening twilight, shortly after sunset. Computer calculations for 1889 quickly showed the only possible dates: May 15–17, June 13–15, July 12–14, August 11–13, and September 9–11.

A striking feature of *Moonrise* is the distinctive overhanging cliff that partially blocks the disk of the Moon. Van Gogh also included, in the foothills below the cliff, an unusual “double house” with the appearance of a smaller structure attached to a larger building. We were encouraged that these might be real features of the landscape because the overhanging cliff and the double house appear in so many of van Gogh’s paint-



From left to right: Russell Doescher, Claude Suc, and Donald Olson plan observations in a Saint-Rémy olive orchard. Photograph by Marilyn Olson.

ings from Saint-Rémy.

We wondered: Does *Moonrise* accurately depict the landscape near Saint-Paul monastery? Could we find the double house and the overhanging cliff? What are the azimuth and altitude of the cliff as seen from the wheat field? Did a nearly full Moon rise in that direction on a date during 1889?

Trip to Provence

To answer these questions, we traveled to Saint-Rémy in June 2002. Before leaving Texas, we contacted Les Astronomes Amateurs Du Delta, an astronomy club

based in Arles. Three of the group’s members, Claude Suc, Vincent Suc, and Bruno Massal, helped us by scouting possible observing locations and then accompanying us during our visit.

Within minutes of our arrival in Saint-Rémy, we were gratified to see that the overhanging cliff actually does exist to the southeast of Saint-Paul! Measuring its azimuth and altitude was not simple, in part because Saint-Paul is still a working hospital, with both van Gogh’s former room and the enclosed field (now a garden) strictly off-limits. (Tourists are allowed to visit a different room called



Above: The “double house” of the *Moonrise* painting still stands in Saint-Rémy. Photograph by Donald Olson.

Left: Van Gogh included the “double house” and overhanging cliff in several paintings. This one, designated F617, was painted before *Moonrise*, as evidenced by the wheat in the process of being harvested. Courtesy Kröller-Müller Museum, The Netherlands.

“Reconstitution Chambre Van Gogh.”) More important, a forest of tall pine trees has grown, obscuring some features of the landscape. For example, by exploring dirt roads into the forest, we found that the double house still stands in a small clearing about 640 meters (2,100 feet) southeast of the monastery, but this distinctive building can no longer be seen from locations near Saint-Paul.

The Arles group had forewarned us of these problems and helped us find an excellent observing location — a large open field immediately northwest of Saint-Paul. From here we had a clear view directly over the monastery to the Alpilles beyond. For six days and nights we observed the Sun, Moon, and stars as they rose and thereby measured the altitudes and azimuths of the peaks and cliffs of the mountain range.

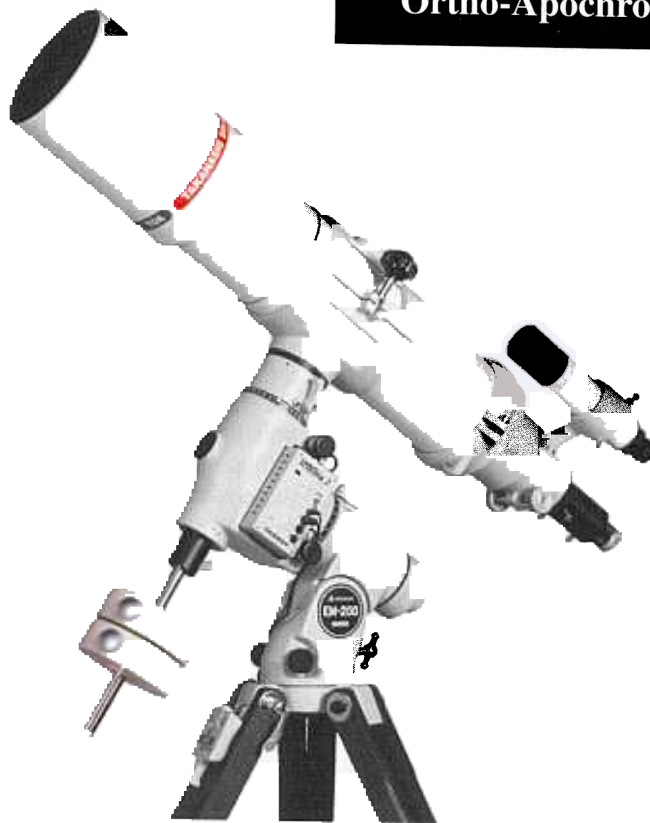
Narrowing the Choices

Van Gogh's viewpoint in the enclosed field was near the north wall, barely visible at the extreme left edge of the painting. We employed topographic maps and aerial photographs to determine that the overhanging cliff stood 2,680 meters (8,800 feet) from van Gogh's position, and that our observing location was another 300 meters farther back and 6 meters lower in elevation. Using trigonometry to make small corrections that adjusted our observations of altitude and azimuth, we found that van Gogh would have seen the outcropping near azimuth 126° , that is, about 36° south of due east, and extending between $4\frac{1}{2}^\circ$ and $4\frac{3}{4}^\circ$ in altitude. At the latitude of the monastery ($43^\circ 47'$ north), celestial objects rising from behind this cliff must have declination near $-21\frac{1}{2}^\circ$. Our computer calculations then showed that from the wheat field in evening twilight, van Gogh could have seen a nearly full Moon rising with this declination on only two dates in 1889: May 16th and July 13th.

Weather records, preserved at the Météo France archives, show that favorable conditions prevailed on both of these evenings. Very heavy rain fell on May 14th and 15th, but skies cleared on May 16th. The entire first two weeks of July were rain free, and the fraction of the sky covered by clouds decreased during the course of July 13th from 50 to 30 percent.

The colors in the foreground of *Moonrise* allow us to eliminate one of these dates. Shortly after arriving in Saint-Rémy in May, van Gogh noted that the

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monastery was surrounded by “very, very green wheat fields” (letter 591). By the middle of June, he was painting “a field of wheat turning yellow . . . the ears of grain baked by the Sun . . . with the warm tones of a bread crust” (letter W12). In late June, the artist painted a reaper cutting wheat that was “all yellow” (letter no. 597). The *Moonrise* painting, with reaped wheat in golden stacks, therefore cannot correspond to a date in mid-May but fits perfectly with our astronomically derived date of July 13th.

Final Choice

Because the Moon’s disk spent less than two minutes passing behind the overhanging cliff, we can determine a precise time for van Gogh’s moonrise: exactly 9:08 p.m. local mean time² on July 13, 1889.

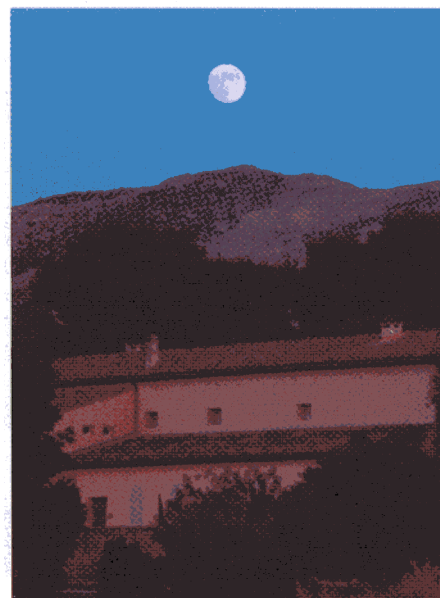
Because van Gogh produced approximately one painting or drawing per day, our calculations therefore suggest that letter 603, describing the *Moonrise* as in progress, would date from about July 14, 1889 — in agreement with Pickvance’s historical analysis!

Our topographic observations, combined with computer calculations, provide strong evidence that van Gogh was working from nature — and not from some composite from his memory — when he created *Moonrise*; we have an accurate depiction of both the overhanging cliff in the Alpilles and the position of the rising Moon. The shadows of the wheat stacks are not aligned with the Moon, suggesting to us that van Gogh remained in the field as the evening twilight faded and the rising Moon began to swing toward the southern sky, causing the shadows to rotate in azimuth.

Furthermore, in an 1888 letter (no. B19) to his artist friend Émile Bernard, van Gogh described his reliance on the natural world:

I never work from memory. . . . I cannot work without a model . . . in the matter of form I am too afraid of departing from the possible and the true . . . my attention is so fixed on what is possible and really exists . . . I exaggerate, sometimes I make changes in a motif; but for all that, I do not invent the whole picture; on the contrary, I find it all ready in nature. . . .

² France had not yet adopted modern time zones; in 1889 Saint-Rémy kept local mean time, 19 minutes later than Universal Time.



Near the summer solstice, nearly full Moons must have a southern declination and rise in evening twilight over the Alpilles Mountains to the southeast of the Saint-Paul monastery. On only two dates in 1889 did such a Moon rise exactly behind the overhanging cliff, several degrees to the left of the view in this image from June 23, 2002. Photograph by Donald Olson.

The Moon in July 2003

Throughout 2003, as special events commemorate the 150th anniversary of van Gogh’s birth, there will also be an astronomical anniversary. Exactly six 19-year Metonic lunar cycles have elapsed since van Gogh’s summer in Saint-Rémy. Therefore, the calendar dates of lunar phases in 2003 nearly repeat those of 1889. On July 13, 2003, modern observers during evening twilight will see a nearly full Moon rise in the southeast, much as it did on July 13, 1889, when van Gogh stood among the wheat stacks in the monastery field and captured the scene in his remarkable *Moonrise*.

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