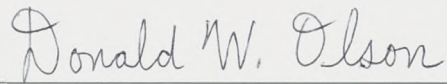


*SHIN-HANGA* AND THE NIGHT SKY: ANALYZING CELESTIAL BODIES  
IN THE WORKS OF HASUI KAWASE

by

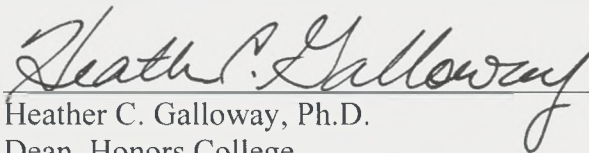
Leeza Dennis

Thesis Supervisor:

A handwritten signature in cursive script that reads "Donald W. Olson". The signature is written in dark ink and is positioned above a horizontal line.

Donald W. Olson, Ph.D.  
Department of Physics

Approved:

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Heather C. Galloway, Ph.D.  
Dean, Honors College

*SHIN-HANGA* AND THE NIGHT SKY: ANALYZING CELESTIAL BODIES  
IN THE WORKS OF HASUI KAWASE

HONORS THESIS

Presented to the Honors College of  
Texas State University  
in Partial Fulfillment  
of the Requirements

for Graduation in the Honors College

by

Leeza Dennis

San Marcos, Texas  
August 2016

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Leeza A. Dennis

2016

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I would also like to thank Dr. Kendall H. Brown of California State University, Long Beach for his invaluable help in my research. This would not be possible without his in-depth knowledge of Japanese History and Kasui Hawase.

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## **ABSTRACT**

Using astronomy to clarify art is an emerging field – one that is pioneered by Texas State’s own Celestial Sleuth, Dr. Donald Olson. However, analysis seems to have been focused on mostly western art, something this thesis hopes to remedy.

From Japan comes the art form of shin-hanga, literally meaning “new prints”, of which the subjects range from landscapes, famous places, beautiful women, Kabuki actors, and birds and flowers. Our artist of focus is Hasui Kawase who was at the forefront of shin-hanga, and whose work continues to be celebrated not only in Japan, but all around the world.

The intent of this thesis is to explore Hasui’s work Kiyomizu Temple, the history surrounding the work, and, most importantly, the two celestial bodies who make an appearance in the print’s night sky. Our Texas State University group used astronomical methods and calculations, a mixture of Japanese to English translation, historical research, topographical analysis, historical photographs, and meteorological reports to determine the precise date and time depicted in the piece.

## THE LEGACY OF SHIN-HANGA

When people think of East Asian art, or more specifically Japanese art, they may imagine Katsushika Hokusai's *The Great Wave off Kanagawa* – the depiction of a large rogue wave threatening to swallow up boatmen as Mount Fuji stands stolid in the background. Or perhaps the gentle *Sumi-e* (ink wash painting) landscapes of 15<sup>th</sup> century artist Tensho Shubun come to mind. Despite the contrasting nature of the two aforementioned examples, one thing is for certain, they both represent the essence of nature that traditional Japanese art strives to capture.

These traditional styles began to die out in the 19<sup>th</sup> century, as the rapid modernization of Japan caused art and poetry to be replaced by industrialization. The essence of nature is nowhere to be found as forests are flattened for cities. Oddly enough, the western world clung to the idea of a rural and untouched Japan. Publisher Shozaburo Watanabe saw an opportunity and called for a re-emergence of traditional Japanese art. He employed highly skilled carvers and printers, and he commissioned artists to design prints that combined traditional Japanese techniques with elements of contemporary Western painting, such as perspective and shadows. Watanabe in 1915 called this new mixture *shin-hanga*, literally meaning “new prints.” Westerners bought into the image of old Japan hungrily, causing the popularity of *shin-hanga* to soar in both the United States and Europe.

The nostalgic and romanticized views of Japan that *shin-hanga* artists offered revealed the ways artists perceived their own environment in the midst of transformation. Most *shin-hanga* landscape prints, which constitute seventy percent of *shin-hanga* prints,

feature places that are obscure and tranquil. Our artist of interest, Kawase Hasui, produced dreamlike qualities in his prints and yearned for rural roots and the warm wooden architecture that was disappearing in urban Tokyo.

In *Kawase Hasui*, expert Dr. Kendall Brown explains the importance of nature to *shin-hanga*:

Nature, in the form of mountains, waterways or even atmospheric conditions, is central to Shin-hanga landscape and townscape prints. Landscape images are by definition about the natural world, but even Shin-hanga townscapes typically demonstrate the power of nature within the city. . . . It can be estimated that landscapes and townscapes constitute as much as seventy percent of all Shin-hanga production. (Brown: 2003: 13)

The importance of nature in Japanese art is evident, particularly when it came to night skies. There are many scenes to be found within the art movement mostly because, as Brown says:

The symbolic qualities attributed to native culture through its association with nature are not manifest merely in such tangible things as mountains, lakes or trees. These symbolic qualities are dependent in part on the uncanny power of atmosphere to render ephemeral the material and make transient the eternal. More precisely, the objects that

constitute landscapes or townscapes best assume the ability to stand as metaphors for Japanese culture when they are saturated or at least tinged with mist, rain, or snow or illuminated by moonlight. (Brown 2003: 20)



**Figure 1** Kobayashi Eijiro, *High Bridge by Night*,

1910-20's

*chuban Tate-e* 10 3/8 by 7 1/2 in., 26.5 by 19 cm



**Figure 2.** Takahashi Hiroaki, *Temple in the Night* -  
*Tokumochi*, 1936 or earlier

*chuban tate-e* 10 3/8 by 7 1/2 in., 26.5 by 19 cm

The above paintings by artists Hiroaki and Eijiro demonstrate *shin-hanga*'s characteristic tranquil and atmospheric night skies. Of all the *shin-hanga* artists, it was perhaps Kawase Hasui's prolific work that truly brought the evening sky to the forefront.

## THE TIMES AND SKIES OF KAWASE HASUI



Figure 3. Hasui Kawase 1883-1957

As noted before, Hasui remains one of the most popular *shin-hanga* artists to date. He was highly prolific with nearly 700 pieces under his belt.

Hasui's life and artistic career are well documented. Beginning in October 1923, a month after the Great Kanto earthquake, Hasui started to keep a diary. Although the content of these nineteen journals rarely venture from mundane affairs, the information is nonetheless invaluable in piecing

together his travels and daily habits. This is particularly important to this study as we need to know where Hasui was when he painted *Kiyomizu Temple*.

## EARLY LIFE

On 18 May 1883, the sixteenth year of the Meiji period (1868-1912), Kawase Shobee and his wife Kan celebrated the birth of their first son. They called him Bunjiro, using the characters indicating ‘art/culture’ (*bun*), ‘heal/peace’ (*ji*) and ‘man/son’ (*ro*). The name Bunjiro seems to have been prophetic for the child who would spend his adult life creating pictures that preserve the countenance and character of the Japan imbibed in his youth.

The Hasui family home was located behind their shop in Tokyo’s Shiba ward at 36 Tsuyugetsu-cho. The area was part of the *shitamachi*, the old ‘low city’, where for generations townspeople had run business catering to the government and military elites. Kawase Shobee’s business, the manufactures and sale of braided cord, was rooted in traditional textiles but was adapting to the up-to-date world of Western fashion. For example, Shobee sometimes sub-contracted for larger shops that provided braid for the military and the Imperial household. It was assumed that Bunjiro, as eldest son, would take over the business. However, with three older sisters, four young sisters and two younger brothers, there was no shortage of help.

At nineteen, he was permitted to receive instruction in art from his parents, and he never looked back.

Kawase worked almost exclusively on landscape and townscape prints based on sketches he made in Tokyo and during travels around Japan. However, his prints are not merely prints of famous places that other *ukiyo-e* artists usually dwelled on.

Hasui considered himself a realist and employed his training in Western painting in his compositions. He made travel and landscape prints, though his subjects were less

known locations rendered with naturalistic light, shade, and texture. It is exactly for this reason we believe that the night sky depicted in Hasui's work *Kiyomizu Temple* is an accurate portrayal.

Here are some examples of his works that detail his love for the night sky.



Figure 4. Hasui Kawase, *Night at Miyajima*, 1947

*chuban tate-e* 10 1/2 by 15 1/4.,  
26.5 by 19 cm



Figure 5. Hasui Kawase, *Starlit Night, Miyajima*, 1928

*chuban tate-e* 10 3/8 by 7 1/2 in.,  
26.5 by 19 cm



Figure 6. Hasui Kawase, *View from Takatsu in Osaka*, 1924

Vertical ôban; 38 x 25.7 cm (14 15/16 x 10 1/8 in.) Woodblock print; ink and color on paper

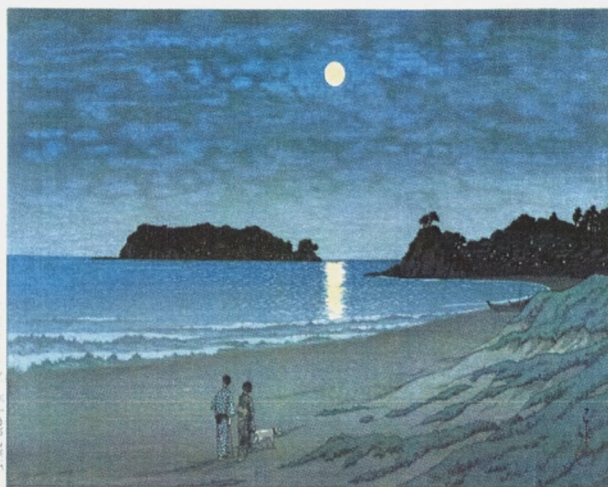


Figure 7. Hasui Kawase, *Moonlight at Shichiri-ga-hama, Sagami Province*

Horizontal ôban; 26.2 x 38.7 cm (10 5/16 x 15 1/4 in.), Woodprint; ink and color on paper



**Figure 8.** Hasui Kawase, *Evening Glow in Spring, Toshogu Shrine, Ueno*

Ôban tate; 26.2 x 38.7 cm (10 5/16 x 14 3/8 in.), Woodprint; ink and color on paper



Figure 9. Hasui Kawase, *Winter Moon at Toyamagahara*, December 1931

Vertical ôban; 38.5 x 25.7 cm (15 3/16 x 10 1/8 in.)



Figure 10. Hasui Kawase, *Matsushima by Moonlight*. Date unknown.

Horizontal ôban; 26.2 x 38.7 cm (10 5/16 x 15 1/4 in.), Woodprint; ink and color on paper



Figure 11. Hasui Kawase, *Beppu in the Morning, Oita*, 1928

Vertical ôban; 26 x 38 cm (10 1/2 x 15 in.),  
Woodprint; ink and color on paper



Figure 12. Hasui Kawase, *Spring Moon at Ninomiya Beach*. Date unknown.

Horizontal ôban 15.8 X 10.3 Inches  
Woodprint; ink and color on paper

## HASUI'S METHODS

Hasui was certainly a master of *shin-hanga*, and he often incorporated night skies in his work. The question that begs to be asked, however, is if the paintings he created were accurate portrayals of the world around him. Compared to other artists of the same genre, Hasui's works were relatively realistic, abandoning the stylistics of traditional Japanese art. According to Dr. Kendall H. Brown, author of several books and catalogues devoted to this artist, Hasui was known to omit objects as well as add them, but not if he could help it. Consider, for example, this quote from Brown's *Kawase Hasui: The Complete Woodblock Prints*:

In theory, Hasui was uncomfortable with fabrication, yet in practice he realized the necessity of omitting some things and adding others . . . the artist revealed that he scanned the scenery looking for suitable print subjects and compositions. By visualizing the print onto the scene, he could minimize the number of changes – whether additions or subtractions – required for a successful image. Hasui understood the practical need of abridging what he saw, cutting items that felt wrong compositionally or thematically. Nonetheless, Hasui claimed to be unable to 'cheat' by adding things he did not see.

(Brown 2003: 32)

The idea that Hasui would not be able to ‘cheat’ by adding things he did not see is particularly interesting to the research of his print *Kiyomizu Temple* later on. According to Brown, Hasui did take liberties with the atmosphere in his paintings, though he was meticulous with the ground work of the subject he was painting.

## KIYOMIZU TEMPLE



**Figure 13.** Initial Scan: Hasui Kawase, *Kiyomizu Temple*.  
November 1933.

Vertical ôban; 38.8 x 26 cm (15 1/4 x 10 1/4 in.)

We first came upon Hasui's *Kiyomizu Temple* in the Spring of 2016 during Dr. Olson's *Astronomy in Art and Literature* course. For the end of the year project, the class was assigned to find a painting and attempt to pinpoint the time and date featured in the piece. My first instinct was to pick something from Japan, mostly because of my background – a year abroad in Tokyo and four years of having studied the language.

After searching the databases of art, I stumbled upon *Kiyomizu Temple*, intrigued by two lonely objects that looked like stars in the sky. The following section describes how I initially determined the date and time of the night sky in the painting.

It was pertinent to gather information on the temple after finding the painting. The information available to us at the beginning of the project was the name of the painting, *Kiyomizu Dera*, and the name of the artist, Hasui Kawase. Our second step was to determine the location of the subject. We found that the Kiyomizu temple is in Kyoto.

Kiyomizu temple is an independent Buddhist temple in eastern Kyoto. It is part of the Historic Monuments of Ancient Kyoto and is a World Heritage site. The temple was founded in the year 778 during the Heian period. The temple expanded in 1633 under the order of Tokugawa Iemitsu until it became a complex of 33 buildings. The subject that we are exploring will be the Main Hall, or rather, the 本堂, pronounced “Hon-dou”.



Now, we know the location of the painting - Kiyomizu Temple in Kyoto. The time though is a bit trickier - we don't know the exact time, or even the month in which this painting was created. Not right off the bat, anyway. However, upon further investigation, one will see Japanese characters written at the bottom of the painting. Luckily, I am fluent in Japanese.

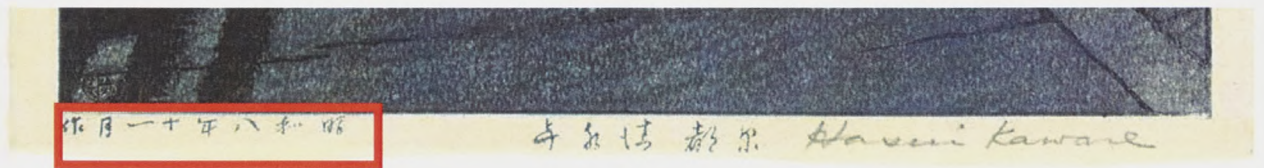


Figure 15. A close up of *Kiyomizu Temple*, showing the characters in the bottom left corner

The characters that are decipherable are as follows: 月十一- these characters, in romaji read as 'getsu juuichi', which in modern Japanese would be nonsensical, so with further research it was found that during this time period that the Japanese wrote their months in reverse order. English would be Month: 11. The other characters in the red box marked above state that the print was made in the 8<sup>th</sup> year of the emperor, equivalent to the year 1933. Now, with this information, we can attempt to identify the stars by using the computer program Voyager.

In Voyager, the location will be Kyoto, Japan, and the time will be November, 1933. We entered the exact latitude and longitude as 35 N, 135.45 E and began the search on November 1.

After logging the information in Voyager, we found that the bodies in the sky

were not stars, but they were in fact the planets Mars and Venus. My first attempt gave the tentative result of October 29<sup>th</sup> for the date that matched the painting. However, upon further inspection we found that the planets were in reversed positions. On October 29, 1933, two planets were in the sky, but the brighter planet Venus was above fainter Mars. We noticed in the print that the brighter celestial body was the lower object.

When the date was wound back just three weeks, the celestial bodies matched their counterparts in the print perfectly. Now that we had narrowed down the date to the beginning of October, we began to search for the precise date and time.

## TOPOGRAPHICAL ANALYSIS

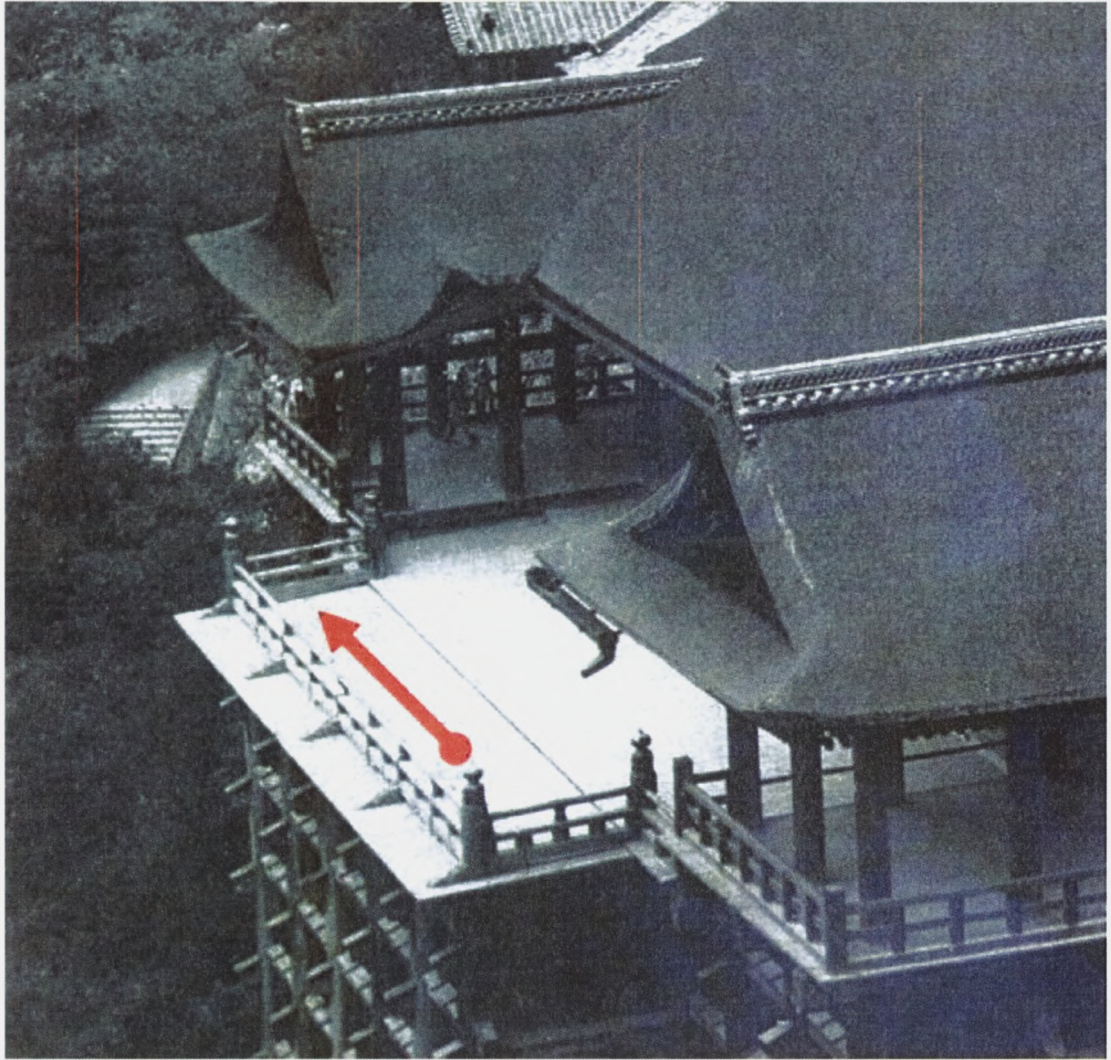
The Kiyomizu-dera temple complex is located in the hills east of the city of Kyoto. In the print showing the night sky above the Kiyomizu-dera, the lights of the city appear below. In the distance, the skyline of the print is formed by the range of hills to the west of Kyoto, including the hills known as Goryoeyama, Katagiharabonyama, and other hills near the Katsurasaka Park region.

Hasui was therefore generally facing toward the west, and the two bright objects must therefore be setting in the sky to the west of the artist.

However, the building known as Hon-Do, or main hall, which appears in the night sky print, is not oriented precisely to the west. That is, the railing on the terrace does not point precisely to the west. Using the Ruler tool in Google Earth determines the precise orientation.

Astronomers define azimuth numerically using  $0^\circ$  for true north,  $90^\circ$  for east,  $180^\circ$  for south, and  $270^\circ$  for west. A line drawn along the railing of the terrace depicted in the night sky print points to azimuth  $261^\circ$ , that is,  $9^\circ$  south of due west.

The photograph below shows part of the temple, the terrace, the railing of the terrace, and the direction of view of the artist.



**Figure 16.** The terrace of Kiyomizu Temple's main hall, the arrow showing Hasui's direction of view.

A careful inspection and perspective analysis of the print shows that the two bright objects in the sky appear slightly to the north of the line of the railing. The two bright objects stand above the hills in the western sky, not far from azimuth  $270^\circ$ , that is, due west.

## ASTRONOMICAL ANALYSIS

From the viewpoint of astronomy, the most intriguing feature of the night sky print is the pair of bright objects in the western sky.

Because the publication date of November 1933 appears in the margin, we first used the computer planetarium software Voyager to check the western skies above Kyoto in the middle of that month. We immediately noticed two bright objects, the planets Venus and Mars. At first glance, the computer screen appeared to resemble the print in a striking manner.

However, a closer look showed a difference. In the print, the lower object is much brighter than the upper object. Voyager showed that in mid-November 1933 brighter Venus stood higher in the sky than fainter Mars.

Of course, when Hasui created the print in November 1933, it is probable that he was relying on an earlier observation made at the Kyoto temple.

Venus and Mars move at different speeds in their orbits around the Sun, move at different rates relative to the background stars in the sky, and therefore change their relative position significantly in just a matter of weeks.

We then explored the changing appearance of the sky by using a time step of one day and checked the skies of early November and October.

In early October, the planets were both still prominent in the evening twilight sky, but they had reversed positions. In the first week of October 1933, Venus shone brilliantly below fainter Mars. Computer calculations for the first week of October 1933 show that Venus had a lower altitude and was also somewhat farther north than Mars.

That is, Venus appeared “down and to the right” of Mars, in a configuration very similar to that seen in Hasui’s night sky print.

## MOONLIGHT AND SHADOWS

We then noticed another astronomical clue in the print. The railing on the left side of the print casts dramatic shadows down onto the terrace. A solitary figure appears near the corner of the terrace. He leans on that part of the railing and gazes out at the city lights. A post to the right of the figure casts a shadow that angles to the right.



**Figure 17.** A close up of the print that demonstrates the direction and the length of the shadows cast by the moon



**Figure 18.** A photographic image of Kiyomizu from a historical Japanese postcard, used as a reference to determine the time and place in Hasui's rendition

The shadows demonstrate that a bright Moon is also in the sky. Using everyday language, the Moon must “behind and to the left” of the artist, that is, the moonlight is coming from behind the artist’s left shoulder.

To make this more precise we relied on a combination of Google Earth and Google Street View photographs. In order to produce the shadows as seen in the print, the Moon's azimuth had to be approximately  $118^{\circ} \pm 3^{\circ}$ . The Moon with this azimuth would have been in the southeastern sky, more precisely,  $29^{\circ}$  south of due east.

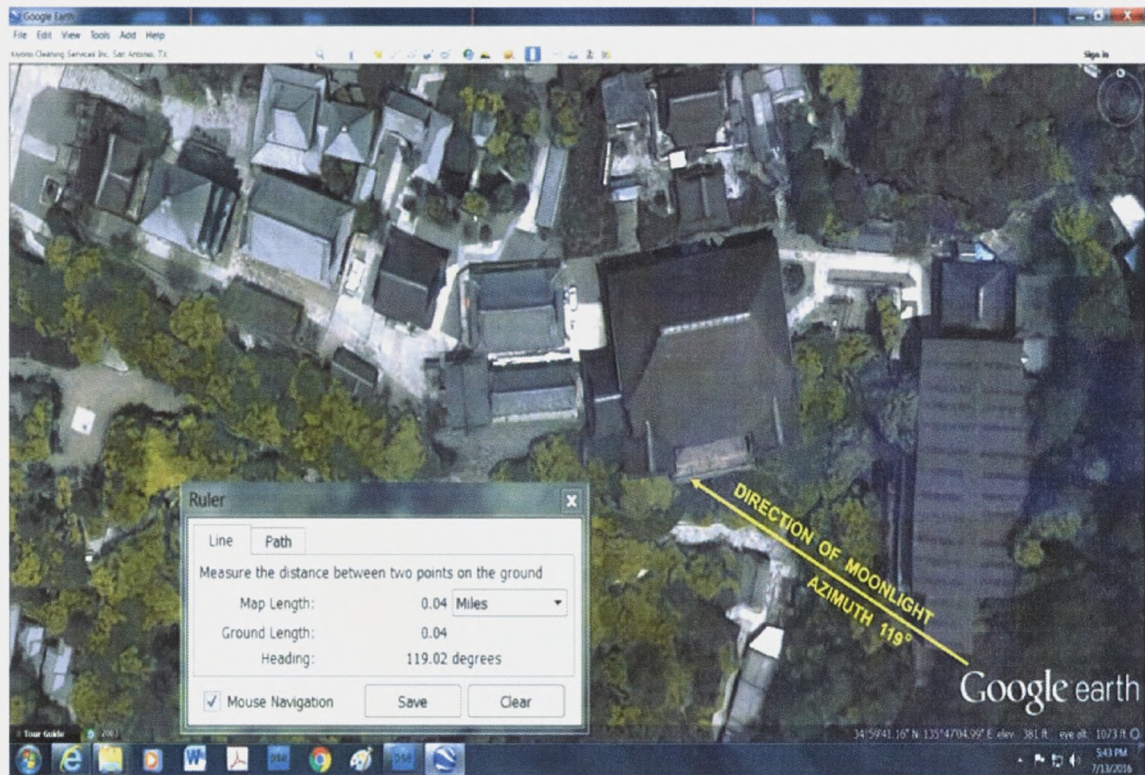


Figure 19. With the help of Google Earth, we were able to figure out the direction and azimuth of the moonlight cast in *Kiyomizu Temple*

We then used Voyager software to search for dates when the bright planets Venus and Mars would have appeared in the western sky during evening twilight and when a bright Moon would be in the correct position to throw the shadows as seen in the print. The results appear in the following table:

<b>Date</b>	<b>Time</b>	<b>Lunar Azimuth</b>	<b>Lunar Illuminated Fraction</b>
October 1, 1933	6:21 p.m.	118 °	94%
October 2, 1933	7:35 p.m.	118 °	98%
October 3, 1933	8:49 p.m.	118 °	100%

These times are expressed in the Japanese time zone, nine hours ahead of Greenwich Mean Time.

The precise moment of full Moon (100% lit) occurred on October 3, 1933 at 2:08 a.m. Japanese zone time.

## **METEOROLOGICAL ANALYSIS**

The astronomical analysis yielded a range of dates when the two bright planets, Venus and Mars, would appear in the western sky during evening twilight, and when dramatic shadows would be cast by a bright Moon, near the time of the full Moon.

We realized that weather information would provide an additional constraint on the possible dates.

NOAA's Data Rescue program has archived meteorological observations from locations worldwide, include detailed records from Osaka, Japan, not far from Kyoto.

The figures on the next three pages show the actual weather observations from October 1933.

# 大 阪 氣 象 月 報

第三十四年 第 十 號

昭 和 八 年 十 月

府 立 大 阪 測 候 所

---

## MONTHLY REPORT

OF THE

METEOROLOGICAL OBSERVATION IN OOSAKA

FOR

October 1933

---

PUBLISHED BY THE METEOROLOGICAL OBSERVATORY

OOSAKA

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1 9 3 4

Figure 20. Title page of the meteorological observations made at Osaka ("Oosaka") in October 1933, preserved by the NOAA Date Rescue program.

雨	●	Rain	露	△	Dew	月光環	∩	Lunar corona
雪	✕	Snow	凍露	⌒	Frozen dew	月暈	∪	Lunar halo
電雷	⚡	Thunder storm	結冰	⊏	Ice	暴風	⚡	Gale
雷聲	⌒	Thunder without lightning	霧冰	∨	Silver thaw	虹	∩	Rainbow
電光	<	Lightning without thunder	雨冰	~	Glazed frost	極光	⌒	Aurora
霰	△	Graupel	吹雪	⊕	Snow drift	烟霧	∞	Haze
雹	▲	Hail	細冰	←	Ice crystals	黃道光	λ	Zodiacal light
霧	≡	Mist, fog	積雪	⊞	Snow lying	海鳴	≡	Oceanic noise
凍雨	⊖	Frozen rain	地震	⊙	Earthquake	波狀雲	~	Undulated cloud
霜	□	Hoar frost	日光環	①	Solar corona	朝燒 夕燒	☾	Red sky
霜柱	⌒	Ice column in ground	日暈	⊕	Solar halo	視程	∪	Visibility(≥50K.M.)

Figure 21. Key to the symbols employed in the meteorological observations made at Osaka ("Oosaka") in October 1933.

Observation in Osaka

Oct. 1933

毎日の成績

Observations at Osaka

Table III

蒸發量 Am. of Evap. mm.	地 中 温 度 Earth Temperature (°C)					最低地温 Min. Temp. on grass (°C)	記 事 Remarks	日 Date
	地表 0.0m.	十厘 0.1m.	二十厘 0.2m.	三十厘 0.3m.	六十厘 0.6m.			
4.0	22.3	20.3	20.7	21.0	21.7	9.9	△ <sup>2</sup> a, ~6h, 7h, ⊕ <sup>8</sup> h15m—9h45m	1
4.7	23.8	21.3	21.3	21.4	21.7	12.1	∞ <sup>6</sup> h, 7h, ⊙ <sup>17</sup> h29m—17h40m, 17h52m—19h22m	2
5.8	21.8	20.4	20.9	21.2	21.7	9.2	△ <sup>1</sup> a, ⊕ <sup>18</sup> h16m—19h55m, 21h35m—22h23m	3
4.7	23.1	20.5	20.8	21.0	21.7	10.4	△ <sup>1</sup> a, ∞ <sup>7</sup> h ∞ <sup>18</sup> h	4
4.1	23.6	20.7	20.8	20.9	21.5	9.2	△ <sup>2</sup> a, ∞ <sup>6</sup> h, ⊕ <sup>6</sup> h48m—9h12m, 13h22m—14h45m	5
1.4	22.1	21.1	21.3	21.3	21.6	16.0	⊙ <sup>6</sup> h50m—15h27m, 20h50m—	6
0.8	22.0	21.4	21.1	21.4	21.5	18.1	⊙ <sup>7</sup> h—7h44m, 11h52m—18h20m	7
3.5	24.6	22.2	22.1	21.9	21.7	17.5	⊙ <sup>18</sup> h20m—22h50m	8
4.5	21.1	21.2	21.8	22.2	22.0	11.6	⊙ <sup>2</sup> h04m—4h40m, ⊙ <sup>5</sup> E13h—16h, ~18h	9
4.0	18.0	17.8	19.2	20.3	21.7	8.2	△ <sup>1</sup> a, ~6h, ⊙ <sup>5</sup> E13h—16h, S13h—16h, W13h—16h	10
3.7	18.0	17.3	18.3	19.2	20.7	8.0	—	11
3.4	20.1	18.3	18.6	19.2	20.3	12.1	△ <sup>1</sup> a, ~5h45m—8h15m, ~9h, ⊙ <sup>3</sup> h22h53m—23h25m	12
1.7	16.2	17.1	18.1	18.8	20.4	12.1	⊙ <sup>7</sup> h22m—21h47m	13
4.2	20.8	18.3	18.6	18.8	19.5	12.7	∞ <sup>6</sup> h ⊙ <sup>5</sup> E14h, 15h, ⊙ <sup>1</sup> p	14
1.2	16.8	17.1	17.9	18.5	19.8	9.3	⊙ <sup>1</sup> h12h17m—⊙ <sup>1</sup> h12h49m—⊙ <sup>1</sup> h20h44m—	15
3.6	17.0	16.7	17.3	17.6	18.6	13.3	⊙ <sup>1</sup> h—⊙ <sup>1</sup> h3h16m—⊙ <sup>1</sup> h6h45m—8h25m, 13h20m—13h52m, 21h04m—22h15m	16
4.8	19.3	17.3	17.6	17.9	18.8	11.4	⊙ <sup>1</sup> p	17
2.9	19.8	17.6	17.8	18.1	19.0	10.9	⊕ <sup>8</sup> h17m—10h55m, ~13h, ⊙ <sup>1</sup> h17h19m—20h19m	18
1.5	20.5	18.8	18.8	18.9	19.2	16.9	⊙ <sup>1</sup> h14h15m—⊙ <sup>1</sup> h22h56m—	19
5.5	21.0	19.7	19.1	19.1	19.0	16.0	⊙ <sup>1</sup> h—⊙ <sup>1</sup> h3h36m—⊙ <sup>1</sup> h6h37m—⊙ <sup>1</sup> h2h02m—9h46m, 16h50m—21h46m, 13h—16h	20
2.2	16.9	17.7	18.3	19.0	19.6	10.5	⊙ <sup>1</sup> h14h40m—15h50m	21
2.5	18.0	16.5	17.1	17.7	19.0	7.1	⊙ <sup>1</sup> a, ~7h30m—8h06m, ~10h	22
2.6	16.4	16.4	17.2	17.7	18.7	10.8	⊙ <sup>1</sup> a, ~7h40m—~7h50m—11h50h45m—19h54m—	23
4.1	15.8	15.5	16.1	17.2	18.5	9.0	—	24
3.8	15.1	14.7	15.5	16.3	17.9	1.0	⊙ <sup>1</sup> a4h—~5h	25
3.6	13.9	13.9	13.9	15.6	17.3	9.5	△ <sup>1</sup> a, p, ~13h13m—13h33m, ⊙ <sup>1</sup> p	26
3.0	14.3	13.9	14.6	15.2	16.9	9.8	△ <sup>1</sup> a, p, ~7h, ⊙ <sup>1</sup> h19h26m—19h41m	27
1.6	15.0	13.8	14.3	14.8	16.4	1.7	△ <sup>1</sup> a, ⊙ <sup>1</sup> a	28
0.8	15.6	14.8	15.0	15.3	16.4	8.8	△ <sup>1</sup> a, ⊙ <sup>1</sup> a, ⊙ <sup>1</sup> h11h21m—19h45m	29
2.9	14.6	14.8	15.2	15.6	16.5	6.2	⊙ <sup>1</sup> h02m—2h11m, ~7h25m—7h35m, ~10h, ~1p	30
3.7	15.1	13.7	14.3	15.2	16.3	4.1	△ <sup>1</sup> a, ~7h, ⊙ <sup>1</sup> p	31
100.8	18.8	17.8	18.2	18.2	19.5	10.2		Mean or Total

Figure 22. Detailed meteorological observations made at Osaka ("Oosaka") in October 1933. The column on the right is the day number of the month, and the symbols indicate the day's weather.

According to the weather observations, October 1, 1933, saw a mixture of clouds and Sun, with more than 4 hours of sunshine, making this date a possibility for Hasui's print.

The date of October 2, 1933, saw less cloudiness during the daytime and almost 10 hours of sunshine. However, this date appears to be ruled out, because of rain that prevailed from 5:29 p.m. to 5:40 p.m. and again from 5:52 p.m. to 7:22 p.m.

On October 3, 1933, had some clouds during the day by again almost 10 hours of sunshine. The Moon was definitely visible on this evening because the weather observer noted a lunar halo visible around the bright Moon from 6:16 p.m. to 7:55 p.m., and again from 9:35 p.m. to 10:23 p.m.

## CONCLUSIONS

The following conclusions are made based on the atmospheric conditions of the sky featured in the painting.

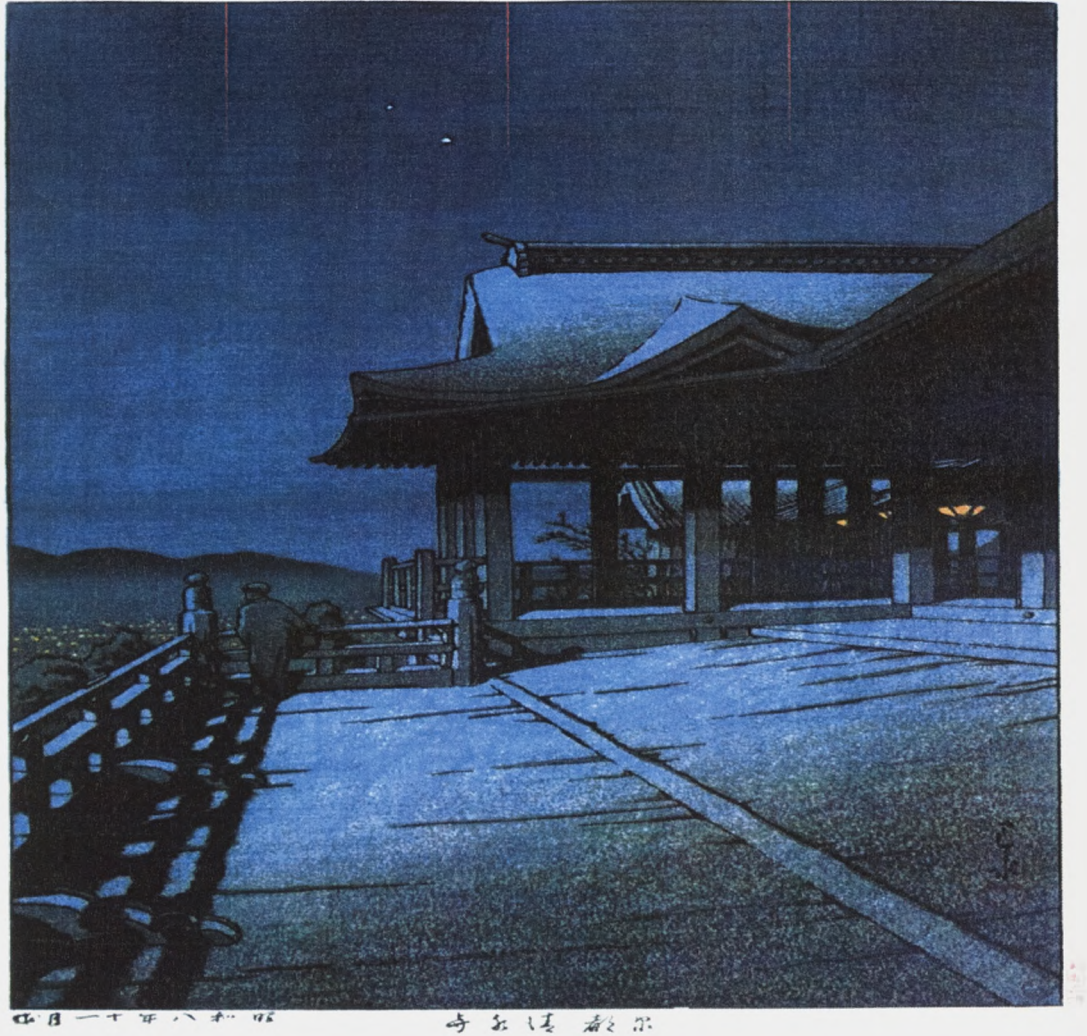


Figure 23. Detail from the *Kiyomizu Temple* print that emphasizes the two celestial bodies in the night sky

For an observer in Kyoto, October 1 and October 3 are the most likely dates when the actual sky matched the sky depicted in the *Kiyomizu Temple* print, according to astronomical and meteorological analysis.

If we assume Hasui observed everything in the painting at once, then the most likely time is October 1, 1933, at 6:21 p.m. in Kyoto, Japan.

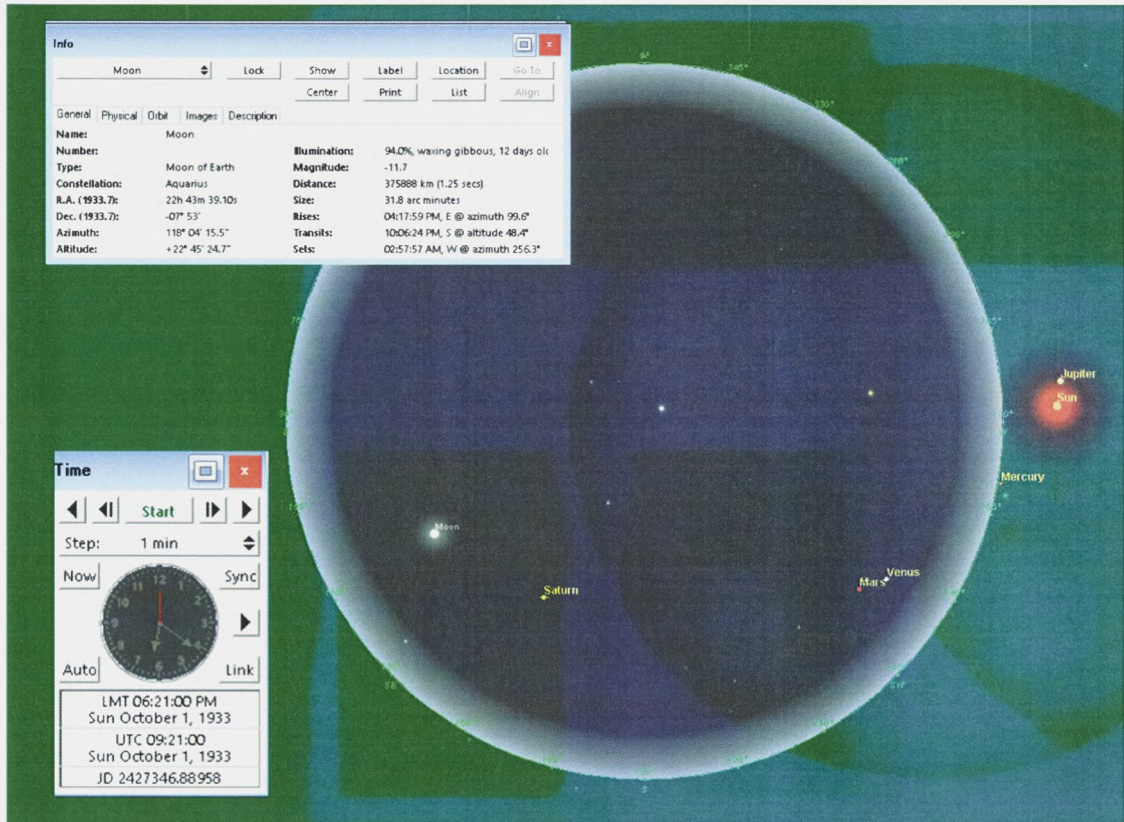


Figure 24. Voyager's calculation of the two celestial bodies – Venus and Mars – and their positions that closely match their *Kiyomizu Temple* counterparts

On October 3, 1933, for an observer in Kyoto, it was not possible to have both the planets and the Moon in the correct positions simultaneously. The print must be a combination of observations, with the planets seen in the evening twilight between about 6:15 p.m. and 7:15 p.m. The bright Moon would not rise into the correct position to cast the

shadows until 8:45 p.m., at which time the two planets were below the horizon. If Hasui made the observations on October 3, then the final print is a composite showing the planets during twilight and the moonlight later in the evening.

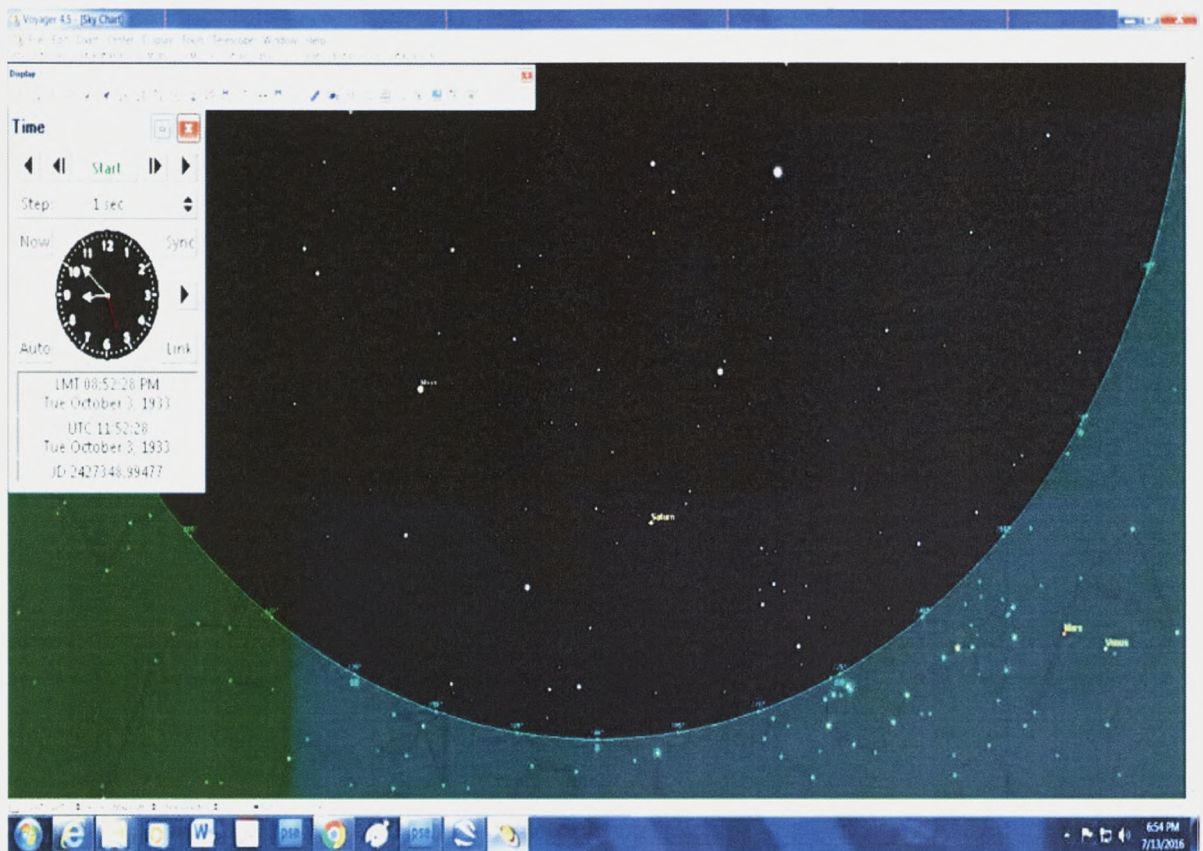


Figure 25. Voyager calculation of **October 3, 1933**.

## CONFLICTING INFORMATION

During this project we consulted Dr. Kendall H. Brown of California State University, Long Beach. Dr. Brown is a *shin-hanga* expert and author of *Kawase Hasui* (2003). According to Dr. Brown, the entries in Hasui's out-of-print diaries show that Hasui visited Kiyomizu Temple only on February 12, 1933. Hasui's working method was to sketch the physical place (architecture, rivers, mountains) very meticulously and then create the design for the print. Often, the artist added or changed the appearance of the sky to turn it into a night scene, a rain scene, a snow scene, etc. The consensus is that Hasui may not have sketched at night, or in heavy rain and snow. In fact, in some cases multiple versions of the same design exist, with changes in the time of day or weather. Thus, the Kiyomizu temple print, produced in November 1933, might include a sky from another time. According to Dr. Brown, his diary travels have him in the Kansai (Kyoto-Osaka-Nara) region in February 1933, but they do not show him in the Kyoto area in October 1933. The diaries do not list any travel for that time, and it is clear that he was home in Tokyo working on the proofs of the prints that were being released that fall, including the Kiyomizu Temple moonlight print which the artist lists as November 15th.

## CONCLUSIONS

Combining both scientific analysis and the expertise of Dr. Brown, the most likely conclusion regarding the painting in its entirety follows. Hasui sketched a detailed drawing of Kiyomizu Temple on February 12, 1933. The memorable grouping of planets in the western sky, with fainter Mars above and brilliant Venus lower down, occurred during the first week of October 1933. When Hasui created the finished print on November 15, 1933, he combined the February sketch of the temple with the sky that he had observed from Tokyo in early October.

## REFERENCES

Brown, Kendall H. (2003) *Kawase Hasui : the complete woodblock prints*,  
Amsterdam: Hotei Publishing.