They Came Together

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July 1, 2015

I will love the light for it shows me the way.
Yet I will endure the darkness for it shows me the stars

~Og Mandino

Last night, 2015 June 30, it happened—Venus and Jupiter finally came together! Did you see this stunning sight? The separation of these two planets was only two-thirds of a Moon diameter or 20 arc minutes.

(If you did not see this event, don't despair. It will happen again. See end of article.)

I set up a telescope in my back yard in early afternoon. At 7:30 p.m. EDT, the sky was mostly clear except unfortunately for a strong white haze over the western horizon.

Still by eight o'clock, 35 minutes before sunset, I could see Venus both with binoculars and with my naked eye. In the telescope eyepiece crescent Venus blazed at magnitude -4.7 though Jupiter was still a faint smudge being about thirteen times fainter. My wife, Marian, came out, and as the sky darkened, we both enjoyed the view. It is not often that one can see two planets in the same eyepiece field!

Ten minutes after sunset I took a quick trial photo through my scope. Next I attempted to refine the focus, difficult due to poor seeing. But then, at "light speed," a massive dark cloud bank moved in from the west. This curtailed the view and any further attempts at photography. Shortly after, dark clouds covered most of the sky.

Larry Friedberg arrived. I said you missed the "grand show." Looks like it might be all over, I remarked. The wind picked up. A few raindrops fell as I prepared to cover my instruments with garbage bags! Should we pack up asked my wife? I replied that we should be patient.

A small patch of clear sky finally appeared in the northwest. We waited and patience prevailed. By 9:10 p.m. Venus reappeared. I again tried to refocus the scope but the seeing had worsened, some of the poorest I had ever encountered. Jupiter's image bounced around, the disk boiled, swelled and contracted. Cloud belts could not be seen. I quickly did the best focus I could and hastily took some images fearing clouds would return.

The time was now 9:25 p.m. and twilight colors had almost disappeared. Nevertheless, I began taking some pictures with my tripod-mounted camera with the lens set at 70 mm focal length to show the sky and the surrounding landscape. By ten o'clock I decided to

attach a 100-400 mm lens to the camera and took some photos at its longest focal length.

Much of the sky remained very murky including clouds to the west but the low western sky stayed mostly clear of this cloud bank. Later the entire sky became very hazy with only the waxing gibbous moon shining through.

So, we were mostly lucky and saw this beautiful sky show. I only hoped some of my photos would help reveal the good fortune we had despite incredibly bad seeing and passing clouds.

The next morning, after laboriously fooling with the images to overcome poor seeing and hastily taken photos, I finally had some pictures to share. (Note all three images trimmed from original and post processed):

Photo No. 1: The overall scene with telescope in foreground. An inset show Venus and Jupiter taken with through the 400 mm telephoto. Jupiter's four satellites are easily seen in the inset. (See description below for satellite identification.) The brightest star in upper left is Regulus in the constellation of Leo.

Photo 1 Link: http://goo.gl/bw1BvN

Photo No. 2: A composite image of three photos made with a 127 mm, f/5.2 telescope showing Venus, Jupiter and its four satellites. (I had to make three different exposures for Venus, Jupiter's disk and its satellites.) A 4x amplifier increased the telescope's focal length four times. Images are less than ideal due to extremely bad seeing. (Notice the jagged edge of crescent Venus, 34 percent illuminated.)

To the left of Jupiter is Ganymede, probably optically distorted since the satellite was near the edge of the telescope's field of view. To the right of Jupiter is Io, then Europa, almost blending. At the extreme right is Callisto. Despite extraordinarily bad seeing, post-processing reveals some cloud belts including the Great Red Spot. The satellites and Red Spot are best seen in an enlarged view (Photo No. 3).

Photo 2 Link: http://goo.gl/fDPlm2

Photo No. 3: An enlargement of Jupiter's image from Photo No. 2. The Great Red Spot appears at the seven o'clock position. Io and Europa almost blend (lower right) whereas Ganymede (upper left) suffers from optical distortions. Callisto is at extreme lower right. Turbulent air caused exceptionally bad seeing.

Photo 3 Link: http://goo.gl/1OjJrk

Future Jupiter Pairings. Venus and Jupiter come together about once every thirteen months. However, some gatherings are much more spectacular than others. The 2015 June 30 event, though not as close as some future pairings, was extremely well placed in North Florida evening skies. Below are four examples, separations in arc minutes (′):

2015 June 30:	Evening,	20′	(26° high, 30 minutes after sunset)
2015 October 25:	Morning,	66′	(39° high, 30 minutes before sunrise)

2016 August 27: Evening, 6' (very low, 7° high, 30 minutes after sunset)
2017 November 13: Morning, 18' (very low, 7° high, 30 minutes before sunrise)

The Venus-Jupiter pairing of June 30 had no astronomical significance apart from its beauty though astrologers may hype this event! This close encounter did not affect the Earth or its inhabitants in any way. Still, would it not be fitting to believe if heavenly bodies can come together, why cannot humans? ¤