

2012: A great year for amateur astronomy!

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All joking aside about the end of the world in December, 2012 promises to be a great year for amateur astronomy. It features numerous celestial scenes worthy of viewing: lunar occultations, planetary encounters, comets, asteroids, planetary satellites, planetary visits to deep sky objects, and the last Venus transit of the twenty-first century. Get your clean, crisp new calendars ready for marking!

1. Comet Levy P(2006 T1) and Garrad P(2009 P1)

We haven't had a grand comet in a number of years and it doesn't look like 2012 will be different. However, binoculars users may be able to catch two seventh — perhaps sixth — magnitude cometary visitors in the first part of 2012.

Early evenings in January bring us Comet Levy, a seventh magnitude fuzzy ball scooting from Aries into Eridanus. On the 15th, it lies 6° west of Jupiter. The best times to view it will be from January 15 through 25 when there is no moonlight washing out the sky. Does your telescope view reveal a wispy tail?

From late February through March, Comet Garrad graces our skies. The big question is how bright it will become. Some accounts indicate 7th magnitude, other claim almost naked eye visibility. Garrad will be located in Hercules in January, then swing near the Little Dipper in mid February, and pass west of the Big Dipper in March and April.

2. Venus and Uranus.

On February 9 at 7 p.m., Uranus lies 19 minutes east of brilliant Venus. Can you spot the 5.9 magnitude planet amid the glare of Venus? Use moderate magnification (around 100x) or greater to see the round disk of Uranus and the gibbous disk of Venus.

3. Can you spot Phobos and Deimos?

From February 12 through March 25, when Mars is at its closest and brightest, its two small, dim moons, Phobos and Deimos, are also at their brightest. To increase your chance of seeing them, Mars should be at least 25° above the horizon and there should be no moonlight interfering. In February, this corresponds to observing at 10 p.m. EST from the 12th to the 25th. In March this corresponds to observing at 11 p.m. EDT from the 10th through the 25th. Mars will span about 14 arc seconds and the magnitudes of Deimos and Phobos are 13.2 and 12.2, respectively. Phobos is situated to either side of the planet by less than the planet's diameter. Deimos, although a magnitude dimmer, is

situated from the planet by 2.5 times Mars' diameter, possibly putting it far enough outside the planet's glare to spot the little satellite.

Place Mars near the edge of the field and focus on it. Then, move the planet just outside of the field. If luck is with you, you'll be able to spot the moons just inside the field of view and just outside of the planet's glare.

Deimos:

Date	Separation from Mars	Side away from Mars
2/13	30 seconds	west
2/15	32	east
2/16	30	east
2/18	38	west
2/20	37	east
2/23	38	west
2/25	40	east
...		
3/13	40	west
3/15	33	east
3/18	39	west
3/20	36	east
3/23	36	west
3/25	38	east

Phobos

2/13	11	west
2/14	11	west
2/17	11	west
2/20	11	west
2/21	11	west
2/24	11	east
...		
3/10	11	east
3/14	11	west
3/17	11	east
3/21	11	west
3/25	10	east

The dates when both moons should be most easily visible are February 20 and March 25.

4. Lunar occultation of Zeta Tauri

For very early morning observers on March 2, the 2.96 magnitude star Zeta Tauri can be seen being occulted by the waxing gibbous moon. Begin watching at 1:40 a.m. before the star suddenly disappears behind the moon's dark southern edge about 1:49. It reappears next to the brightly lit lunar surface around 1:55 a.m. making it more difficult to see than the disappearance.

5. The bright and the dim

Mars slides into the same field of view as the galaxies M95 and M96 on March 16 and 17. How difficult will it be to spot both the bright planet and the two very dim galaxies at the same time? M95 and M96 will be giants compared to tiny Mars, but their low surface brightness may make their identification difficult.

6. Venus Transit

The transit begins on June 5 just after 6 p.m. and continues well after sunset. Let's hope for clear skies with no late afternoon or early evening storms!

7. Vesta passes Aldebaran

Asteroids are interesting to observe because they creep across the sky, showing discernible movement in just two or three hours time. Vesta passes Aldebaran on the morning of August 6. Look at Aldebaran at 4:00 a.m. when it rises above the atmospheric goop, for the 7.5 magnitude Vesta sitting thirteen arc minutes to the left of the star. The next morning, the asteroid will have moved eastward by a few minutes.

8. The moon points to Venus in the daytime.

At 4 p.m. on August 13, the pale crescent moon lies next to Venus low in the west. Binoculars should help in finding this pair. Venus is about two-thirds of the moon's apparent diameter to its upper left. The planet shouldn't appear nearly as washed out as the moon because its surface brightness is much greater. The moon occults Venus at 4:43 when they are less than 7° above the horizon.

9. Ceres grazes southern lunar rim.

The largest asteroid, Ceres, can be easily found on September 9 around 3:30 a.m. For observer's north of a line extending from just north of Winston-Salem, NC to just north of Richmond, VA, and continuing to the northeast, the moon's southern edge barely

occults it. Begin observing at 3:40. Sometime in the next ten minutes, the moon blocks the 7.7 magnitude Ceres. Does Ceres wink out suddenly as the dark lunar rim covers it, or does it disappear gradually, taking many seconds to do so?

Project: If simultaneous observations are coordinated by two observers who are located near the same longitude and who are separated by a north-south distance of a couple of hundred miles, then the distance to the moon can be calculated using simple trigonometry.

10. Ceres passes Eta Gemini

Ceres can be found again, this time when it moves past the 3.3 magnitude star Eta Geminorum. On November 4 at 10 p.m., aim your scope at Eta. Ceres twinkles a minimum of three arc minutes to the star's east. As the hours pass, the little worldlet creeps to the northwest. If a medium magnification eyepiece is used, after two or three hours a slight change in position with respect to the star should be noticed.