



The Observer

August 2013 (#33)

Schedule of public programs on last page!

COMET ISON: COMING IN FALL 2013

At this point you might have heard about comet ISON. The name ISON stands for “International Scientific Optical Network”, a network of observatories in various countries that perform coordinated monitoring programs for the solution of scientific and applied problems (space debris, asteroids, gamma-ray bursts).

Russian astronomers Vitali Nevski and Artyom Novichonok found the comet in September of 2012. The hubbub about ISON is that it is a large, “sun-grazing” comet which has the *potential* to be quite spectacular. The emphasis here is on the word “potential”. Comets are sort of like the weather in that they are hard to predict. A comet is a “dirty snowball” or “orbiting iceberg” in space — an accumulation of rocky and icy

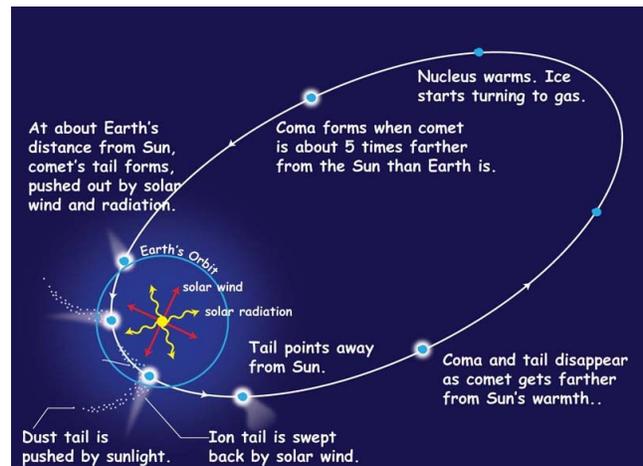


Diagram from NASA.gov showing the elliptical orbit of a comet compared to the more circular orbit of Earth.



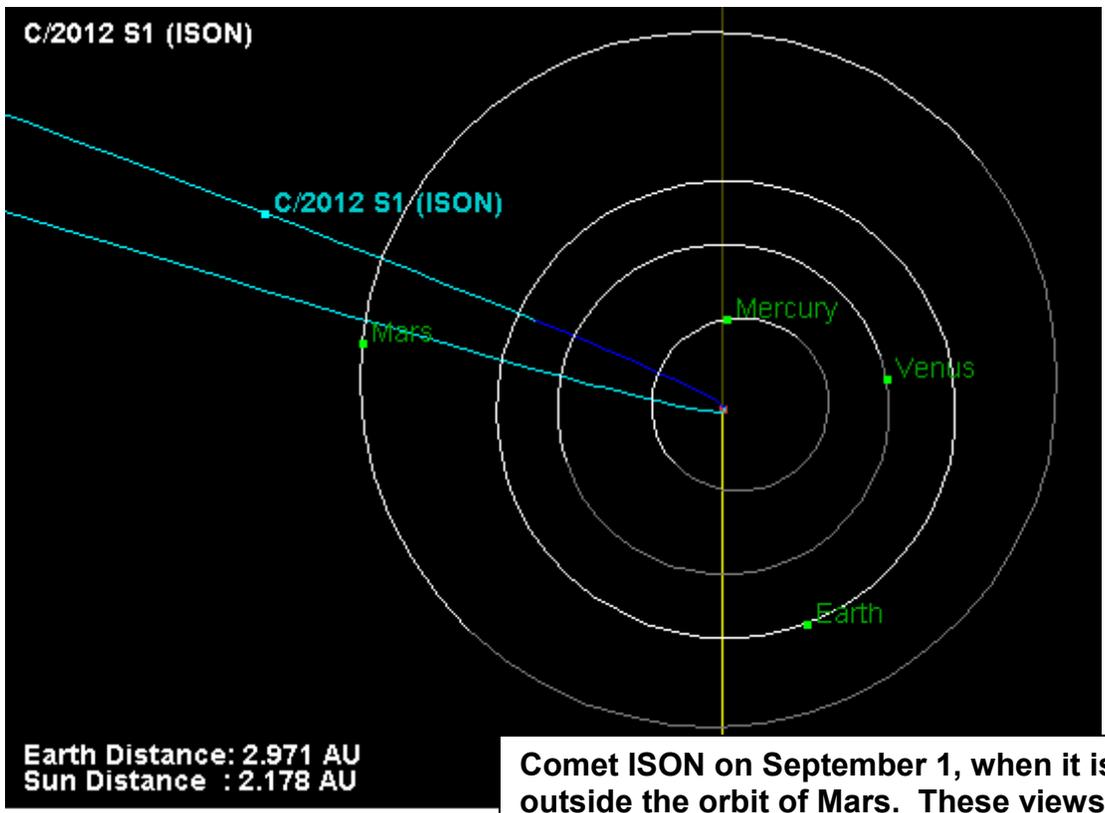
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material that measures a few miles across. Usually a comet is in a highly “elliptical” orbit which brings it close to the Sun for a brief period of time. As the comet approaches the Sun, the icy materials begin to evaporate out of it, forming its spectacular tail. The tail does not trail behind the comet, but rather points away from the Sun, as radiation from the Sun drives the evaporated material away from the Sun. The question with ISON is what will happen as it passes close to the Sun. Will it produce a spectacular tail? Will it break up? Will it be completely disrupted and dissipated in the encounter with the Sun, so that it “fizzles” and produces nothing spectacular to look at? We will find out.

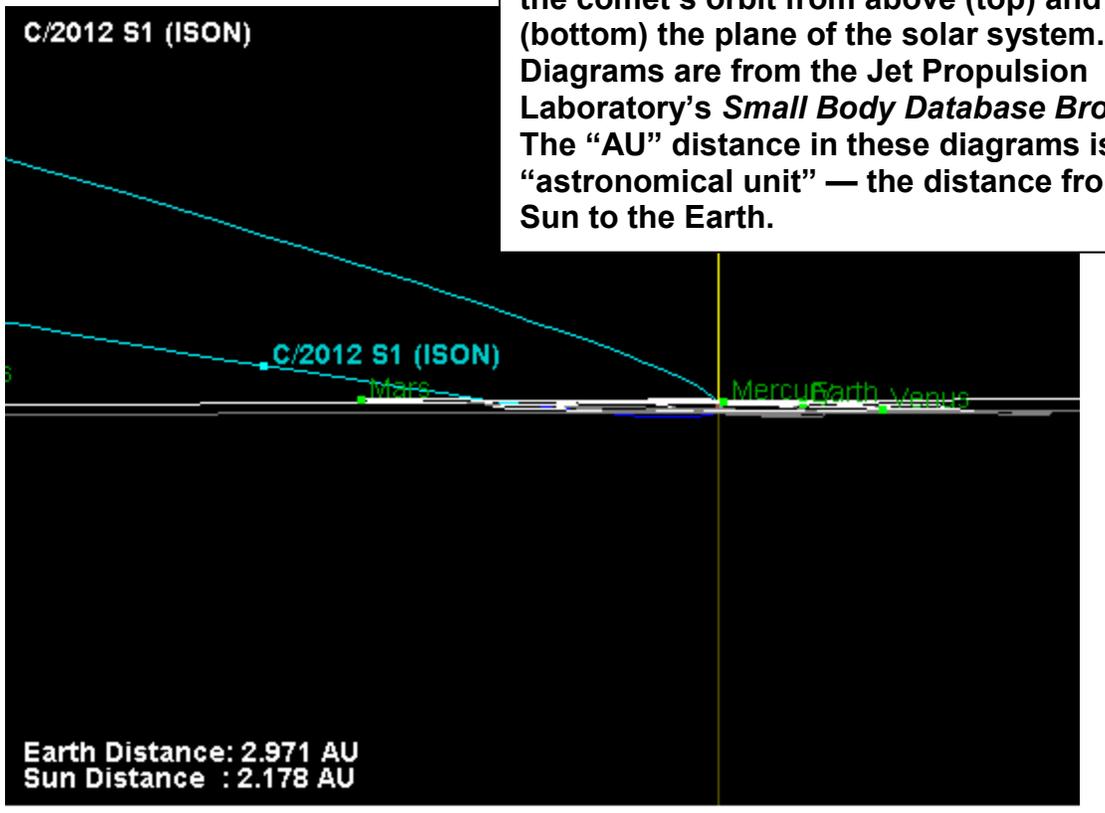


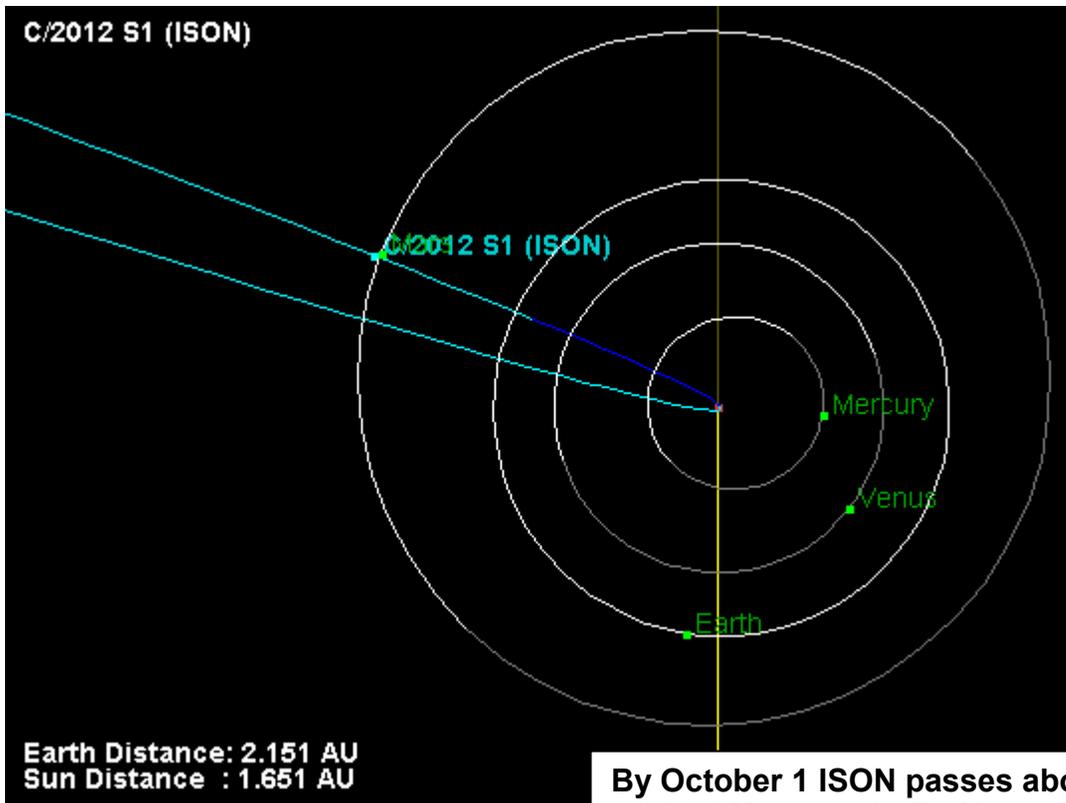
The nucleus of Comet Halley, with material evaporating from it, as by the European Space Agency's Halley Multicolour Camera on its Giotto spacecraft.

Now, assuming ISON does produce something to look at, when and where will it be visible? It will begin to be visible in late August, as it emerges from behind the Sun. At that point it will still be outside of the orbit of Mars, on its way in to its rendezvous with the Sun. However, if you have a telescope and you know where to look, you could see it. It will not be spectacular at this point. But as the fall progresses ISON will draw closer to the Sun, and will become brighter. If it is going to put on a show, the best time will be in December before Sunrise. One neat thing about ISON is that it will pass right above Earth's North Pole at one point, which means the comet will be visible all night long, although by then it may have grown fairly dim.

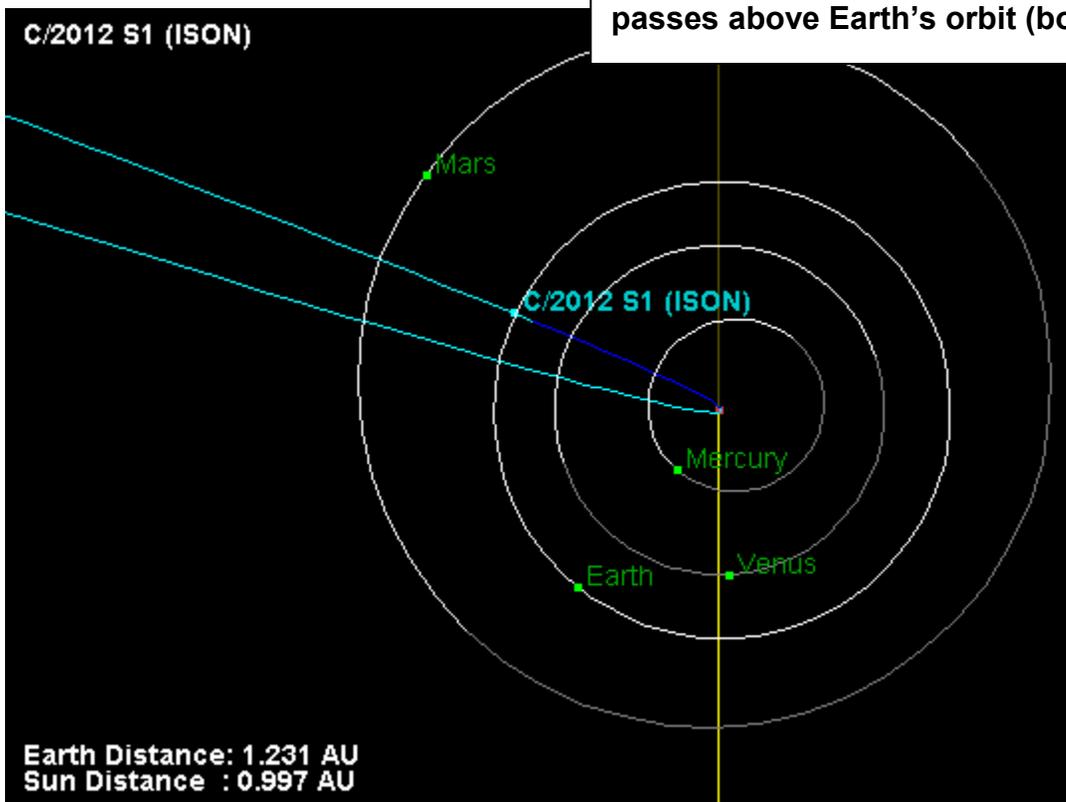


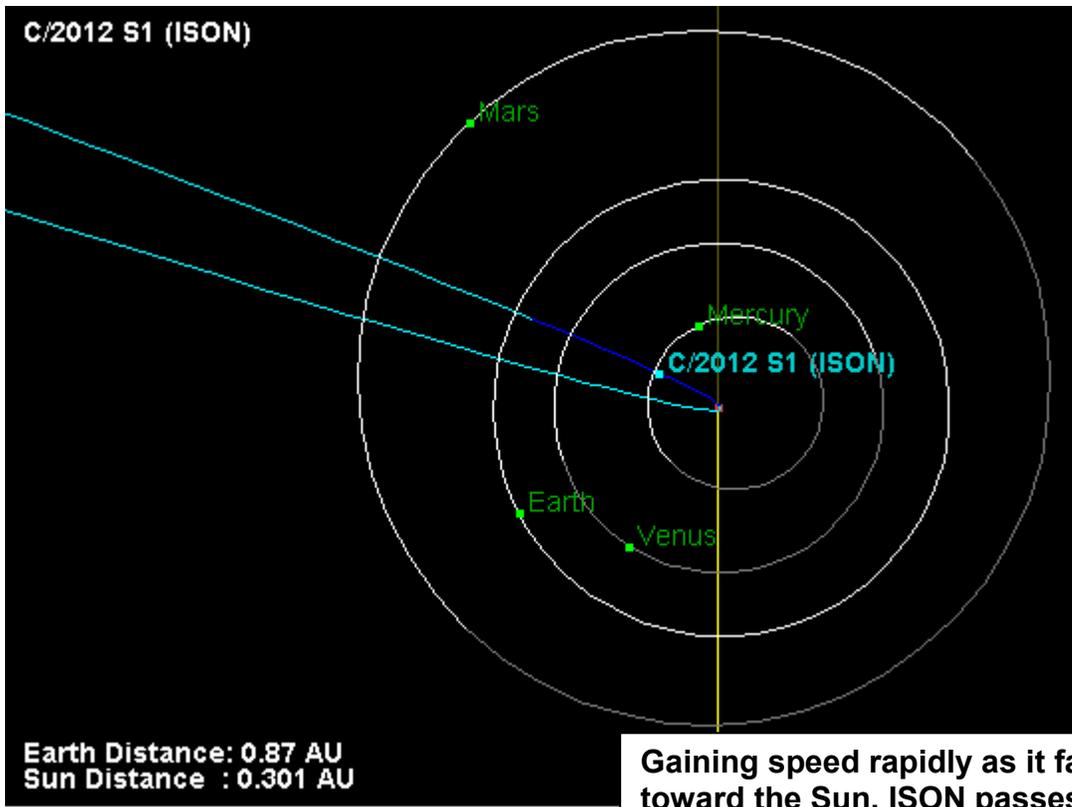
Comet ISON on September 1, when it is still outside the orbit of Mars. These views show the comet's orbit from above (top) and within (bottom) the plane of the solar system. Diagrams are from the Jet Propulsion Laboratory's *Small Body Database Browser*. The "AU" distance in these diagrams is an "astronomical unit" — the distance from the Sun to the Earth.



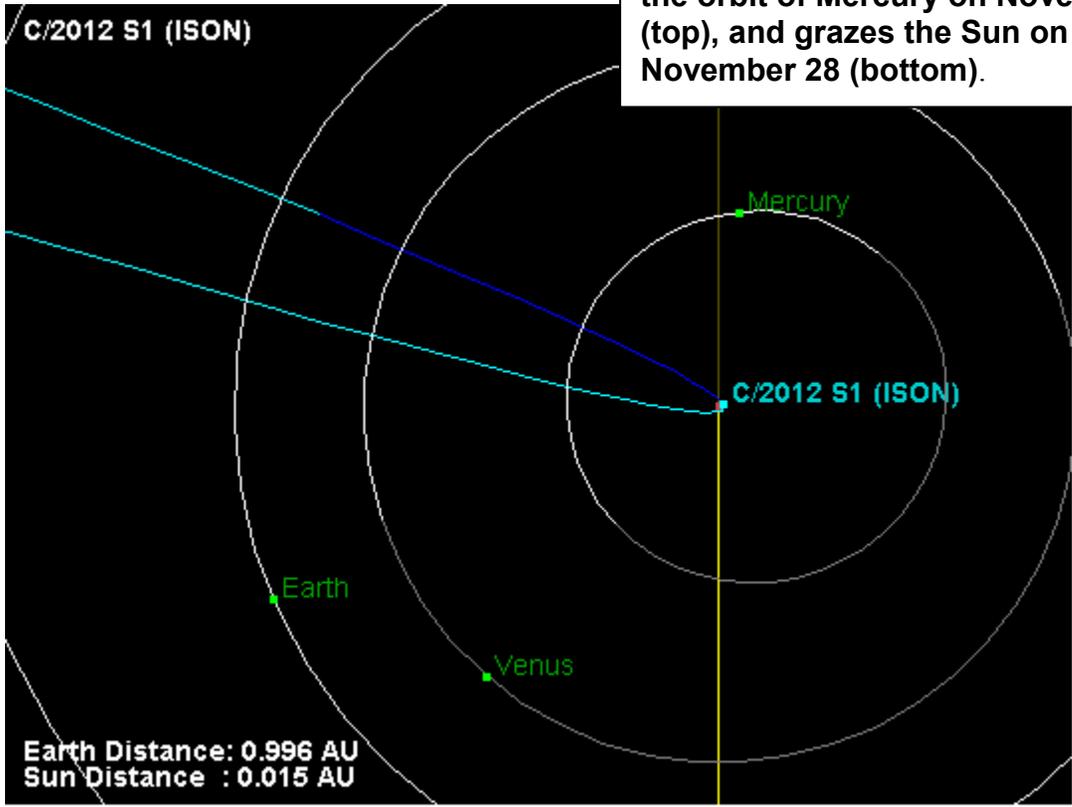


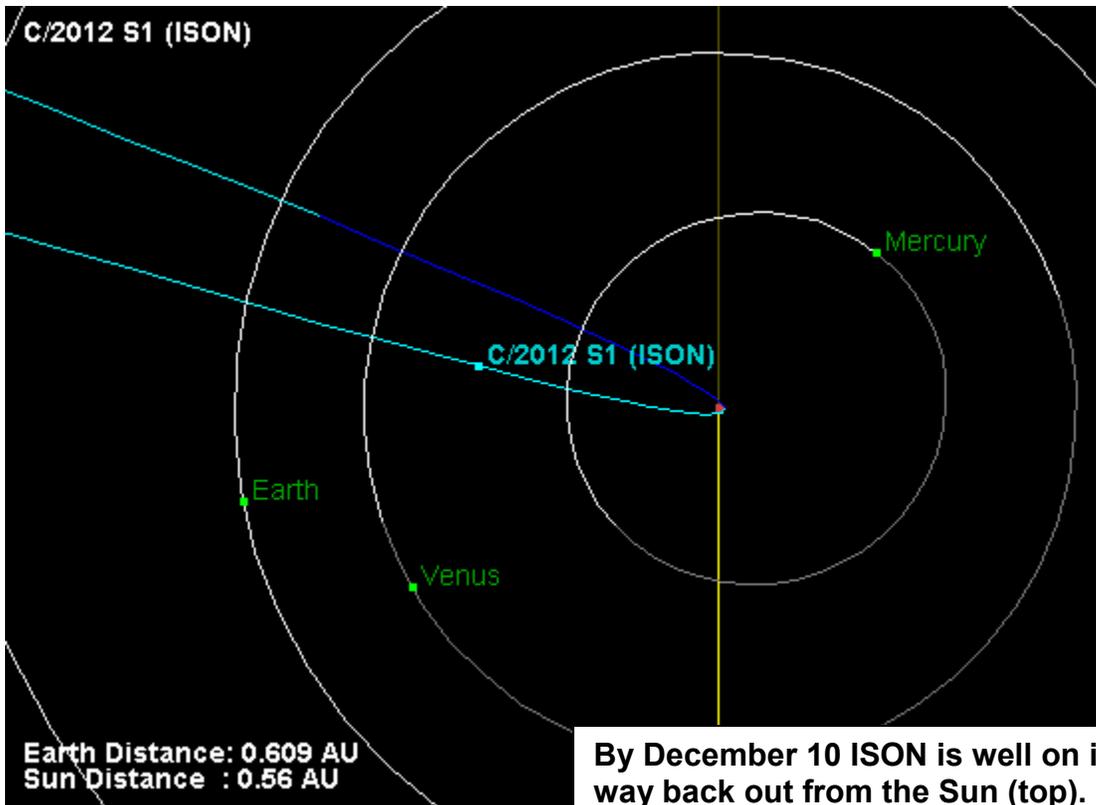
By October 1 ISON passes above the orbit of Mars (top). By November 1 it passes above Earth's orbit (bottom).



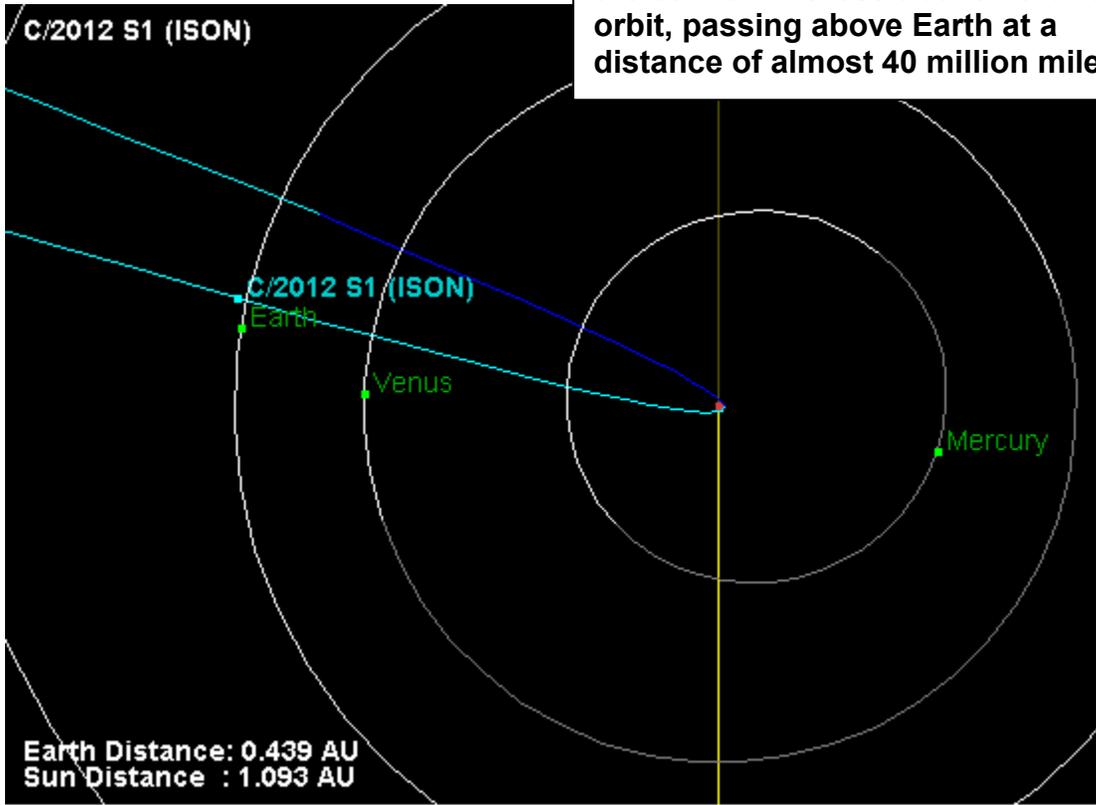


Gaining speed rapidly as it falls toward the Sun, ISON passes below the orbit of Mercury on November 24 (top), and grazes the Sun on November 28 (bottom).





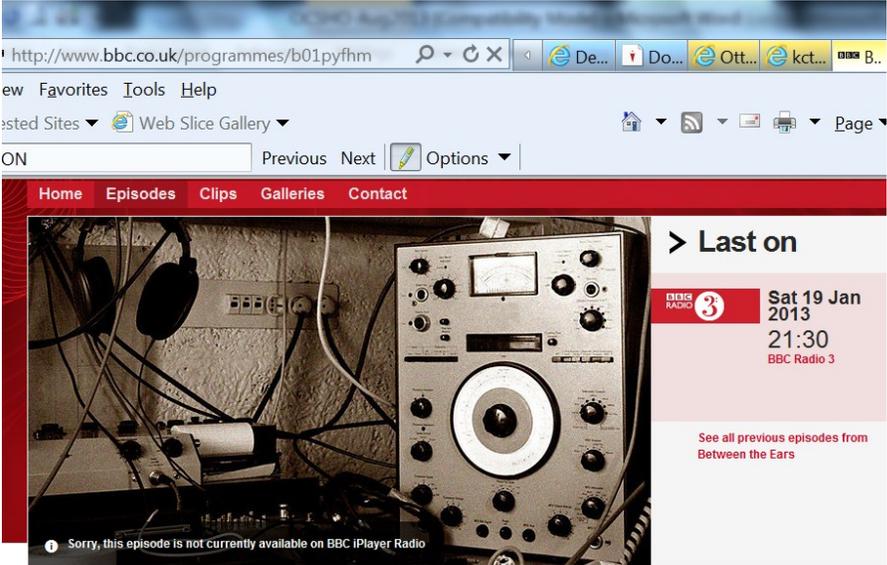
By December 10 ISON is well on its way back out from the Sun (top). By the 30th it will cross above Earth's orbit, passing above Earth at a distance of almost 40 million miles.



LOUISVILLE MOON MEN ON THE BBC

If you have been receiving this newsletter a while, you may recall the December 2009 issue (#22), which included a story about two Louisvillians, Larry Baysinger and Glenn Rutherford, who used a home-built antenna to listen to Apollo 11 astronauts on the Moon in 1969. Well, earlier this year Chris Graney, of Otter Creek-South Harrison observatory, received a call from the BBC Radio 3 (that's the British Broadcasting Company, not the Bluegrass Brewing Company!), asking about how to contact these gentlemen so they could interview them. Contacts were made, and the interview took place, and was featured on the BBC Radio 3 program "Between the Ears" on January 19. You can hear an excerpt of that program on the observatory web page. Go to www.jefferson.kctcs.edu/observatory/Apollo11 and scroll toward the bottom for a link. It's a great interview, and worth your while to listen to it!

At this point this newsletter is going to engage in some grouching. This is the second time in the past few years that observatory personnel have been contacted, out of the blue, by people from across the Atlantic asking to interview Louisvillians about their interesting scientific activities. How the BCC learned of the Baysinger story is not clear. Meanwhile, local media, who have been told about the Baysinger story (by Otter Creek-South



The screenshot shows a web browser window displaying the BBC website. The address bar shows the URL: <http://www.bbc.co.uk/programmes/b01pyfhm>. The page has a red navigation bar with links for Home, Episodes, Clips, Galleries, and Contact. Below the navigation bar is a large image of a vintage-style radio receiver with various knobs and a speaker. To the right of the image is a 'Last on' section for BBC Radio 3, dated Sat 19 Jan 2013 at 21:30. Below the image, there is a message: 'Sorry, this episode is not currently available on BBC iPlayer Radio'. The main content area is titled 'Space Ham' and contains several paragraphs of text about amateur radio and space exploration. An orange arrow points to the text: 'Radio brought us Neil Armstrong's first transmission from the Moon and afforded ham operator, Larry Baysinger, the chance to intercept the radio transmissions between the astronauts. His recordings include the moment President Nixon transmitted his message of congratulations to them.'

Space Ham

Sound artist Caroline Devine sends *Between the Ears* into orbit in this celebration of amateur radio and space exploration

Since the dawn of the Space Age, amateur "ham" radio has eavesdropped on our exploration of the cosmos. From Sputnik to the International Space Station, radio enthusiasts with homemade kit have been able to tune into the distant sounds of space and talk to those exploring it. Caroline Devine, found space-sound artist, creates a composition from the ethereal sounds of space and the space hams and sends *Between the Ears* into orbit.

Owen K. Garriott reveals why he was the first astronaut to take amateur radio into space, opening up, for the very first time, the channels of communication with ordinary people back on Earth, a tradition still maintained on the International Space Station to this day.

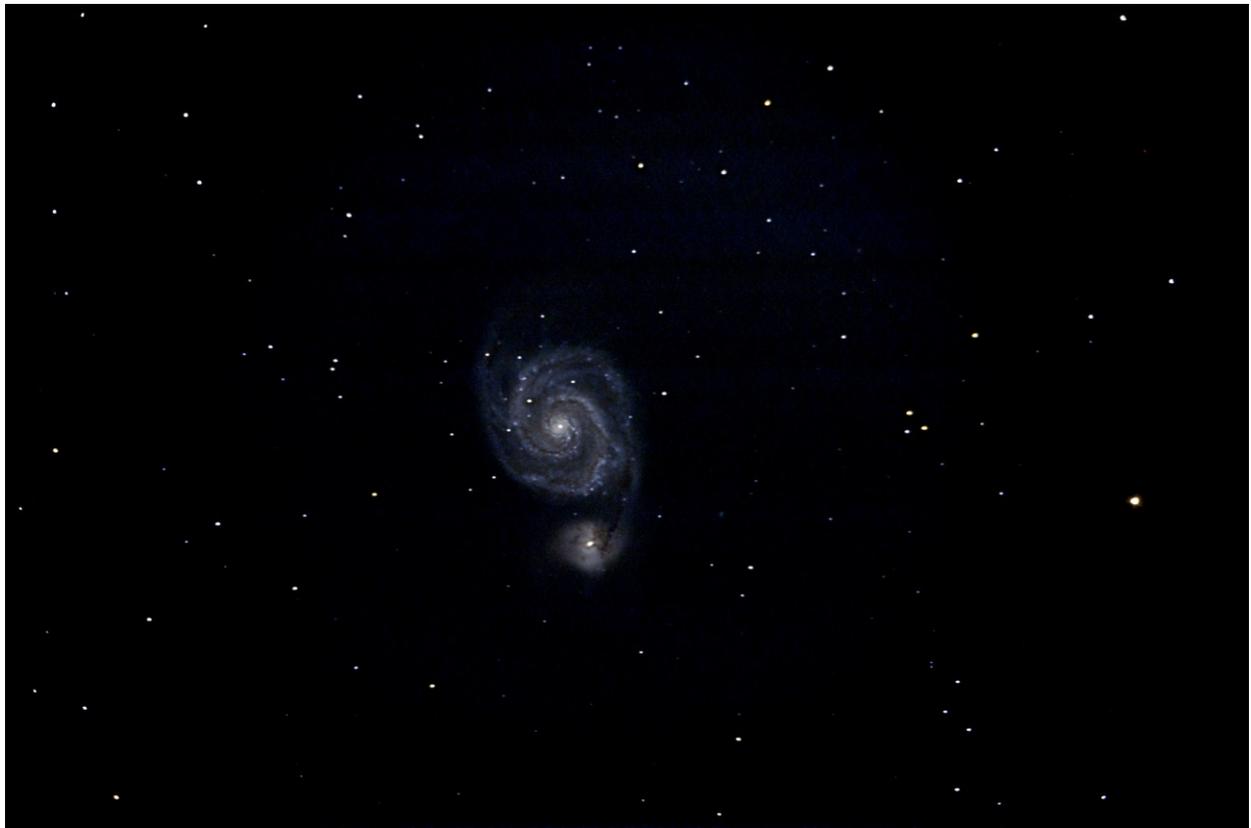
And we hear newly released archive of US radio ham Roy Welch, who immediately after Sputnik's launch rigged up a makeshift station, looking up to the night sky as the satellite's eerie beat found voice in his ramshackle equipment.

Radio brought us Neil Armstrong's first transmission from the Moon and afforded ham operator, Larry Baysinger, the chance to intercept the radio transmissions between the astronauts. His recordings include the moment President Nixon transmitted his message of congratulations to them.

Harrison Observatory) have taken no interest in it. British media find science in Louisville so interesting they seek it out. Local media find science in Louisville so disinteresting that they ignore it.

GALAXY IMAGE BY HENRY SIPES

Henry Sipes of Otter Creek-South Harrison Observatory has been working on refurbishing an old telescope from the Otter Creek Park observatory — a 10-inch Meade Schmidt-Cassegrain telescope, or SCT. The 10-inch Meade SCT is over 20 years old but Henry has it working. This is an image of the “Whirlpool” galaxy in Ursa Major, the Great Bear (the same constellation that contains the “Big Dipper”). Henry reports that he is having some trouble with keeping the telescope on track, so the star images are a little smeared.





Jefferson



Community & Technical College

HIGHER EDUCATION BEGINS HERE

2013 Schedule

South Harrison Park Observatory Events

Nighttime Programs

Jan 19	6:30pm to 8:30pm
Feb 16	7:00pm to 9:00pm
Mar 16	8:30pm to 10:30pm
JPL NASA Event – Juno	
April 13	9:00pm to 11:00pm
May 11	9:30pm to 11:30pm
June 15	9:30pm to 11:30pm
JPL NASA Event – Cassini	
July 13	9:30pm to 11:30 pm
Aug 10	9:30pm to 11:30pm
Sep 7	8:30pm to 10:30pm
Oct 12	8:00pm to 10:00pm
JPL NASA Event - InOMN	
Nov 9	7:30pm to 9:30pm
Dec7	6:30pm to 8:30pm

Daytime Programs:

Feb 2	11:00am to 1:00 pm
JPL NASA Event – Space Place	
Mar 2	11:00am to 1:00pm
Mar 30	11:00am to 1:00pm
April 27	11:00am to 1:00pm
June 1	11:00am to 1:00pm
June 29	11:00am to 1:00pm
July 27	11:00am to 1:00pm
Aug 24	11:00am to 1:00pm
JPL NASA Event – Solar Dynamics Obs	
Sept 21	11:00am to 1:00pm
Oct 26	11:00am to 1:00pm
Nov 23	11:00am to 1:00pm

All programs at South Harrison Park Observatory are open rain or shine.

Daytime programs allow you to safely view sunspots and solar prominences using solar filters.

Nighttime programs allow you to view the moon, planets, stars, galaxies, nebulae, and more.

NASA Events – These are JPL Solar System Ambassador programs.

The facility is handicapped accessible and we feature a video display system for cloudy day and/or night programs.

Contacts: Park Astronomer – Henry Sipes H 270-828-6191 Cell 270-668-2103
Harrison County Park Office 812-738-8236

Websites: <http://www.harrisoncoparks.com/Observatory.html>
<http://www.jefferson.kctcs.edu/observatory/>

