



The Fremont Peak

Observer

Bringing Astronomy to the Public

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Renew now for 2017. Don't let your membership expire. See page 6 for details.

Treasurer's Message

By Rob Hawley

This is the time of the year we ask our annual members and those Life Members with Observer Privileges to renew their membership. Membership remains a principal source of income for the Association.

The Association remains strong. Our programs were well attended. During 2016 we invested in new and updated equipment and tried a new approach at a traditional FPOA event. We rethought our whole approach to our summer annual meeting. The new event will again be in September (due to the eclipse) and will again focus on our Members and other astronomy enthusiasts instead of being a public program. The public will be invited to an evening program later that night. The new format received excellent reviews from those attending this year. We hope you will stop by in 2017 and experience the different focus.

Challenges for 2017

2017 looks like it will be a challenging year for FPOA. Our need for volunteers exceeds even our need for funds. 2017 will present two challenges.

- We plan to start our next major renovation of the facility. We plan to replace the decaying west ramp. This will be the largest project since installation of the new ADA-required East ramp 10 years ago. It will be a major effort that will require more people than just the regulars.
- August is Solar eclipse month. We are planning to schedule a program the Saturday near the eclipse date (Monday Aug. 21st); however, several of our normal volunteers will be away and extra volunteer help would be helpful on Saturday, Aug 19th.

Approved 2017 FPOA Program Dates

Saturday Evening Programs

Apr 1, 22, 29 May 20, 27
 Jun 3, 17, 24 Jul 1, 15, 22, 29
 Aug 12, 19, 26 Sept 16, 23
 Oct 14, 21, 28

Solar Programs

Apr 1, 29 May 20 Jun 17
 Jul 15 Aug 26 Sept 16 Oct 14

Board Meetings

Jan 28 Feb 25 Mar 25 Apr 15
 May 27 Jun 24 Jul 22 Aug 12
 Sept 23 Oct 21 Nov 11

Special Events

Annual Meeting / BBQ Sept 23

Please check <http://www.fpoa.net/schedule.html> for changes or updates to this schedule.

So in addition to your financial help please consider helping with a program next year or helping us build a safer west ramp.

To quickly renew your membership go to <https://fpoa.net/membership.html#renew>

Rob Hawley
 FPOA Treasurer
treasurer@fpoa.net

Taking a look at the Winter Milky Way

By Ric Babcock

As the Summer Sky sets below the western edge of Fremont Peak Observatory and makes way for autumn's celestial vistas, I'm reminded by the overhead, arching Milky Way that in a few hours, the deep sky objects of the Winter Milky Way will be coming into view, that part of our galaxy we see with our backs to the center bulge between Scorpius and Sagittarius.

At night fall, once I can see Polaris, and polar align my mount with Vega, Altair and Capella, I find Algedi and Dabih. They are two stars which represent the head of the sea goat Capricornus and are getting close to the red lights of the radio and TV antennae atop of the Peak. I slew my scope to NGC 7293, the Helix.



This object is a very faint planetary nebula but it's BIG. The outer circumference is about 25 arc minutes, so it fills up a large portion of my field of view. Compared to other planetary nebulae, it's only 700 light-years from Earth! There are no really bright stars close to the Helix. When I first viewed this object a few years back, I had to get in the general neighborhood with my eyepiece, and my mount's clutch pins loose. I scanned the area until I saw a faint, hazy cloud which contrasts to the black background of the night sky. That "hazy cloud" turns into rings of color once the camera has time to soak in the photons emitted by the expanding gases of the planetary nebula. But I've digressed. I'm looking at winter Milky Way objects tonight and Cassiopeia is high in the northeast. Let's go there and work our way in a southeasterly flowing direction.

In Cassiopeia, there is a very pretty and colorful open cluster, M 103.



M103 is a open cluster where a few thousand stars formed; 40 of which dominate the Messier object. The open cluster object ranges about 15 light-years across as seen from Earth. It is also one of the most distant open clusters visible from Earth, at a distance of 8,000 to 9,500 light-years from Earth.

While I'm in Cassiopeia, I might as well stop over at Gamma Cassiopeia and take a look at IC 59 and IC 63.



IC 59 and IC 63 are two separate objects of hot ionized gas influenced by the third brightest star in the constellation of Cassiopeia (Gamma Cassiopeia). They are located about 600 light-years from Earth. Gamma-Cas, itself, is only 3 to 4 light-years from the nebulae. The closest is IC 63, which displays the red hydrogen ionization. Slightly further away is IC 59. It reflects the energy of the star by the interstellar dust contained within its patch of the night sky.

The Winter Milky Way continues to emerge upward toward the southeast. I see the faintly hazy

stream of background stars, ever present over the eastern tree line, which borders the FPOA observatory. While leaving Cassiopeia, I won't go far. Slew-ing back toward M 103 and toward Perseus our "Hero"; I catch a glimpse of the famous Double Cluster.



NGC 884 and NGC 869 are located in the northern regions of the constellation Perseus. Both visible with the naked eye, on dark, clear nights, NGC 869 and NGC 884 lie at a distance of 7,500 light years from Earth. It's estimated that both clusters are 12.8 million years old.

Next, we stop in the neighborhood of Auriga, the Charioteer. Here, amongst the many open star clusters, M 36, M 37 and M 38, lies a couple of bright nebulae.



The Flaming Star nebula (IC 405 above), is an emission nebula seen in red, with a reflection nebula component seen in blue.



IC 410 (above) is an emission nebula with two smaller trunk nebulas seen in the lower left of this image, known as the Tadpoles.

As we proceed into the constellation of Gemini, the twins, and slide by the outer reaches of the horn tips of Taurus the Bull, we are now looking in the opposite direction from the center of our home galaxy The Milky Way. Here we can stop by and view the first of Charles Messier's cataloged objects, M1 the Crab Nebula.



This exploded star was first viewed by the Chinese in the year 1054 and later named from a sketch produced in 1840. M-1 is a super nova remnant seen by the Chinese, with a pulsar in it's center. The nebula is the remains of the original star that collapsed.

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Not far, angularly speaking, to the east of M-1,



we find IC 443 the Jellyfish nebula

South of here we find the reflection nebula M 78.



Surrounding the eastern most star in the belt of Orion, Alnitak, we see the Flame and Horse Head nebula, NGC 2014 and IC 434 respectively.



and NGC 2174 the Monkey Head nebula.

By this time, in the autumn sky, the winter Milky-Way is rotating more into view. Orion is rising and that constellation is packed with deep sky objects.

Near Meissa (Lambda Orionis), which represents the head of the great hunter, there's a nice planetary nebula NGC 2022.



The Flame (Left) and Horsehead (Right) nebulae

As we scan further south and look at the knife sheath of the Great Hunter, we notice that the middle "star" which represents the knife holder is really one of the closest star forming nebulas to Earth, The Great Orion Nebula.



Looking to the constellation just east of Orion, we are in Monoceros, the Unicorn. There, we find two beautiful star forming regions. The Cone and Fox Fur nebulas enclose the Christmas Tree open cluster, NGC 2264.



NGC 2264

Just below (to the south) is the Rosette Nebula NGC 2244.



NGC 2244

Still a bit further south, we move into Canis Major, as known as the Large Dog. He was known as Orion's companion during his hunting trips. Here we see the planetary nebula known as NGC 2359 or Thor's Helmet. This object has an overall bubble shape, but with complex filamentary structures. The nebula contains several hundred solar masses of ionized material, plus several thousand more of un-ionized gas. It is largely interstellar material swept up by winds from the central star.



NGC 2359 Thor's Helmet.

Let's conclude our tour of the Winter Milky way for now by revisiting the constellation of Orion and turning our attention near Rigel which represents the hunter's left knee.



IC 2118, The Witch Head Nebula is a very faint reflection nebula, lit up by the super giant star Rigel to its east; however the object is technically within the boundaries of the constellation Eridanus, "The River". It is thought that what we see is the remnant of an ancient super

nova explosion some 900 light-years from Earth.

In this tour of deep sky object viewed in the winter Milky Way, we've gone altitudinal from the celestial north polar regions, where Cassiopeia resides, to the -20 degree latitudes when we observed at the Helix and Thor's Helmet. At those latitudes, we are pointing in the same plane as the sky glow from the Soledad Prison. This makes for an almost horizontal viewing perspective from Fremont Peak.

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Let's keep in mind the advantages of star gazing at this time of year. The nights are long! Astronomical twilight ends well after 6 am. I'll only advise to dress warmly and have hand warmers ready to dismantle your equipment, as you may find the coldest part of the evening is just before the sun rises.

Hopefully, wishfully, I may meet you one evening when you are up on Fremont Peak, gazing at the celestial wonders. Tell you what, I'll bring the coffee, deal?

Ric Babcock, FPOA

(all images in this article were taken by Ric from Fremont Peak)

2017 Membership Renewal

Renewals are easy. You can use the forms on the membership page <http://www.fpoa.net/membership.html> to pay with either PayPal or via a credit card. For those preferring paper you can just send a check (that has your current correct address) to : FPOA Membership, c/o Rob Hawley, 1233 Hillcrest Dr., San Jose CA 95120

If your email has changed, then please be sure to include that in either the PayPal payment as a comment or a note with your check.

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EMAIL DELIVERY OF THE OBSERVER

Dear FPOA Members,
We have been delivering the Observer via email for the past several years. This obviously saves the Association postal expenses, and assures the quickest delivery to you. However, several of you no longer have valid email addresses, due to ISP changes, moves, etc. If you would like to continue to receive, or begin to receive, notification of the Observer via email, please send your current email address to membership at fpoa.net

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The *Fremont Peak Observer* is published four times a year (Winter, Spring, Summer, Fall). Articles from members are encouraged and should be emailed to <schedule at fpoa.net > Articles should be in plain text or MS Word format. Deadlines are Feb. 1, May 1, Aug. 1 and Nov 1, respectively.