

# IO – December 2004

Issue # 2004-12

[www.eugeneastro.org](http://www.eugeneastro.org)

Eugene Astronomical Society, Annual Club Dues \$25, President: AC Illig, Treasurer: Roscco Wright, Secretary Alicia McGraw  
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Io (*EYE-oh*) is nearest to Jupiter and fastest orbiting of the four Galilean moons

EAS is a Proud Member of:



## EAS Club Picnic / Swap-Meet / Party

**Dec 4th Saturday, Noon till Dark**  
**Indoors at the Eugene Yacht Club at Fern Ridge Reservoir**

### EUGENE ASTRONOMICAL SOCIETY

Please come to the EAS party on Dec 4th, Saturday afternoon. It is at the Eugene Yacht Club. The clubhouse sits beside the lake nestled into some Oak and fruit trees. It is a nice community building with kitchen and facilities, very private, lots of room. If the weather is nice, there is a deck out front with an Eastern and Southern view. The skies are quite dark, and the surrounding lights are few.

Bring astro-stuff to swap and sell. The public is not invited, but you may bring guests.

The following items have been purchased by EAS or donated by the Community. Kathy Boyd and Annie Cole collected them. They will be given away to **members** by a drawing, using tickets given at the door.

Olive Garden - \$50.00 gift cert.  
Wal-Mart - \$50.00 Gift card  
Chapala - Certificate: dinner for two  
The Science Factory - One Family Membership  
CD World - Gift Certificate for \$18.00  
One camping chair  
Two envelopes of 5ea \$1.00 Lotto tickets  
Two throw blankets

We will begin to meet about noon. Eat about 2PM, stay for recreation and camaraderie until dark. (or later ☺)

Bring your own main course (to cook on site, if needed). And bring a dish or desert to share with the group. Bring your own beverages, of any type. We will begin a running email dialog on the EAS maillist to inform each other what each of us is bringing to share.

The EAS Board of Directors is hosting this party. We, the BOD, have offered, as a group, to stay after and do the clean up. This is to express our appreciation of all of our wonderful members.

At this point I would like to solicit suggestions for activities at this party. (We probably shouldn't do the egg toss in that nice clubhouse). Please post your ideas on the EAS maillist or to a board member.

Roscco Wright

See Page 2 for Map

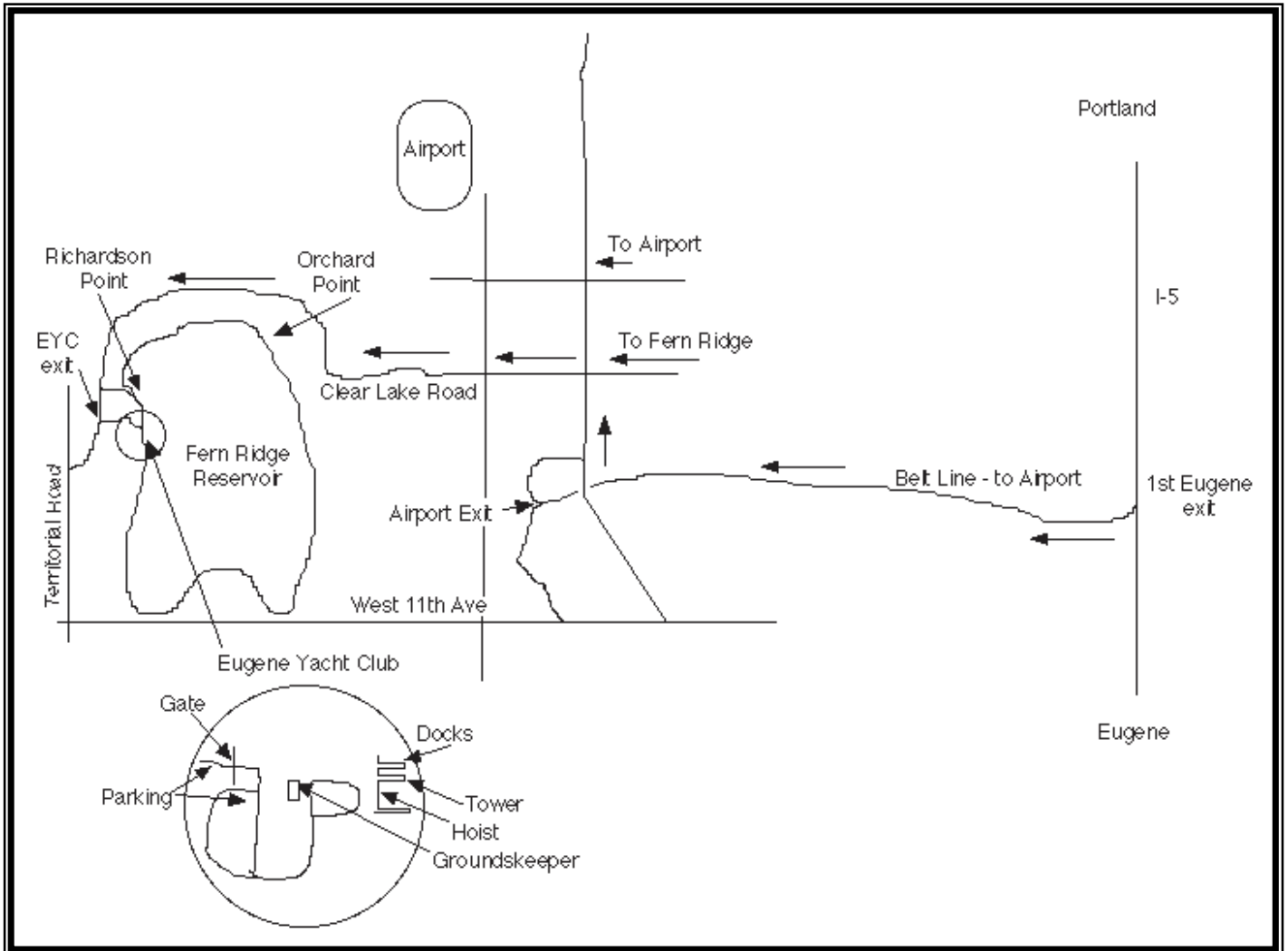
Magazine subscriptions go to Richard Boyd: [checkerkit@aol.com](mailto:checkerkit@aol.com)



**Join the user List!      Keep in-touch with Members and Events!**

<http://lists.cmc.net/cgi-bin/mailman/listinfo/eugeneastro>





## Directions to Eugene Yacht Club- Saturday Dec. 4<sup>th</sup> Meeting/Picnic



## Cloudy November

One of the reasons for all the clouds & rain is this brand new TMB CNC 115mm Triplet APO recently acquired by an EAS member. I am sure he is not alone, and others have acquired more scopes, cameras and other astronomical equipment to add to all the clouds. I just hope Dan and others will be gracious enough to allow some of us thrilling views in the clear months to come. Of course December is also a time of procuring and upgrading equipment so we may have to wait till next year for really clear skies.

## What's Out This Month

Geminid Meteor Shower peaks on December 13; new moon is two days earlier, good dark skies for viewing. Saturn is up in late evening at  $-0.1$  magnitude. While Jupiter is coming up in the early morning at  $-2.0$  magnitude.

Orion is placed nice and high in late evening revealing the great Orion Nebula M42 and others. Great time to try and get some images if the clouds clear.

Again we have prospects of a good comet in our latitude. Comet Machholz will start at magnitude 6.1 in December and enter January 2005 at 4.3. It will start out in December in the constellation Lepus and head north to Eridanus near Rigel (Orion) December 16-31. In January it will be in Taurus. This comet will continue north through Perseus and pass Polaris in early March at magnitude 6.6 or so. This again presents a good opportunity to try and image a comet. We have had several good comets over the last ten years.

You want to keep an eye out for solar activity as some recent solar flares produced some magnificent auroras here in Oregon in late November. We may get some more in December with the long nights and peak in solar activity.

## Transits of Jupiter's Moons



12/06	02:48	Io	Transit Begins
	05:00	Io	Transit Ends
12/07	04:16	Europa	Transit Begins
	06:56	Europa	Transit Ends
12/11	03:53	Ganymede	Transit Begins
	06:33	Ganymede	Transit Ends
12/13	04:45	Io	Transit Begins
	06:57	Io	Transit Ends
12/14	06:56	Europa	Transit Begins
12/20	06:42	Io	Transit Begins
12/22	01:10	Io	Transit Begins
	03:22	Io	Transit Ends
12/29	06:06	Io	Transit Begins
	05:17	Io	Transit Ends

Shadows cast on Jupiter's disk by Transit of its moons may Begin and end after transit times. Begin observing before Times listed. Actual times of events will vary depending on your precise location within time zones. Shadows start before transits and usually end before transits are over.

## Jupiter's Red Spot Centered PST

12/01	00:00	09:48		12/16	07:14	00:00
12/02	00:00	05:39		12/17	03:05	00:00
12/03	01:31	11:26		12/18	08:52	00:00
12/04	07:18	00:00		12/19	04:44	00:00
12/05	03:09	00:00		12/20	00:00	10:31
12/06	08:56	00:00		12/21	06:22	00:00
12/07	04:48	00:00		12/22	02:14	00:00
12/08	00:39	10:35		12/23	08:01	00:00
12/09	06:27	00:00		12/24	03:52	00:00
12/10	02:18	00:00		12/25	09:39	00:00
12/11	08:05	00:00		12/26	05:31	00:00
12/12	03:57	00:00		12/27	01:22	00:00
12/13	09:44	00:00		12/28	07:09	00:00
12/14	05:35	00:00		12/29	03:01	00:00
12/15	01:27			12/30	08:48	00:00
				12/31	04:39	00:00



College Hill Reservoir EAS Lunar Eclipse Star Party

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## Lunar Eclipse Party

On October 27<sup>th</sup>, EAS hosted a Lunar Eclipse Star Party at College Hill Reservoir at 25<sup>th</sup> & Lawrence in Eugene. Nature tried to curtail the event with fog and clouds but dozens of members set up scopes, equipment, cameras and more. Hundreds of folks turned out along with a local news team to enjoy glimpses of the total eclipse of the Moon in between clouds and fog. The Moon completely disappeared behind the clouds during totality but later emerged, to offer promising views. Many EAS members were able to capture images of this event. Images of this event are below & scattered throughout this months Io.

Thanks to the many EAS volunteers that sat up tables and talked with the public sharing their knowledge, camaraderie and scopes. This was truly a pleasant event enjoyed by all.



Garth Price was able to capture some of Wednesday's eclipse before the clouds masked totality. He has a larger version, a 1024x768 jpg at: <http://www.oregonvos.net/~gprice/eclipse.jpg>  
Garth used his Canon EOS digital camera, with a 55-200mm zoom at 200mm a tripod and just sat back in his snapping pictures. Exposure is appr. 1/4 second. The physical setup was simply the camera on a tripod. Individual pictures were pasted into a picture program in an East to SE pattern.

## Lunar Eclipse

October 27, 2004  
by: Jerry Olton



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These photos were taken by Jerry Olton on October 27th, 2004, from the College Hill reservoir at 24th and Lawrence in Eugene, Oregon, between 6:30pm and 10:05pm Pacific time. The sky was partly cloudy, and many of these shots were taken through light overcast.

All images (except the group photo and the montage) are Newtonian telescope images, i.e. rotated 180 degrees from the naked eye view. The telescope is a Celestron C8-N (8") with 1000mm focal length, using a 25mm eyepiece which provides 40x magnification. The camera is a Canon Powershot A70 digital camera providing 3.2 megapixels resolution and some unknown additional amount of magnification. (I used the camera's zoom through the eyepiece until the Moon filled the frame, but the camera doesn't tell me what

focal length it's set at. I'm guessing it was about the equivalent of an 80-100mm lens on a standard 35mm camera.)

I took a bunch of different exposures whenever the clouds gave me a chance, so some pictures show the bright side well, while others burned out the bright side to reveal detail within the shadowed side. The longest exposures (during totality) were 15 seconds at f3.5. Others ranged down to 1/250 at f8.

Afterward I made a montage of three images from before, during, and after totality, oriented with Lunar north to the top and spaced about where they really were in the sky at the moment they were taken. The effect shows the relative size of the Earth's shadow compared to the Moon, and the path the Moon took through it.

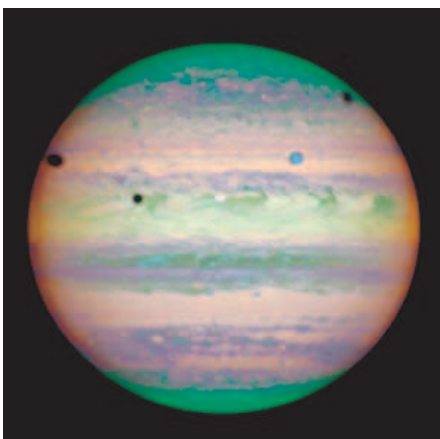


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Various stages of the Lunar Eclipse taken by Jerry Olton on October 27, 2004 ©



NASA, ESA, and E. Karkoschka  
(University of Arizona)

## Three Moon Alignment on Jupiter

At first glance, Jupiter looks like it has a mild case of the measles. Five spots – one colored white, one blue, and three black – are scattered across the upper half of the planet. Closer inspection by NASA's Hubble Space Telescope reveals that these spots are actually a rare alignment of three of Jupiter's largest moons – Io, Ganymede, and Callisto – across the planet's face. In this image, the telltale signatures of this alignment are the shadows [the three black circles] cast by the moons. Io's shadow is located just above center and to the left; Ganymede's on the planet's left edge; and Callisto's near the right edge. Only two of the moons, however, are visible in this image. Io is the white circle in the center of the image, and Ganymede is the blue circle at upper right. Callisto is out of the image and to the right.

## Galactic Surprise

by Patrick L. Barry and Dr. Tony Phillips

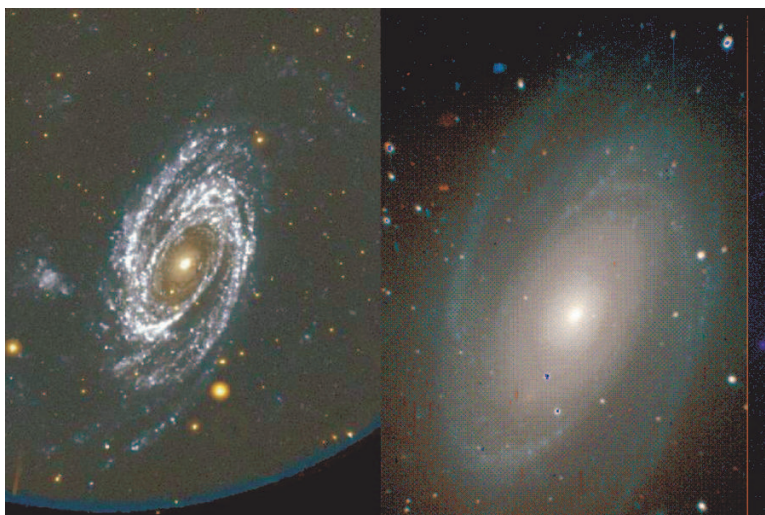
Open an old astronomy textbook. The basic sketch you'll find there of galaxy formation is fairly simple: a vast cloud of diffuse hydrogen and helium gas condenses under gravity, and dense spots in the cloud collapse to form stars. Voila! A galaxy.

But real galaxies are much more complex than that. A galaxy is a swirling "soup" of billions of stars and roaming black holes, scattered clouds of gas and dust, random flashes of star birth and exploding supernovas, and an unseen and mysterious substance called "dark matter." Over time, all these ingredients mix and interact—pulling and compressing and colliding—and somehow that interplay leads to the galaxies we see today. No wonder it's such a hard problem to solve!

Just over one year into its three-year mission, GALEX is already shedding some new light on the problem.

"Some of the discoveries GALEX has made will change our understanding of how galaxies develop and when, where, and why stars form in galaxies," says Peter Friedman, a researcher at Caltech and Project Scientist for GALEX.

This small space telescope, called the Galaxy Evolution Explorer (GALEX for short), makes its discoveries by taking pictures of millions of galaxies scattered over the whole sky. Some of these galaxies are close by (at least by astronomical standards of "close"), while others are as much as 10 billion light-years away. Because light takes time to travel through space, we see these distant galaxies as they appeared billions of years ago. Comparing young galaxies from the distant past with older, modern galaxies will teach scientists about how galaxies change over time.

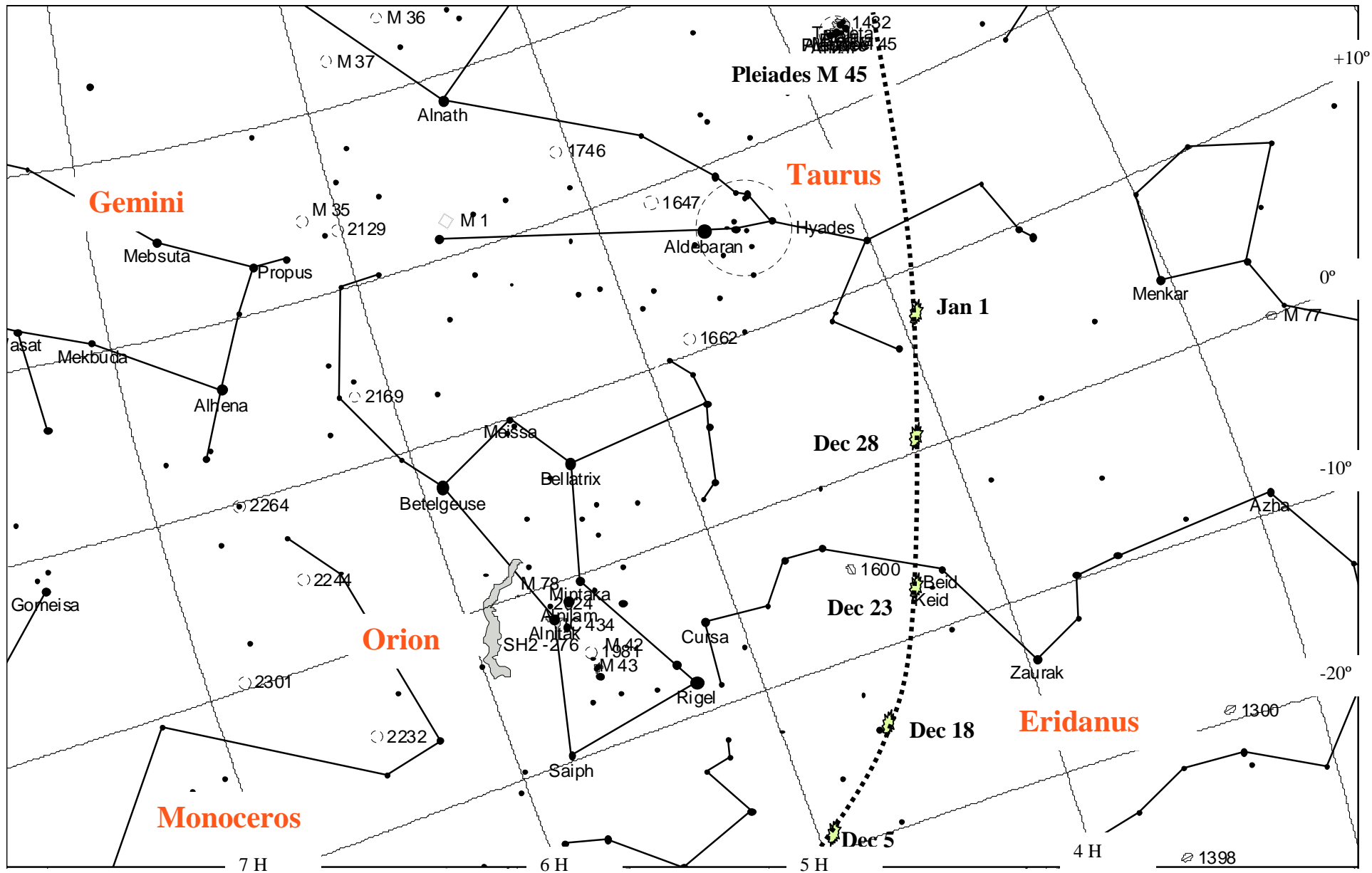


*M81 is 10 million light years away. The image on the left was made from GALEX data and shows UV light from hot, new stars. These star forming regions are not detectable in the visible light image on the right (McGraw-Hill Observatory, Kitt Peak, Arizona, Greg Bothum, Univ. of Oregon.)*

Looking at these pictures, scientists were surprised to find many newborn stars in the outer parts of old, mature galaxies. Scientists had assumed that as a galaxy ages, the clouds of gas needed to form new stars in these outer reaches either got used up or blown away. Finding so many new stars in these regions of old galaxies (such as Centaurus A, Messier 101, and Messier 81) shows that, apparently, they were wrong.

Friedman says that astronomers don't know yet how to explain these new findings. Rethinking and improving theories to explain unexpected discoveries has always been the way science makes progress—and GALEX is certainly making progress.

One thing is certain: It's time to re-write some old textbooks.



Path of Comet Machholz