

Cache Valley Clear Skies

The Journal of the Cache Valley Astronomical Society



CVAS Executive Committee

Pres – Tom Westre - (435) 787-6380
twestre45@aol.com

Vice Pres- Dell Vance – (435) 938-8328
avteam.dell@gmail.com

Public Relations – Lyle Johnson
lyledj@aol.com

Treasurer- Ned Miller - (435) 757-9035
nedmiller2008@gmail.com

Secretary – Dale Hooper - (435) 563-0608
dchooper5@gmail.com

Librarian – Open
Loaner Scope Coordinator – Lyle Johnson
Webmaster – Tom Westre

Vol. 2 Number 7 March 2015

www.cvas-utah.org

Meeting Announcement

Our monthly meeting will be held on Friday, March 13, 2015 at 7:30pm at the Physics Conference Room (room 244) in the Science Engineering Research (SER) building directly east of the library. **Please note that this is the second Friday rather than the third Friday.** This month our speaker will be Dr. Hollis R. Johnson, Emeritus Professor of Astronomy from Indiana University and father of club member Lyle Johnson. Dr. Johnson will be speaking to us about the Big Bang Theory (the theory, not the TV show).

The President's Corner By Tom Westre, CVAS President



Our February meeting with James Coburn was very interesting. James gave us a great overview of how the USU observatory came about. Afterwards we enjoyed a tour of the observatory and the 20 inch

telescope. Sadly, the sky was cloudy and we couldn't observe but everyone enjoyed the evening. Now, it is March, my how time is flying. Spring is only a few weeks away. Traditionally March is the month astronomy clubs across the US and the world plan to view all 110 objects in the Charles Messier catalog. This even is called the Messier Marathon. Who was Charles Messier? He was a French Astronomer, born in Badonviller, France, June 26, 1730. He spent much of his career hunting comets.

In 1757, the famous Halley's Comet was to return, so Charles began his search for this comet. As he swept the sky he noted the similarity between comets and many deep sky objects, such as the Crab Nebula. So he began go catalog these objects so he wouldn't confuse those with comets. So, the Crab Nebula became the first object in his list that would grow to 45 objects. Eventually, the list contained 110 objects.

This year our Messier Marathon will be held on March 20th a perfect evening due to the New Moon. If the weather is bad our backup date is March 27th, first Quarter Moon. But the prospect of an all-nighter, from sunset to sunrise may be so daunting that only the most daring people would actually try it. So this year I am proposing a "Half Messier Marathon."

For this to be a success we need to gather together by 7:00 pm. The Sun sets by 7:30 pm in mid-March (remember day-light savings time begins March 8, 2015 and we spring forward one hour).

We start with M77 and M77 in the west about 7:10 pm....if you stay until 5:15 am you can end with M 52. We need to have an observing plan, dress warm, have plenty of food. We start viewing objects in the west, then move to the east. But, remember, the whole idea is to have fun. Even if you don't get to see all of them, at least you gave it a try.

If you get there late, that's ok, just turn off your car lights to save dark adaption. I will be hosting our club Messier Marathon at my observatory in Nibley. If you would like to join me please drop me an email at twestre45@aol.com and I will provide you directions to my place.



Comet Lovejoy, January 20th 2015 by Tom Westre

I must mention Comet Lovejoy. If you haven't seen it yet, get out a do so. Send me any of your comet observations. Last report its magnitude 5.5 in the constellation Cassiopeia. Check out heavens-above.com for detailed maps. Jupiter is well placed for observing its four Galilean moons. Of course the Orion Nebula is still a favorite and easily seen in binoculars.

One final item, because USU is holding an observatory public night on March 20th, we will have our March meeting on March 13th. Dr. Hollis Johnson, professor emeritus in astronomy from Indiana University will speak to us on the Big Bang

Theory (not the TV show). We hope to see everyone there.

If you are new to our club we would like to welcome you and invite you to get active with our club. Keep up with events with our website. We hope to see you at one our upcoming events and wish you clear skies as you start your adventure under the stars.



M42 the Great Orion Nebula and M43, 15 second exposure using a Mallincam Jr Pro connected to an Explore Scientific 80mm APO. The image was displayed on a monitor and then a picture was taken of the screen. Submitted by Dale Hooper.

Second Option for Messier Marathon

In addition to the club's plans for a half-marathon, there is a second option for those that would like to try a full marathon. The Ogden Astronomical Society will be holding its Messier Marathon at the Curlew Campground which is seven miles north of Snowville, Utah. We are also invited.

The coordinates for the campground are **Latitude:** 42° 3' 29" N **Longitude:** 112°41' 24" W. The OAS will probably have club members there Friday night (March 20th) and Saturday night (March 21). Dale Hooper from our club will be there Friday night.

The basic directions from Logan are to go west on 200 North (UT-30 W) in Logan to I-15 S. Follow I-15 S to Tremonton and then take I-84 N. Take I-84 N exit 7 and then continue north on 18575 W. Take the turn-off into the park. The coordinates above are

for the turn-off into the park which is shown in the picture below. There is a sign but it is easy to miss.

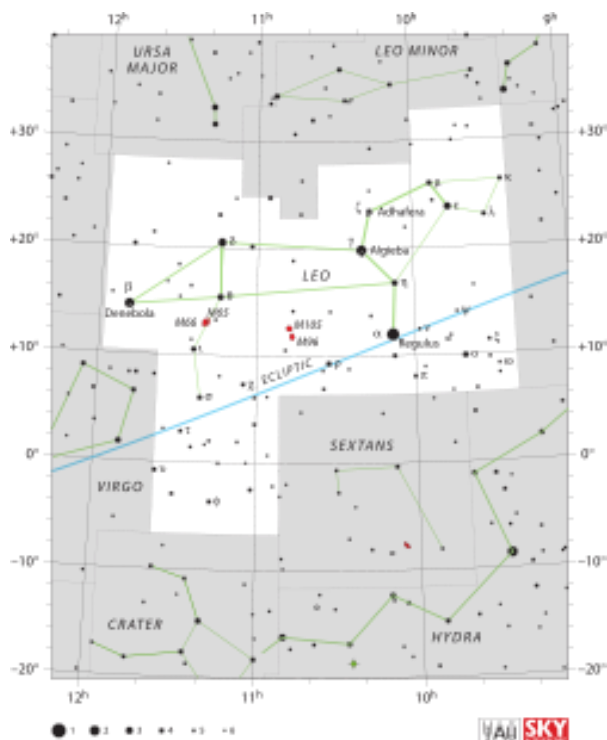
The OAS always camps out in the northernmost part of the campground. Make sure that you arrive before dark. There are vault toilets but the water is still shut off this time of year.



Turn-off (north) into Curlew Campground

Spotlight on Leo

- Submitted by Dale Hooper



Leo is still climbing higher during early evening but by 8pm MDT it is already 45 degrees high. Leo is

chock full of galaxies, including five Messier objects. It is also the home to several very nice multiple star systems. All of the multiple stars listed can be observed with a 4 to 6 inch scope.

Each of the objects in the table below rate at least four stars out of five in *The Night Sky Observer's Guide*.



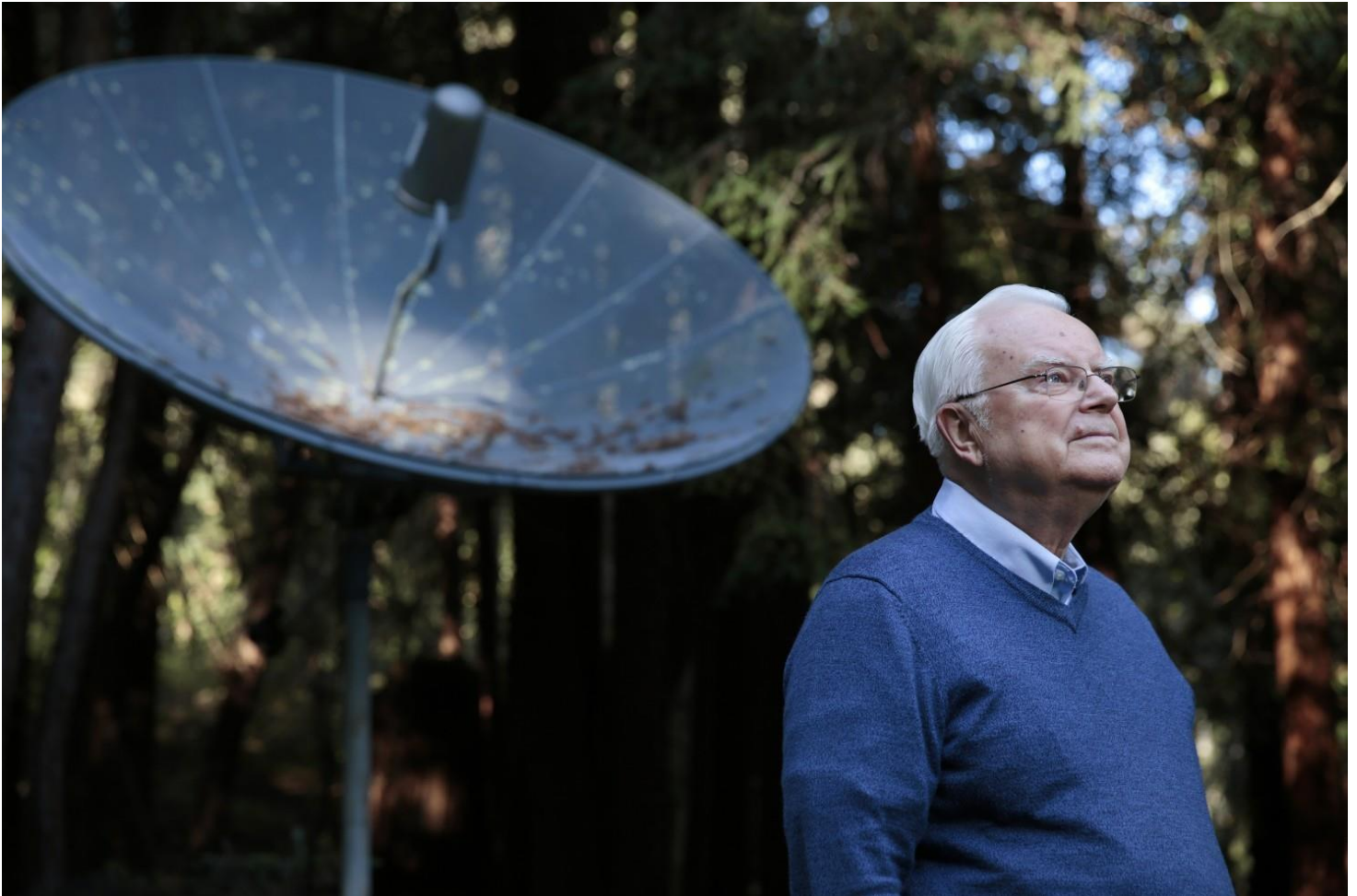
M65 (left) and M66 (right)

Object	R.A.	Dec.
NGC 2903 (Galaxy mag9.0)	09h32.2m	+21°30'
Regulus (Double star)	10h08.3m	+11°58'
NGC 3190 (Galaxy mag11.2)	10h18.1m	+21°50'
Algieba (Double star)	10h20.0m	+19°51'
Messier 95 (Galaxy mag9.7)	10h44.0m	+11°42'
NGC 3367 (Galaxy mag11.5)	10h46.6m	+13°45'
Messier 96 (Galaxy mag9.2)	10h46.8m	+11°49'
NGC 3377 (Galaxy mag10.4)	10h47.7m	+13°59'
Messier 105 (mag9.3)	10h47.8m	+12°35'
NGC3384 (Galaxy mag9.9)	10h48.3m	+12°38'
NGC 3412 (Galaxy mag10.5)	10h50.9m	+13°25'
54 Leonis (Double star)	10h55.6m	+24°45'
NGC 3489 (Galaxy mag10.3)	11h00.3m	+13°54'
NGC 3521 (Galaxy m9.0)	11h05.8m	+00°02'
NGC 3593 (Galaxy m10.9)	11h14.6m	+12°49'
Messier 65 (Galaxy mag9.3)	11h18.9m	+13°05'
Messier 66 (Galaxy mag8.9)	11h20.2m	+12°59'
NGC 3628 (Galaxy mag9.5)	11h20.3m	+13°36'
NGC 3705 (Galaxy mag11.1)	11h30.1m	+09°17'
88 Leonis (Double star)	11h31.7m	+14°22'
90 Leonis (Triple star)	11h34.7m	+16°48'

[Submitted by Kathy Skelding]

Are we alone? Do we want to know?

By Joel Achenbach, [Washington Post](#), February 28, 2015



Frank Drake, the founder of Search for Extraterrestrial Intelligence (SETI), at his home in Aptos, Calif. (Ramin Rahimian for The Washington Post)

It was near Green Bank, W.Va., in 1960 that a young radio astronomer named Frank Drake conducted the first extensive search for alien civilizations in deep space. He aimed the 85-foot dish of a radio telescope at two nearby, sun-like stars, tuning to a frequency he thought an alien civilization might use for interstellar communication.

But the stars had nothing to say.

So began SETI, the Search for Extraterrestrial Intelligence, a form of astronomical inquiry that has captured the imaginations of people around the planet but has so far failed to detect a single “hello.” Pick your explanation: They’re not there; they’re too far away; they’re insular and aloof; they’re zoned out on computer games; they’re watching us in mild bemusement and wondering when we’ll grow up.

Now some SETI researchers are pushing a more aggressive agenda: Instead of just listening, we would transmit messages, targeting newly discovered planets orbiting distant stars. Through “active SETI,” we’d boldly announce our presence and try to get the conversation started.

Naturally this is controversial, because of . . . well, the Klingons. The bad aliens.



An artist's concept of Kepler-186f, the first validated Earth-size planet to orbit a distant star in the habitable zone, a range of distance from a star where liquid water might pool on a planet's surface. The discovery of Kepler-186f confirms that Earth-size planets exist in the habitable zones of other stars and signals a significant step closer to finding a world similar to Earth. (Nasa/Jpl-Caltech/T. Pyle/European Pressphoto Agency)

"ETI's reaction to a message from Earth cannot presently be known," states [a petition](#) signed by 28 scientists, researchers and thought leaders, among them SpaceX founder Elon Musk. "We know nothing of ETI's intentions and capabilities, and it is impossible to predict whether ETI will be benign or hostile."

This objection is moot, however, according to the proponents of active SETI. They argue that even if there are unfriendlies out there, they already know about us. That's because "I Love Lucy" and other TV and radio broadcasts are radiating from Earth at the speed of light. Aliens with advanced instruments could also detect our navigational radar beacons and would see that we've illuminated our cities.

"We have already sent signals into space that will alert the aliens to our presence with the transmissions and street lighting of the last 70 years," Seth Shostak, an astronomer at the SETI Institute and a supporter of the more aggressive approach, has written. "These emissions cannot be recalled."

That's true only to a point, say the critics of active SETI. They argue that unintentional planetary leakage, such as "I Love Lucy," is omnidirectional and faint, and much harder to detect than an intentional, narrowly focused signal transmitted at a known planet.

These critics add that it's bad form for scientists to attempt such interstellar communication without getting permission from the rest of humanity. Plus there's the question of what, exactly, a message to the stars ought to say.

Thus one of the greatest scientific mysteries — are we alone in the universe? — leads to a thorny political and cultural question: Who speaks for Earth?

'A waste of time'

This discussion about the proper protocols of communicating with aliens is not the most mainstream scientific debate ever concocted. But it got a lot of attention here in San Jose at the annual meeting of the ultra-mainstream American Association for the Advancement of Science.

Astronomer Jill Tarter, a pioneer of SETI who is neutral about the more active approach, organized a symposium on the topic. Before the symposium, two advocates of the idea, Shostak and Douglas Vakoch, appeared at a press briefing alongside science fiction writer David Brin and planetary scientist David Grinspoon.

“Active SETI is a reflection of SETI growing up as a discipline,” said Vakoch, a clinical psychologist who is the SETI Institute’s director of Interstellar Message Composition. “It may just be the approach that lets us make contact with life beyond Earth.”

But Brin, a signer of the petition protesting the campaign for active SETI, said we don’t know what’s out there and shouldn’t presume that aliens are benign. He said there are roughly 100 scenarios to explain why we haven’t heard from the aliens so far. Roughly a dozen of those scenarios are unpleasant, he said.



The zodiacal light, left, and the Milky Way, right, are seen from the region of Salgotarjan, northeast of Budapest, on Feb. 17, 2015. (Peter Komka/MTI/AP)

Vakoch countered that Brin was being inconsistent, because he collaborated on a message that will be carried into space by NASA’s New Horizons spacecraft after its fly-by of Pluto later this year.

“No one is going to get it!” Brin interjected. (The spacecraft is very slow in the galactic scheme of things and will journey for eons into the void of interstellar space.)

As the scientists debated one another, a white-haired, bespectacled man in the back of the room listened quietly: Frank Drake.

He is 84 years old, the beloved dean of the SETI field. He is the Drake of the famous Drake Equation, the formula he scribbled down in 1961 in advance of a meeting in Green Bank. His equation offers a technique for estimating the abundance of communicative civilizations.

He parked himself on a bench in a corridor and, bracketed by a clutch of reporters, held forth for 30 minutes. He said he thinks it’s too soon to engage in active SETI. We don’t know enough.

“I think it’s a waste of time at the present. It’s like somebody trying to send an e-mail to somebody whose e-mail address they don’t know, and whose name they don’t know.”

The odds of someone out there

When Drake plugs his estimates into the Drake Equation (and who is more entitled to do so?) he comes up with 10,000 alien civilizations that we could detect if we looked in the right places with the right techniques.

“It’s 10,000 that we can *detect*. There are a lot more,” Drake clarifies. “A lot more young ones that can’t be detected because they don’t have the technology, and there are older ones that have technology that is so good that they don’t waste any energy.”

The Drake Equation has endured despite being rather ungainly at first glance:

$$N=R^* \cdot f_p \cdot n_e \cdot f_l \cdot f_i \cdot f_c \cdot L$$



Drake also created the Arecibo Message, a simple binary encoded message broadcast into space by the Arecibo radio telescope in Puerto Rico in 1974. The message encodes several things: the numbers 1 to 10, the basic chemistry of life on Earth, the double helix structure of DNA, Earth's population, a graphic of the solar system, a human figure, and a graphic of the Arecibo radio telescope and its dish's dimensions. (Ramin Rahimian for The Washington Post)

It’s not as complicated as it looks. The number (N) of detectable civilizations is the product of seven factors: The rate of star formation (R^*), the fraction of stars with planetary systems (f_p), the average number of habitable planets per planetary system (n_e), the fraction that actually have life (f_l), the fraction that have intelligent life (f_i), the fraction with communicative civilizations (f_c) and the average longevity of the communicating phase of such civilizations (L).

Exoplanets — outside our solar system — were first discovered in 1995. NASA’s Kepler Space Telescope and other observatories in space and on the ground [have found more than 1,000 planets](#) in the years since. Astronomers say it’s likely that our galaxy has [tens of billions](#) of “habitable zone” planets. And of course (channeling Carl Sagan) our galaxy is just one of billions and billions of galaxies.

But after the first three factors in the Drake Equation, we enter the murk. How many of those potentially habitable planets out there actually have life? No one knows, because we don’t yet know how life began on Earth. How likely is it that simple, microbial life will

evolve into complex, multicellular organisms and eventually into creatures with large brains? We don't know, because we have only the one data point of life on Earth.

Do intelligent creatures tend to be communicative and potentially detectable? No idea. And finally, there's that ominous "L" at the end of the equation: Do technological civilizations tend to survive a long time?

"Those factors are just completely unknown. It's a great way to organize our ignorance," says Tarter.

Why, a reporter asked Tarter, should we try to pick up signals from an alien civilization?

"We're curious how many different ways there are to do this thing called life," she said. "And we're curious if it's possible for us to have a long future."

That's because we'd most likely find a very old civilization, not a young one. It's a matter of statistical probabilities. The universe is 13.8 billion years old. If we pick up a signal, it is unlikely to be from a civilization that has only recently become communicative.

Tarter isn't discouraged by SETI's null result to date. She says our ability to detect signals, though much improved since 1960, remains limited.

"We've explored one eight-ounce glass of water out of the ocean," she says.

But you hear something different from Geoff Marcy, an astronomer who has found many of those exoplanets, and who also came to San Jose to discuss results from the Kepler mission. Marcy — who, like David Brin and Elon Musk, signed the petition to protest efforts in active SETI — said it is striking that we have found all these distant planets but no evidence at all of intelligent civilizations.

"The absence of strong radio beacons, television broadcasts, robotic spacecraft, obelisks on the moon — all of those absences add up to give us the suggestion that our galaxy is not teeming with technological life," Marcy said.

Planetwide decisions

After the active SETI symposium at the AAAS convention in San Jose, the interested parties reconvened for a Valentine's Day workshop at the SETI Institute up the road in Mountain View. Bottom line: No one's going to be beaming signals to the aliens anytime soon.

"We need tools to enable true global deliberation and then action," Tarter said in an e-mail summarizing the workshop. She pointed out that this active SETI issue echoes another debate that got a lot of attention at the AAAS meeting: whether to inject aerosols into the upper atmosphere to reflect sunlight and combat global warming. No one's going to do that, either, in the near future, but suddenly people are discussing these basic issues of planetary management and global decision-making.

Rogue alien-hunters can always go it alone, of course — and they have. For example, a Russian astronomer, Alexander Zaitsev, has repeatedly beamed messages to nearby stars. Even NASA has gotten into the act, [beaming the Beatles song "Across the Universe"](#) toward the star Polaris in 2008 ("I see that this is the beginning of the new age in which we will communicate with billions of planets across the universe," Yoko Ono said, according to the NASA news release).

Frank Drake has dabbled in active SETI himself. It was just a stunt, a proof-of-concept, on April 16, 1974, at the dedication ceremony of the rebuilt Arecibo observatory in Puerto Rico. He transmitted an encoded message — one that described the elements that make up DNA, the planets in our solar system, the size of a human being, etc. — toward a star cluster in the constellation Hercules. The star cluster is about 25,000 light-years away.

The odds that anyone will get that message are vanishingly small, but Drake did catch grief from Britain's Astronomer Royal, Sir Martin Ryle, who thought it was reckless. Drake shrugs and says, "Anyone who's even 100 years ahead of us [in technology] could detect our run-of-the-mill transmission."

Drake said he doesn't worry, as some do, that we'd become depressed by contact with a superior civilization. Children aren't depressed by the company of adults, he says. He compared SETI to doing research on ancient civilizations on Earth, such as the Greeks and the Romans.

"We're going to do the archeology of the future," Drake says. "We're going to find out what we're going to become."

CVAS Minutes – February 2015

Tom Westre welcomed everyone to the meeting and gave some introductory remarks. He discussed the passage of a star near our solar system in the distant past. He also shared some ideas about the Nikon camera and its use for taking astrophotos. He showed pictures of the Orion nebula and M46. Tom also showed pictures of the moon, Mars, Venus conjunction and Comet Lovejoy.

Tom then introduced the main speaker for the evening, James Coburn who is the manager/director of the Utah State University Observatory. James shared with us the history of the observatory dating back to the early days of USU. The old observatory is near the stadium and used golf balls as bearings for the dome. The old dome had to be rotated by manually and required people to stand on the roof of the building to rotate it.

In June 2009 construction was started for the current observatory. After construction time of about two months the observatory was completed on time and under budget. After completion of the observatory a twenty inch Corrected Dall Kirkham telescope was purchased and the first public viewing was held in January of 2010.

The three primary purposes of the USU observatory were discussed. The three purposes are creation of a laboratory for astronomy students, a place where astronomy projects can be carried out by students and third being for public outreach.

This was a very interesting presentation and was accompanied by many photographs and images related to the observatory. After a question and answer period the group went to the observatory and had an opportunity to see the resources available.

- Byron Ray and Dell Vance

Upcoming Star Parties

20 Mar Messier Half or Full Marathon

Upcoming Events

5 Mar	Full Moon Voyager 1 flies past Jupiter in 1979.
7 Mar	Venus and Mercury near each other at sunset.
8 Mar	Daylight Savings Time begins at 2am.
10 Mar	Rings of Uranus discovered, 1977
11 Mar	Mars 0.3 degrees North of Uranus
12 Mar	Saturn 2 degrees south of Moon
13 Mar	Last Quarter Moon CVAS Monthly Meeting William Herschel discoverers Uranus, 1781
14 Mar	Saturn stationary Albert Einstein born, 1879
16 Mar	Robert Goddard launches first liquid fueled rocket, 1926
17 Mar	St. Patrick's Day MESSENGER spacecraft orbits Mercury, 2011
18 Mar	Neptune 4 degrees south of Moon
19 Mar	Mercury 5 degrees south of Moon
20 Mar	New Moon USU public observatory night Messier Marathon Vernal Equinox, 4:45pm MDT
21 Mar	Uranus 0.1 degrees south of Moon, occultation Mars 1 degree north of Moon
22 Mar	Venus 3 degrees north of Moon
23 Mar	First photograph of Moon, 1840
24 Mar	Moon Crosses the Hyades
25 Mar	Aldebaran 0.9 degrees south of Moon
29 Mar	Mariner 10 first flyby of Mercury, 1974
30 Mar	Jupiter 6 degrees north of Moon