ANTELOPE VALLEY ASTRONOMY CLUB, INC.

Desert Sky Observer

Volume 30 *Antelope Valley Astronomy Club Newsletter* **March 2010**

Up-Coming Events

March 6: Moon Walk @ Prime Desert Woodlands
March 10: SAGE Observations @ the S.A.G.E. Planetarium
March 12: Club Meeting*
March 13: Messier Marathon @ the Poppy Reserve
March 20: Lunar Club & Star Party @ Saddleback Butte

* Monthly meetings are held at the S.A.G.E. Planetarium on the Cactus School campus in Palmdale, the second Friday of each month. The meeting location is at the northeast corner of Avenue R and 20th Street East. Meetings start at 7 p.m. and are open to the public. *Please note that food and drink are not allowed in the planetarium*

President

Don Bryden

If you missed last month's star party at Devil's Punchbowl you missed an excellent night of steady seeing. Not to worry, there will be opportunities aplenty in the coming months (if the rain stops!). March, of course, means Messier Marathon. We have once again been given permission to use the Poppy Reserve parking lot all night by Ranger Tom and the great folks at the Mojave Desert State Parks department. If you saw the Messier Marathon tee shirts at the last meeting but didn't order one it's not too late! I have a limited supply and, if there's enough interest, may place a second order. So come out Saturday the 13th of March and stay late. There will be prizes for the top three marathoners as well as a light bar-be-cue. The visitor's center will be open until sunset so come early and bring friends and family.

The weekend before the Messier Marathon will be our first Prime Desert Woodlands Moonwalk with Jeremy. Two weeks later, on the 20th, come out to Saddleback Butte for a star party/lunar club event with the Girl Scouts. We have the group site all day and night so bring the camper or tent and have a picnic, go hiking or enjoy the night sky and share your interest with some fledgling astronomers. And don't forget Jeremy's SAGE Observations class and star party on Wednesday, March 10th at 6pm.

April will be another busy month with a Prime Desert on the 3rd and a Dark Sky Star Party/Lunar Club on the 17th. I'm hoping to secure the use of the marina parking lot at Littlerock Dam for the star party but that's still up in the air. Finally at the end of the month on the 24th and 25th we'll be out at Lancaster City Park for the Annual Poppy Festival. Woodland Hills Camera & Telescope has graciously sponsored our club again by offering an Orion XT-6 Dobsonian to give away at the Poppy Festival. From their donations to their club discounts, Woodland Hills Telescope has always been a fantastic sponsor. If you have never made it down below to visit the store you should make a point to come out to RTMC in May. Farah, John and the gang will be in their usual vendor spot with tons of goodies and discounts so don't miss out! RTMC is May 12th through the 16th this year and unlike year's past, anyone who wants to get there early can get into the grounds as soon as noon on Wednesday.

So you can see, it'll be a busy first half of the year (my wife's already complaining) so dust off those optics and I hope to see you all out among the stars!

Vice President

Doug Drake

Dr. Gary L. Peterson Professor of Geology, San Diego State University, shall be our speaker at our March 12 club meeting. He will be speaking on "Exploring the Lunar Landscape" and this ought to be significant for our Loony Club people, sorry Matt I thought Loony and meant Lunar.

I have been setting up the Littlerock Dam for our Club picnic in July. The Littlerock Dam area is now under control of the National Forest and I am working with the resident caretaker. If the caretaker gets an approval from the National Forest then we shall have an excellent place, adults and kids, for a great picnic party and a good night sky for observing.

Director of Community Development

Rose Moore

We have several events coming up in the next month or so. Please check the calendar on our website and sign up for the events, or call or email me if you can attend any of the events.

Our first Prime Desert Woodlands Moon Walk with Jeremy for this year is on Saturday, March 6th starting at 6:30pm. We need volunteers with scopes to come out and support this fun event!

Saturday, March 13th is our annual Messier Marathon/Club Star Party which will be held at the Poppy Reserve in Lancaster. Plan to arrive and set up before the Sun goes down. We will be having a BBQ so if you can attend please contact Don.

Saturday March 20th is a Star Party for a local Girl Scout Troop and also a Lunar Club event. The Lunar Club event will be hosted by Karole Barker, substituting for Matt Leone. We need members to come out with their telescopes and help make this a great star party for the scouts!

The event will start at 5pm at Saddleback Butte State Park, but members will be coming out early to set up, and there may be Scouts there to observe how we set up our scopes. A short list of some of the objectives for the scouts will be sent out the week before to members.

Other events coming up are the Poppy Festival, April 24-25th; RTMC May 12-16th; July 16th a 'private' star party for students at Highland High School, and our trip to Mt. Wilson on Aug. 7th. We are also planning a trip to Mt. Palomar, so stay tuned for further information!

Don't forget that Jeremy has his ongoing astronomy class 'SAGE Observations'. The next class is Wednesday, March 10th at 6pm, 'Nebula, Planetary formation, and Exoplanets'. Further dates will be posted on our website. Please come out and support Jeremy and learn Astronomy!

Sharpen, Steady and Clarify Your View by Tom Koonce

There are at least three important elements affecting your telescope that if improved, can make a dramatic improvement in the views you'll get this springtime. You've probably heard a lot about the first element – collimation. If you are using a Newtonian or Schmidt-Cassegrain telescope, accurate optical collimation can make a huge difference in your views. How much? From personal experience I can tell you that with an eight inch Schmidt-Cassegrain, it makes the difference between being able to make out the main bands on Jupiter and being able to see the curly festoons *between* the main bands on clear, steady evenings. There are many fine articles about the proper way to collimate your telescope. One can be found here, and another example can be found here, but a Google search will reveal dozens more.

The second element to upgrade is your mount. Nothing can ruin a great observing night faster than a shaky, unsteady or oscillating mount. A number of years ago, I recall that a friend of mine had had custom telescope called a Schiefspiegler built for him. This was not a small telescope (at over 4 feet in length), but the planetary and binary star views promised to be superb based upon the indoor optical tests. I went out with him the first night he set it up. We found out that the slightest breath of wind or slight tap to the side of the scope would cause oscillations lasting for many, many seconds. This wasn't only annoying; it nearly made us seasick and it certainly spoiled the view. I remember that he spent several hours later trying to beef-up the mount. Ultimately he sold the telescope because he couldn't get the mount steady enough to be both functional and portable. Always go for 'overkill' when it comes to your mount.

No astronomer has ever been heard complaining that their mount was just *too steady*. A big part of why the great observatories of the world are so expensive to build is because awesome views require rock steady support of the optics. I'm always trying to add stability. Little tricks like hanging a brick from a chain from below the center of your mount's tripod will add stability. Isolation pads under the tripod legs can reduce vibration. Talk to other amateurs at the next event to hear about other ideas you may try.

The third often neglected element is, of course, your eyepieces. Anything that affects the light path coming from the object you want to view contributes to the overall quality of the image your seeing. Spending good money for your telescope but then using cheap eyepieces will result in a disappointing view of the star, galaxy, or planet you want to see. The most obvious improvement to the sharpness, contrast and field of view can be obtained by using better eyepieces in the scope that you already have. Beginners typically will use whatever eyepiece(s) that came with their telescope, so I'm addressing the needs of "intermediate" level amateur astronomers with this advice. I recommend the Meade, Celestron, Pentax and Orion lines of Plossl eyepieces, and strongly recommend *anything* made by TeleVue. The best way to shop for an eyepiece is to go out with other amateurs to a star party and borrow their eyepieces for a few minutes and check out the view they produce using your own telescope. Most of the other folks in the astronomy club will be glad to do this since that's likely how they originally decided on what eyepieces to buy! You may be able to field test two or three "side-by-side". Just remember to treat their eyepieces as if they were gold and return them right after you're done with your assessment.

Photo Used With Permission of Rod Nabholz
http://www.homebuiltastronomy.com/downbino/EyepieceCase.htm

There are trustworthy classified ad sites like those at AstroMart.com and CloudyNights.com that can offer you exceptional deals on top quality eyepieces. With patience and knowledge of what you want to buy you can build an eyepiece collection of higher-end eyepieces for relatively little money. If you have used 1 ¼ inch diameter eyepieces for a while, you may consider adding a 2" eyepiece to your collection. This may require that you upgrade your telescope's focuser to accommodate the larger size, but this is the sort of eyepiece change that will make your jaw drop with the spectacular vistas they show.

By considering any one of these elements you'll get the "Wow!" factor back into your viewing when you see the detail that your equipment is really capable of seeing.

Aerospace Committee Report Jeff Riechmann and Roswell (co-chairbeings)

Vandenberg Launch Schedule: As of 2010 February 16

Date	Launch Time/Window (PST/PDT)	Vehicle	Pad/Silo
JUN	To be announced	Minuteman III	---
Vehicle will probably send one or more unarmed warheads on a ballistic trajectory to the central Pacific			
SEP	To be announced	Minuteman III	---
Vehicle will probably send one or more unarmed warheads on a ballistic trajectory to the central Pacific			
SEP	To be announced	Delta II	SLC-2W
Vehicle will launch the COSMO-SkyMed 4 radar Earth-imaging satellite			
OCT-DEC	Evening?	Minotaur IV	SLC-8
First-ever Minotaur IV launch. Payload is the Space-Based Space Surveillance (SBSS) satellite. Delayed from OCT due to concerns with the launch vehicle			
OCT	To be announced	Atlas V	SLC-3E
Vehicle will launch the U.S. National Reconnaissance Office's NROL-41 payload			

Extraterrestrial Tidbits (ET) by Jeff Riechmann

Gemini 8

16 March 1966 saw the first successful docking of spacecraft in space, a very significant milestone in the preparation for the trip to the Moon. Shortly after Gemini 8 docked with the Agena Target Vehicle (ATV), an electrical malfunction caused the two connected spacecraft to tumble. Using the re-entry control system of the Gemini 8, Astronauts David R. Scott and Neil A. Armstrong were able to regain control just long enough to allow the Gemini 8 to safely undock from the ATV. The Gemini 8 spacecraft would splashdown just ten hours after launch on 17 March in NASA's first emergency landing.

Space Place

Flipping the Lights on Cosmic Darkness

Exploring the universe is a bit like groping around a dark room. Aside from the occasional pinprick of starlight, most objects lurk in pitch darkness. But with the recent launch of the largest-ever infrared space telescope, it's like someone walked into the room and flipped on the lights.

Suddenly, those dark spaces between stars don't appear quite so empty. Reflected in the Herschel Space Observatory's 3.5-meter primary mirror, astronomers can now see colder, darker celestial objects than ever before—from the faint outer arms of distant galaxies to the stealthy "dark asteroids" of our own solar system.

Many celestial objects are too cold to emit visible light, but they do shine at much longer infrared wavelengths. And Herschel can observe much longer infrared wavelengths than any space telescope before (up to 672 microns). Herschel also has 16 times the collecting area, and hence 16 times better resolution, than previous infrared space telescopes. That lets it resolve details with unprecedented clarity. Together, these abilities open a new window onto the universe.

"The sky looks much more crowded when you look in infrared wavelengths," says George Helou, director of the NASA Herschel Science Center at Caltech. "We can't observe the infrared universe from the ground because our atmosphere blocks infrared light, and emits infrared itself. Once you get above the atmosphere, all of this goes away and suddenly you can look without obstruction."

Herschel launched in May from the Guiana Space Centre in French Guiana aboard a European Space Agency Ariane 5 rocket. Since then, it has expanded the number of distant galaxies observed at far infrared wavelengths from a few hundred to more than 28,000. And with the instrument testing and system check-out phases finally completed, the discoveries are only now beginning.

The Herschel Space Obs. has 3.5-meter primary mirror, allowing astronomers to see colder, darker celestial objects than ever before.

Beyond simply imaging these dark objects, Herschel can identify the presence of chemicals such as carbon monoxide and water based on their spectral fingerprints. "We will be able to decipher the chemistry of what's going on during the beginnings of star formation, in the discs of dust and gas that form planets, and in the lingering aftermath of stellar explosions," Helou says.

And those are just the expected things. Who knows what unexpected discoveries may come from "flipping on the lights?" Helou says "we can't wait to find out."

Herschel is a European Space Agency mission, with science instruments provided by a consortium of European-led institutes and with important participation by NASA.

News Headlines

New Technique for Detecting Earth-like Planets
Astronomers have discovered a new ground-based technique to study the atmospheres of planets outside our Solar System, accelerating our search for Earth-like planets with life-related molecules
http://www.spaceref.com/news/viewpr.html?pid=30146

NASA's Fermi Closes on Source of Cosmic Rays
New images from NASA's Fermi Gamma-ray Space Telescope show where supernova remnants emit radiation a billion times more energetic than visible light. The images bring astronomers a step closer to understanding the source of some of the universe's most energetic particles -- cosmic rays.
http://www.nasa.gov/mission_pages/GLAST/news/cosmic-rays-source.html

Orion in a New Light
The Orion Nebula reveals many of its hidden secrets in a dramatic image taken by ESO's new VISTA survey telescope. The telescope's huge field of view can show the full splendor of the whole nebula and VISTA's infrared vision also allows it to peer deeply into dusty regions that are normally hidden and expose the curious behavior of the very active young stars buried there.
http://www.spaceref.com/news/viewpr.html?pid=30206

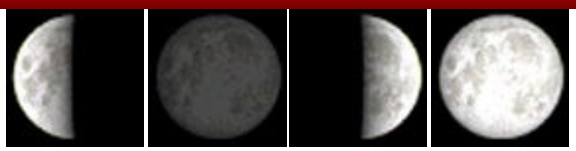
Jurassic Space: Ancient Galaxies Come Together After Billions of Years
Imagine finding a living dinosaur in your backyard. Astronomers have found the astronomical equivalent of prehistoric life in our intergalactic backyard: a group of small, ancient galaxies that has waited 10 billion years to come together. These "late bloomers" are on their way to building a large elliptical galaxy.
http://www.sciencedaily.com/releases/2010/02/100218110946.htm

Hubble Sees Suspected Asteroid Collision
NASA's Hubble Space Telescope has observed a mysterious X-shaped debris pattern and trailing streamers of dust that suggest a head-on collision between two asteroids. Astronomers have long thought that the asteroid belt is being ground down through collisions, but such a smashup has never been seen before.
http://science.nasa.gov/headlines/y2010/02feb_asteroidcollision.htm?list65200

NASA Breaks Ground on New Deep Space Network Antennas
NASA officials broke ground near Canberra, Australia on Wednesday, Feb. 24, beginning a new antenna-building campaign to improve Deep Space Network communications. Following the recommendations of an independent study, NASA embarked on an ambitious project to replace its aging fleet of 70-meter-wide (230-foot-wide) dishes with a new generation of 34-meter (112-foot) antennas by 2025.
http://www.jpl.nasa.gov/news/news.cfm?release=2010-065

World's most sensitive neutrino experiment begins
An intrepid subatomic particle has travelled through the bedrock of Japan and triggered a detector on the other side of the country, heralding a new attempt to probe the mystery of neutrino oscillations. The result could take us closer to answering one very big question – why is the universe full of matter?
http://www.newscientist.com/article/dn18582-worlds-most-sensitive-neutrino-experiment-begins.html

March Sky Data



Best time for deep sky observing this month:
March 5 through March 17

Mercury is at superior conjunction (almost directly behind the Sun) on March 14th. By the end of the month, this it may be visible just after sunset, low in the west – close to the lower right of brilliant Venus.

Venus is emerging very slowly from behind the Sun. At the start of March, it's setting in the west just an hour after sunset. But each evening it appears a little higher, and sets a little later, so it's gradually getting easier to find. On the evening of Wednesday March 17th, the narrow crescent Moon will be almost directly above Venus, about 7 degrees apart.

Mars is slowly moving further away from Earth, but is still bright, and easy to observe. It's high in the south-eastern sky at dusk, and it doesn't set in the until dawn. Relative to the stars, Mars is almost stationary in Cancer; towards the end of March, it starts to move very slowly to the south-east, away from the bright Twin stars of Gemini.

Jupiter was at superior conjunction (behind the Sun) in February, and the giant planet still won't be visible this month.

Saturn is very well placed for viewing this month. It's at opposition to the Sun on March 22nd; so it is rising as the Sun sets, it's due south at midnight, and it doesn't set until sunrise. Relative to the stars, it's moving very slowly north-westwards in Virgo. It's midway between Spica, to its lower left, and Regulusto its upper right. In the telescope, Saturn shows a disc almost 20 arc-seconds across. Its famous rings appear as a narrow oval, 45 arc-seconds wide and only 3 arc-seconds high.

There are no major **meteor-showers** in March, but we may see a handful of meteors from the Virginid shower, which is usually active during March and April; they appear to radiate outwards from the constellation of Virgo.

Sun and Moon Rise and Set

Date	Moonrise	Moonset	Sunrise	Sunset
3/1/2010	19:28	06:41	06:22	17:50
3/5/2010	23:58	09:07	06:17	17:53
3/10/2010	03:16	13:31	06:10	17:57
3/15/2010	06:41	19:12	07:04	19:01
3/20/2010	09:23	------	06:57	19:05
3/25/2010	14:29	03:46	06:50	19:09
3/31/2010	21:33	07:19	06:41	19:14

Planet Data

Mar 1

	Rise	Transit	Set	Mag
Mercury	05:59	11:31	16:59	-0.8
Venus	06:54	12:51	18:48	-3.9
Mars	14:10	21:29	04:48	-0.6
Jupiter	06:17	12:03	17:46	-2.0
Saturn	19:17	01:27	07:37	0.6

Mar 15

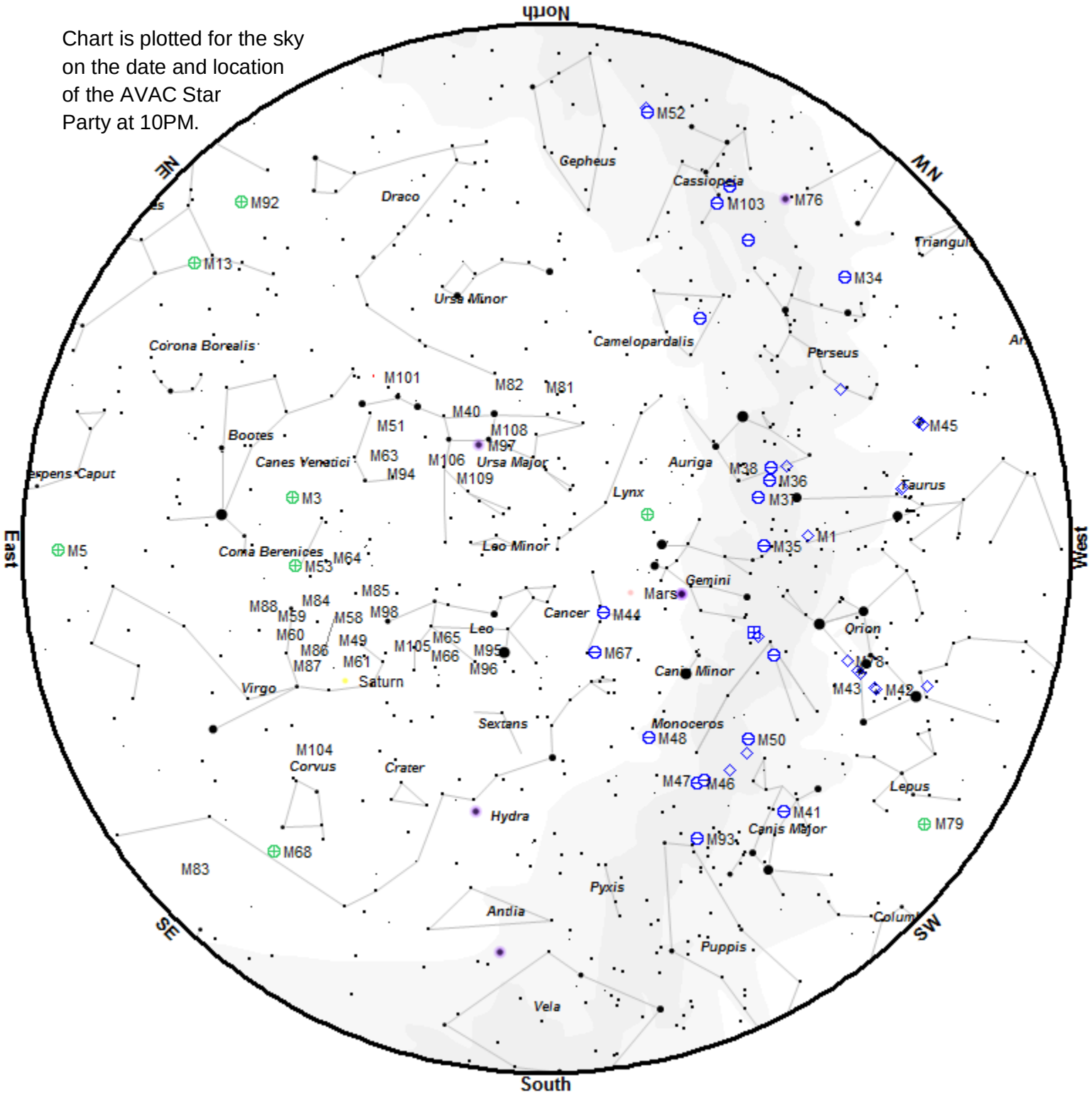
	Rise	Transit	Set	Mag
Mercury	07:09	13:09	19:10	-1.8
Venus	07:43	14:00	20:16	-3.9
Mars	14:15	21:32	04:50	-0.2
Jupiter	06:31	12:20	18:07	-2.0
Saturn	19:17	01:28	07:39	0.5

Mar 31

	Rise	Transit	Set	Mag
Mercury	07:15	13:56	20:38	-0.9
Venus	07:30	14:10	20:49	-3.9
Mars	13:25	20:39	03:53	0.2
Jupiter	05:38	11:28	17:22	-2.1
Saturn	18:08	00:21	06:33	0.6

Planet, Sun, and Moon data calculated for local time at Lancaster, CA

Chart is plotted for the sky on the date and location of the AVAC Star Party at 10PM.



To use the chart, go outside within an hour or so of the time listed and hold it up to the sky. Turn the chart so the direction you are looking is at the bottom of the chart. If you are looking to the south then have 'South horizon' at the lower edge.

Suggested Observing List

The list below contains objects that will be visible on the night of the AVAC Star Party. Since this month is our Messier Marathon the list is the observing order for the night. You can download the order in Excel format at http://www.avastronomyclub.org/docs/marathon_order.xls or Adobe PDF at http://www.avastronomyclub.org/docs/marathon_order.pdf

Order	Time	M #	NGC	Con	R.A.	Dec	Mag	Type*	Comments
1		M 77	1068	CET	2h 43m	0° 1'	8.8	SG	
2		M 74	628	PSC	1h 37m	15° 47'	9.2	S	
3		M 33	598	TRI	1h 34m	30° 39'	5.7	SG	Pinwheel galaxy
4		M 31	224	AND	0h 43m	41° 16'	3.4	SG	Andromeda galaxy
5		M 32	221	AND	0h 43m	40° 52'	8.2	EG	
6		M 110	205	AND	0h 40m	41° 41'	8.0	EG	
7		M 52	7654	CAS	23h 24m	61° 35'	6.9	OC	
8		M 103	581	CAS	1h 33m	60° 42'	7.4	OC	
9		M 76	650	PER	1h 42m	51° 34'	11.5	PN	The Little Dumbell
11		M 34	1039	PER	2h 42m	42° 47'	5.2	OC	
11		M 45		TAU	3h 47m	24° 7'	1.2	OC	Pleiades
12		M 79	1904	LEP	5h 24m	-24° 33'	8.0	GC	
13		M 42	1976	ORI	5h 35m	-5° 27'	4.0	DN	Great Orion nebula
14		M 43	1982	ORI	5h 35m	-5° 16'	9.0	DN	
15		M 78	2068	ORI	5h 47m	0° 3'	8.0	DN	
16		M 1	1952	TAU	5h 34m	22° 1'	8.4	PN	Crab nebula
17		M 35	2168	GEM	6h 09m	24° 20'	5.1	OC	
18		M 37	2099	AUR	5h 52m	32° 33'	5.6	OC	
19		M 36	1960	AUR	5h 36m	34° 8'	6.0	OC	
20		M 38	1912	AUR	5h 29m	35° 50'	6.4	OC	
21		M 41	2287	CMA	6h 47m	-20° 44'	4.5	OC	
22		M 93	2447	PUP	7h 45m	-23° 52'	6.2	OC	
23		M 47	2422	PUP	7h 37m	-14° 30'	4.4	OC	
24		M 46	2437	PUP	7h 42m	-14° 49'	6.1	OC	
25		M 50	2323	MON	7h 03m	-8° 20'	5.9	OC	
26		M 48	2548	HYA	8h 14m	-5° 48'	5.8	OC	
27		M 44	2632	CNC	8h 40m	19° 59'	3.1	OC	Beehive Cluster
28		M 67	2682	CNC	8h 50m	11° 49'	6.9	OC	
29		M 95	3351	LEO	10h 44m	11° 42'	9.7	SG	
30		M 96	3368	LEO	10h 47m	11° 49'	9.2	SG	
31		M 105	3379	LEO	10h 48m	12° 35'	9.3	EG	
32		M 65	3623	LEO	11h 19m	13° 5'	9.3	SG	Leo's triplet
33		M 66	3627	LEO	11h 20m	12° 59'	9.0	SG	Leo's triplet
34		M 81	3031	UMA	9h 56m	69° 4'	6.8	SG	Bodes Galaxy
35		M 82	3034	UMA	9h 56m	69° 41'	8.4	IG	Cigar Galaxy
36		M 97	3587	UMA	11h 15m	55° 1'	11.2	PN	Owl Nebula
37		M 108	3556	UMA	11h 12m	55° 40'	10.0	SG	

Order	Time	M #	NGC	Con	R.A.	Dec	Mag	Type*	Comments
38		M 109	3992	UMA	11h 58m	53° 23'	9.8	SG	
39		M 40		UMA	12h 22m	58° 5'	8.0	dbl	
40		M 106	4258	CVN	12h 19m	47° 18'	8.3	SG	
41		M 94	4736	CVN	12h 51m	41° 7'	8.1	SG	
42		M 63	5055	CVN	13h 16m	42° 2'	8.6	SG	Sunflower galaxy
43		M 51	5194	CVN	13h 30m	47° 12'	8.1	SG	Whirlpool galaxy
44		M 101	5457	UMA	14h 03m	54° 21'	7.7	SG	
45		M 102	5457	UMA	14h 03m	54° 21'	7.7	SG	Duplicate of M101
46		M 53	5024	COM	13h 13m	18° 10'	7.7	GC	
47		M 64	4826	COM	12h 57m	21° 41'	8.5	SG	Black eye galaxy
48		M 3	5272	CVN	13h 42m	28° 23'	6.4	GC	
49		M 98	4192	COM	12h 14m	14° 54'	10.1	SG	
50		M 85	4382	COM	12h 25m	18° 11'	9.2	EG	
51		M 99	4254	COM	12h 19m	14° 25'	9.8	SG	Pin Wheel nebula
52		M 100	4321	COM	12h 23m	15° 49'	9.4	SG	
53		M 84	4374	VIR	12h 25m	12° 53'	9.3	EG	
54		M 86	4406	VIR	12h 26m	12° 57'	9.2	EG	
55		M 87	4486	VIR	12h 31m	12° 24'	8.6	EG	
56		M 89	4552	VIR	12h 36m	12° 33'	9.8	EG	
57		M 90	4569	VIR	12h 37m	13° 10'	9.5	SG	
58		M 88	4501	COM	12h 32m	14° 25'	9.5	SG	
59		M 91	4548	COM	12h 35m	14° 30'	10.2	SG	
60		M 58	4579	VIR	12h 38m	11° 49'	9.8	SG	
61		M 59	4621	VIR	12h 42m	11° 39'	9.8	EG	
62		M 60	4649	VIR	12h 44m	11° 33'	8.8	EG	
63		M 49	4472	VIR	12h 30m	8° 0'	8.4	EG	
64		M 61	4303	VIR	12h 22m	4° 28'	9.7	SG	
65		M 104	4594	VIR	12h 40m	-11° 37'	8.3	SG	Sombrero galaxy
66		M 68	4590	HYA	12h 40m	-26° 45'	8.2	GC	
67		M 83	5236	HYA	13h 38m	-29° 52'	7.6	SG	Southern Pinwheel
68		M 5	5904	SER	15h 18m	2° 5'	5.8	GC	
69		M 13	6205	HER	16h 42m	36° 28'	5.9	GC	Hercules Cluster
70		M 92	6341	HER	17h 17m	43° 8'	6.5	GC	
71		M 57	6720	LYR	18h 54m	33° 2'	9.0	PN	Ring nebula
72		M 56	6779	LYR	19h 17m	30° 11'	8.2	GC	
73		M 29	6913	CYG	20h 23m	38° 32'	6.6	OC	
74		M 39	7092	CYG	21h 32m	48° 26'	4.6	OC	
75		M 27	6853	VUL	20h 00m	22° 43'	8.1	PN	Dumbbell nebula
76		M 71	6838	SGE	19h 54m	18° 47'	8.3	GC	
77		M 107	6171	OPH	16h 33m	-13° 3'	8.1	GC	
78		M 10	6254	OPH	16h 57m	-4° 6'	6.6	GC	
79		M 12	6218	OPH	16h 47m	-1° 57'	6.6	GC	
80		M 14	6402	OPH	17h 38m	-3° 15'	7.6	GC	
81		M 9	6333	OPH	17h 19m	-18° 31'	7.9	GC	
82		M 4	6121	SCO	16h 23m	-26° 32'	5.9	GC	

Order	Time	M #	NGC	Con	R.A.	Dec	Mag	Type*	Comments
83		M 80	6093	SCO	16h 17m	-22° 59'	7.2	GC	
84		M 19	6273	OPH	17h 03m	-26° 16'	7.2	GC	
85		M 62	6266	OPH	17h 01m	-30° 7'	6.6	GC	
86		M 6	6405	SCO	17h 40m	-32° 13'	4.2	OC	Butterfly cluster
87		M 7	6475	SCO	17h 54m	-34° 49'	3.3	OC	Ptolemy's Cluster
88		M 11	6705	SCT	18h 51m	-6° 16'	5.8	OC	Wild Duck cluster
89		M 26	6694	SGR	18h 45m	-9° 24'	8.0	OC	
90		M 16	6611	SER	18h 19m	-13° 47'	6.0	DN	Eagle nebula
91		M 17	6618	SGR	18h 21m	-16° 11'	7.0	DN	Swan nebula
92		M 18	6613	SGR	18h 20m	-17° 8'	6.9	OC	
93		M 24	6603	SGR	18h 16m	-18° 29'	4.5	OC	
94		M 25		SGR	18h 32m	-19° 15'	4.6	OC	
95		M 23	6494	SGR	17h 57m	-19° 1'	5.5	OC	
96		M 21	6531	SGR	18h 05m	-22° 30'	5.9	OC	
97		M 20	6514	SGR	18h 02m	-23° 2'	8.5	DN	Trifid nebula
98		M 8	6523	SGR	18h 03m	-24° 23'	5.8	DN	Lagoon nebula
99		M 28	6626	SGR	18h 25m	-24° 52'	6.9	GC	
100		M 22	6656	SGR	18h 36m	-23° 54'	5.1	GC	
101		M 69	6637	SGR	18h 31m	-32° 21'	7.7	GC	
102		M 70	6681	SGR	18h 43m	-32° 18'	8.1	GC	
103		M 54	6715	SGR	18h 55m	-30° 29'	7.7	GC	
104		M 55	6809	SGR	19h 40m	-30° 58'	7.0	GC	
105		M 75	6864	SGR	20h 06m	-21° 55'	8.6	GC	
106		M 15	7078	PEG	21h 30m	12° 10'	6.4	GC	
107		M 2	7089	AQR	21h 33m	0° -49'	6.5	GC	
108		M 72	6981	AQR	20h 54m	-12° 32'	9.4	GC	
109		M 73	6994	AQR	20h 58m	-12° 38'		ast	
110		M 30	7099	CAP	21h 40m	-23° 11'	7.5	GC	

For Sale

C5 telescope, tripod, eyepieces, & tools

This scope formerly belonged to AVAC club member Errol Van Horn. The OTA is a Celestron C5 Schmidt-Cassegrain telescope. It has the Celestron StarBright enhanced coatings on the primary mirror and corrector plate for superior light transmission. Mechanically and optically this telescope is in excellent condition

The mount is a stable single fork equatorial which tracks in RA, the excellent Byers tracking motor runs 120V AC. Telescope OTA mounts on a quick release equatorial wedge using a standard Vixen style saddle so any small scope can be attached - a unique quality of this mount. The OTA can be quickly separated from the wedge to use as a spotting scope (or brought onboard as an airline carry-on). Comes with an accessory bar for mounting camera or second telescope, and a Tele Vue "Quick Point" red dot finder (I've even included a new battery!). Everything has been well-cared-for, in great condition, with no dings or scrapes. The mount is **not** a “GoTo” mount.

For photos go to: http://www.avastronomyclub.org/links/classified.html?id=11&task=viewad
Contact Tom Koonce for more information

Public Outreach

The 2010 Leona Valley Elementary School Science Fair, organized once again this year by Kellee Koonce, was supported by Don Bryden, Lee and Millie Bush, Jeff Riechmann, Robert Lynch, Bob Ayres, and Matthew and Tom Koonce. A special thanks too, for Rose Moore who put out several announcements about the event, Dick Hague who had a flat tire on his truck as he was coming to the event (Sorry!), and to Karole Barker for getting off of work intending to come up and support the canceled star party, which was actually clouded out. Early in the afternoon, the AVAC supported the judging of the Science Fair projects for 1 1/2 hours, judging grades Kindergarten through 8th grade. Then because of the weather, we stayed indoors and the AVAC set up tables with a meteorite display with the stereoscopic microscope, a monitor with Starry Night running, a telescope display, and handed out numerous NASA posters and 2009 issues of Astronomy Magazine.

A.V.A.C. Information

Membership in the Antelope Valley Astronomy Club is open to any individual or family.

The Club has three categories of membership.

- Family membership at $30.00 per year.
- Individual membership at $25.00 per year.
- Junior membership at $15.00 per year.

Membership entitles you to…

- Desert Sky Observer–monthly newsletter.
- The Reflector – the publication of the Astronomical League.
- The A.V.A.C. Membership Manual.
- To borrow club equipment, books, videos and other items.

AVAC
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Visit the Antelope Valley Astronomy Club website at www.avastronomyclub.org/

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