A Year of Sky Events 2005
By Joe Orman

Mark your calendar for these interesting alignments, conjunctions, occultations, eclipses & meteor showers in the year 2005. Times are calculated for Phoenix, Arizona; other locations may differ. Most will be easy to see with the unaided eye, some very challenging -- take a look!

- **January 1 (morning):** Mercury 1 degree above Venus, low in SE before sunrise. Mars and star Antares to upper right.
- **January 4 (morning):** Star Spica 2 degrees to lower right of thick crescent moon, Jupiter 8 degrees to upper right, high in S before sunrise.
- **January 7 (morning):** Crescent moon, Mars and star Antares form triangle within 5 degrees, in SE before sunrise. Venus and Mercury to lower left.
- **January 7-8 (night):** Comet C/2004 Q2 (Machholz) 2 degrees west of the Pleiades star cluster.
- **January 8 (morning):** Mercury 1 degree to upper right of Venus, crescent moon 8 degrees to right, low in SE before sunrise.
- **January 12-13 (mornings):** Mercury 1/3 degrees to right of Venus, very low in SE before sunrise.
- **February 15-16 (night):** Star cluster Pleiades 1 degree to right of first-quarter moon, set in WNW about 1:30 a.m.
- **March 2-3 (night):** Last-quarter Moon occults star Antares (moonrise 1:19 a.m. MST, disappears behind bright side 1:25 a.m., reappears from dark side 2:22 a.m.), low in SE.
- **March 11 (evening):** Mercury 5 degrees to lower right of crescent moon, low in W after sunset.
- **March 20: Spring equinox (5:33 a.m. MST).** Sunrise straight east (6:32 a.m., azimuth 89.5 degrees), sunset straight west (6:40 p.m., azimuth 270.8 degrees). Always use proper eye protection when viewing the sun.
- **March 25 (morning):** Full moon sets straight west at sunrise (moon 1 degree up straight west at 6:16 a.m. MST, sunrise 6:25 a.m.).
- **March 31 (morning):** Star Antares 3 degrees to left of gibbous moon, in S before sunrise (occultation for Japan and Hawaii).
- **April 8 (afternoon):** Very slight partial solar eclipse, high in SW. Mere sliver of SE edge of sun will be covered. Starts 2:31 p.m. MST, greatest 3:04 p.m., ends 3:37 p.m. (annular/total in Southern Hemisphere). Always use proper eye protection when viewing the sun.
- **April 11 (evening):** Star cluster Pleiades 1 degree to lower right of crescent moon, in W after sunset.
- **May 2 (morning):** Mars 5 degrees to upper left of thick crescent moon, in SE before sunrise.
- **May 23-24 (night):** Full moon occults star Antares in S.

(Continued on page 3)
Who in their right mind would design this bizarre-looking antenna? Actually, nobody did. It evolved.

Taking a cue from nature, NASA engineers used a kind of "artificial evolution" to find this design. The result may look odd, but it works very well.

"The evolutionary process improves the design of antennas, just as evolution in nature leads to fitter plants and animals," says Jason Lohn, leader of the Evolvable Systems Group at NASA's Ames Research Center.

The improvement comes from Darwin's idea of natural selection: only the fittest members of a generation survive to produce offspring. Over many generations, traits that hinder survival are weeded out, while beneficial traits become more common. "In the end," he says, "you have the design equivalent of a shark, honed over countless generations to be well adapted to its environment and tasks."

Evolutionary computation, as it's called, applies this principle to hardware design. It's particularly useful for tackling problems that are difficult to solve by hand--like the design of new antennas.

Designing a new antenna for NASA's Space Technology 5 (ST-5) mission was the challenge facing Lohn's group. ST-5 will explore how TV-sized "nano-satellites" can perform the tasks of much larger, conventional satellites at a cheaper cost. Antennas on these satellites must be smaller than usual, yet capable of doing everything that a bigger antenna can do.

The evolution of this bizarre-looking antenna happened inside a computer. Many random designs were tested in a computer simulation. The computer judged their performance against certain goals for the design: efficiency, a narrow or wide broadcast angle, frequency range, and so on.

As in nature, only the best performers were kept, and these served as parents of a new generation. To make the new generation, the traits of the best designs were randomly mixed by the computer to produce fresh, new designs—just as a father and mother's genes are mixed to make unique children. This new generation was again tested in the computer simulation, and the best designs became the parents of yet another generation.

This process was repeated thousands, millions of times, until it settled onto an optimal, shark-like design that wouldn't improve any further. With today's fast computers, millions of generations can be simulated in only a day or so.

The result: an excellent antenna with an odd shape no human would, or could, design.

For more about artificial evolution, see ic.arc.nasa.gov/story.php?sid=86&sec. For more about Space Technology 5, see nmp.nasa.gov/st5. For an animation that helps explain to kids how STS's antenna sends pictures through space, go to spaceplace.nasa.gov/en/kids/st5xband/st5xband.shtml.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.
May 31 (morning): Mars 1 degree above thick crescent moon, rising in E about 1:30 a.m. and in SE before sunrise.

June 9 (evening): Saturn 5 degrees to lower left of crescent moon, in W after sunset. Stars Castor and Pollux straight in line to right, Venus to lower right.

June 15-16 (night): Jupiter 2 degrees to upper left of gibbous moon, high in S after sunset. Set in W about 1:00 a.m. with Jupiter 1 degree to upper right of moon.

June 25 (evening): Saturn 1 1/2 degrees to lower left of Venus, Mercury 1/2 degree to lower right of Venus, low in W after sunset. Stars Castor and Pollux straight in line to right.

June 27 (evening): Mercury just 9 arc-minutes (!) to left of Venus, very low in WNW after sunset.

July 2 (morning): Star cluster Pleiades 5 degrees to lower left of crescent moon, in E before sunrise.

July 8 (evening): Mercury 2 degrees to lower left of Venus, crescent Moon 3 degrees above, low in W after sunset.

July 17 (evening): Gibbous moon occults star Antares, in S after sunset. Disappears behind dark edge 8:32 p.m. MST, reappears from bright edge 9:13 p.m.

July 22 (evening): Star Regulus 1 degree to lower left of Venus, low in W after sunset.

August 7 (evening): Venus 1 degree to left of crescent Moon, low in W after sunset.

August 9 (evening): Jupiter 3 degrees to upper left of crescent moon, in W after sunset. Venus to lower right, star Spica to upper left.

August 11 - 12 (night): Perseids meteor shower. First-quarter moon setting about 11 p.m. will not interfere. Shower radiates from constellation Perseus, which rises in NE about 10 p.m. Best time to look between midnight and morning twilight. Typical rate 50 to 100 meteors per hour. Night of August 12 - 13 good too.

August 25-26 (night): Star cluster Pleiades 1 degree to left of last-quarter moon, rise in ENE about 11:00 p.m. 2 degrees apart near zenith at dawn on August 26.
I believe we all know the constellation Orion represents The Great Hunter, but what is the prey? Lepus the hare and Taurus the bull. Did you also know he is also followed by his two faithful companions, Canis Minor and Canis Major! Not many observations were submitted for this month. The major problem here is January is early for Orion. Not sure what I was thinking when this selection was made but I'm stuck with it, so we are making due with what we have. This will also be a problem with Canis Major next month, but not as bad. By the time we get to the March constellation, Gemini and the All Arizona Messier Marathon, the selection should be better placed for timelier observing.

NGC1662
8” f6, Newtonian, 38X; Charlie Whiting: Visible in 9x50 finder scope as a tiny and tight grouping of a few stars. At 38X in the 8” telescope, it became a collection of 17 stars. The cluster is hardly distinguishable as a cluster because it lies in a very rich field of stars. 12 of the stars form a capital “A”. Going to 120X only a few more very dim stars appear as part of the “A” formation. No signs of clouds of unresolved stars.

M42
The Great Orion Nebula, what more can be said? The Great Nebula is visible to the naked eye from moderately light and air polluted residential areas of Phoenix, Arizona; or any other city on planet earth. Structure is visible in 10 X 80 binoculars and 8 X 50 finder as a faint haze spreading out from the Trapezium. No words can do it justice. Only repeated observations over a long period of time can begin to reach that state.

NGC1999
Star-forming Region: NGC 1999 is a very bright example of a reflection nebula, an emission nebula, and a dark nebula all rolled into one object. Technically speaking, NGC 1999 is considered to be the core of a nearby low-mass star-forming region known as L1641 (catalogued as a dark molecular cloud which covers most of Orion below his sword). The core of the bright nebula itself is the peculiar V380 Orionis, a 10.3 magnitude variable star having emission-line features in its spectrum. A dusty "globule" can easily be seen obscuring the nebula's western edge. Furthermore, HH1 and HH2, the brightest members of a bizarre class of objects known as Herbig-Haro Objects, can be faintly seen as a pair of nebulosity features just southward of NGC 1999. The newly forming star located in the darkness between these two objects is said to be enveloped by a shroud of dust obscuring the event by more than 50 magnitudes!

8” f6, Newtonian, 100X; AJ Crayon: 10’x5’ in position angle southeast no magnitude estimate, responds well to UHC, at least twice as big! Surrounded by 5 stars to west and north about 12m. Without the UHC it looks like nice triple star with other involved stars to the southwest. The Orion Nebula is at the extreme north edge.

16” f4.4 Newtonian, Rick Rotramel: DN - pS, fB, Round, a bright object located in the middle, a dark lane on the west side.

(Continued on page 5)
Although NGC2174 was actually listed in the call for observations, I've included both observations submitted. I was not aware of the preceding discussion at the time my observation was made. I suspect Charlie wasn't either.

8" f6, Newtonian; Charlie Whiting: By the time I started looking for 2174 at Sentinel, I got "dewed out". So, I thought I'd try for it from home. M42 can be seen easily, so maybe I can nab 2174. Wrong! This nebula was almost impossible to detect. I tried Broadband, Narrowband and O-III filters with various eyepieces. The only combination that yielded a result was the 32mm eyepiece with the O-III filter. A splash of gray nebulosity was barely detected. It was shaped like a slice of pie. It seemed to emanate from the bright star in the middle of the 2175 cluster. It radiated to the south and southwest for a distance of about 20'. It was very, very faint.

14.5-inch f5.2 at 60X; AJ Crayon: The nebulosity, of which we are interested, is 30' diffuse, shaped like an isosceles triangle and has 3 dark lanes. There are 22 stars scattered about and an 8 star grouping in a 5' area from mag 10... elongated in an easterly position. The UHC increases contrast considerably, but the O III increases the contrast much more to the point where there are several dark lanes dividing the nebulosity. There is a dark bay shaped almost like a V on the west side point east to an 8m star in the middle.

Rho (ρ) Orionis

8" f6, Newtonian, 80X; AJ Crayon: orange and blue; no position angle or separation estimated.

8" f6, Newtonian, 120X; Charlie Whiting: primary is a pale yellow and very bright. Since it is not naked eye from my Glendale backyard, it is dimmer than 3.5m. It is probably 4.0 - 4.5m. The secondary is much dimmer, probably 3 magnitudes dimmer than the primary. The secondary appears blue-white and its separation is very close. The combination of closeness and magnitude spread is the reason that I had to go all the way from 38X to 120X in order to confirm its duplicity. It was suspected at 67X and 96X. At 192X I estimate the PA at 80-degrees and the separation to be less than 10'.

10" f5.8 Newtonian, 210X; Rick Rotramel: Dbl. Star - I saw the close 7" dbl. As Yellow and Blue. Pretty!

Call for Observations

For February we are going to take a tour of Canis Major. While most of us are aware it has many open clusters and nebula, not all of us realize it does have a very nice selection of galaxies, which are included in our list. First will be NGC2207 and IC2163, a pair of interacting galaxies with magnitudes of 10.8 and 13.4 respectively.

(Continued on page 9)
Contributing to SACnews

**Articles**

Articles for SACnews should be submitted either in ASCII Text format (*.txt) or Microsoft Word (*.doc) formats. If you sent it in Word, please help me with the formatting. Use full justification and 12 point type, I use Swis 721 BT font, if you have it available, use it. It will save me time in changing it later. Try to keep article to about two pages, including table’s, photos or diagrams. Please spell-check your documents. Although I’ll run spell check sometimes a typo will get through.

**Tables and Ephemeris’**

If you have a table of astronomical information, such as ephemeris, please try to arrange it in Microsoft Excel. If the table is part of an article you should be able to embed the excel file into word. If you do not have access to excel, any spreadsheet program would do, or you could use the table function in Word. As a last resort, try to type the table as clearly as possible with enough space between entries that my scanner will recognize it as a table. I’ll scan the information and convert it. Include information where the table is to be placed in the article if it is not obvious. Keep in mind this can take me some time to do and may delay publication. If your information is time sensitive, try to give me as much lead-time as possible.

**Photographs**

Keep in mind the limitations on what I can do with pictures. Astrophoto’s will probably not print well unless they are of the moon. For best results, pictures should have good contrast and a moderately light background. I can work with most picture and graphic file formats, but prefer JPEG, particularly if you’re sending me the picture via e-mail. I can scan prints, but once again give me plenty of lead time and include a SASE for return of the original, or contact me to find out what meeting or star party we’ll both be at so I can return the original.

**Deadlines & Contact Info**

I try to have the newsletter ready for posting to the web by the beginning of the month. Given that, I need to have material to me the week before. Since AJ has to sort through the contributions to his column and then send the finished product to me, Observations for Last Call should be sent to A.J. the 2 weeks prior to the end of the month. Submissions after this date may not make it into that particular issue. Keep in mind that currently, the newsletter is 12 pages. Of this 7 pages are reserved for regular features. I will do my best to get your submissions published as soon as practical, but space constraints may delay publication. If you have any questions regarding suitability and format of something you’d like to submit, contact me at the following numbers and address:

Rick Tejera  
5643 W. Pontiac Dr.  
Glendale, AZ  85308-9117  
Home phone: (623) 572-0713  
E-mail: newsletter@saguaroastro.org

A table of deadlines for submissions can be found on page 8.
February 2005

<table>
<thead>
<tr>
<th>SUN</th>
<th>MON</th>
<th>TUE</th>
<th>WED</th>
<th>THU</th>
<th>FRI</th>
<th>SAT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>12</td>
<td>13</td>
<td>14</td>
<td>15</td>
<td>16</td>
<td>17</td>
<td>18</td>
</tr>
<tr>
<td>19</td>
<td>20</td>
<td>21</td>
<td>22</td>
<td>23</td>
<td>24</td>
<td>25</td>
</tr>
<tr>
<td>26</td>
<td>27</td>
<td>28</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Schedule of Events for January & February 2005**

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan. 25th</td>
<td>ATM &amp; Astro-imaging Sub group Meeting at Thad’s Shop. See Page 10 for directions</td>
</tr>
<tr>
<td>Jan. 28th</td>
<td>SAC General Meeting at Grand Canyon University at 1930. Speaker Ted Dunham From Lowell Observatory: Topic: Progress on the Discovery Telescope &amp; the SOPHIA Project</td>
</tr>
<tr>
<td>Jan. 29th</td>
<td>Novice Group Session at Flat Iron. Plan on arriving about 1/2 before Sunset (1800)</td>
</tr>
<tr>
<td>Feb. 2nd</td>
<td>Moon at last quarter at 0727 mst.</td>
</tr>
<tr>
<td>Feb. 5th</td>
<td>SAC Star Party at Flat Iron, Sunset 1807, Ast. Twilight Ends 1931, Moonrise 0549</td>
</tr>
<tr>
<td>Feb. 8th</td>
<td>Moon is new at 2228 mst</td>
</tr>
<tr>
<td>Feb. 16th</td>
<td>Moon at First Quarter at 0016 mst.</td>
</tr>
<tr>
<td>Feb. 22nd</td>
<td>ATM &amp; Astro-imaging Sub group Meeting at Thad’s Shop. See Page 10 for directions</td>
</tr>
<tr>
<td>Feb. 24th</td>
<td>Moon is Full at 0454 mst</td>
</tr>
<tr>
<td>Feb. 25th</td>
<td>SAC General meeting at Grand Canyon University at 1930; Speaker: Chris Watson is tentative Topic TBA (I know Jenn’ll come through)</td>
</tr>
</tbody>
</table>

**Future Planning**

<table>
<thead>
<tr>
<th>Month</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>March 12-13</td>
<td>2005 All Arizona Messier Marathon at Farnsworth Ranch in Arizona City. For Details goto: <a href="http://www.saguarastro.org/content/messier.htm">http://www.saguarastro.org/content/messier.htm</a></td>
</tr>
<tr>
<td>April 16th</td>
<td>Thunderbird Public Star party at Thunderbird Park in Glendale. Got page xx for more details</td>
</tr>
<tr>
<td>Jun 4-11th</td>
<td>Grand Canyon Star Party. Go to: <a href="http://www.tucsonastronomy.org/gcsp.html">http://www.tucsonastronomy.org/gcsp.html</a> for more information</td>
</tr>
</tbody>
</table>
Deadlines for SACnews Article Submissions

As States in the article on page 6, IF you have an item you’d like to see published in SACnews, Here is a listing of deadlines for this years issues. Please submit contributions for Last Call For Observations directly to AJ.

<table>
<thead>
<tr>
<th>Issue</th>
<th>SACnews</th>
<th>Last Call</th>
<th>Issue</th>
<th>SACnews</th>
<th>Last Call</th>
</tr>
</thead>
<tbody>
<tr>
<td>March</td>
<td>February 25, 2005</td>
<td>February 18, 2005</td>
<td>August</td>
<td>July 22, 2005</td>
<td>July 15, 2005</td>
</tr>
<tr>
<td>April</td>
<td>March 25, 2005</td>
<td>March 18, 2005</td>
<td>September</td>
<td>August 26, 2005</td>
<td>August 19, 2005</td>
</tr>
<tr>
<td>May</td>
<td>April 22, 2005</td>
<td>April 15, 2005</td>
<td>October</td>
<td>September 23, 2005</td>
<td>September 16, 2005</td>
</tr>
<tr>
<td>June</td>
<td>May 27, 2005</td>
<td>May 20, 2005</td>
<td>November</td>
<td>October 22, 2005</td>
<td>October 15, 2005</td>
</tr>
<tr>
<td>July</td>
<td>June 24, 2005</td>
<td>June 17, 2005</td>
<td>December</td>
<td>November 25, 2005</td>
<td>November 18, 2005</td>
</tr>
</tbody>
</table>

SUCH-A-DEAL

For Sale

SkyQuest XT8 Dobsonian, 8” 1200mm f/5.9 with two Sirius Plossl eyepieces 25mm and 10mm, with padded scope case. $300.00 Call Damion at (602) 240-5421 Damion Pauksta: 4750 N. Central Ave. Apt. 9-H Phoenix Az. 85012

Astronerds

Comic provided free of charge by www.astronerds.com
This year we will hold our annual Spring Public Star Party at Thunderbird Park on April 16th. This is traditionally our best attended public event and we'll need as many folks to bring their scope out to show off Saturn & Jupiter, the Moon and any other astro-goodies you can find. Directions & Map Below.

Sponsored by Glendale Parks and Recreation.
Jack Jones
Public Events

(Continued from page 5)

NGC2217 is a barred spiral with a very faint ring. NGC2325 is another fairly bright galaxy. NGC2354 is a pretty rich galactic star cluster. About one degree northeast you will find our next object, another cluster, NGC2362, which includes tau (τ Canis Majoris), which is also a nice double; please include your description of this double in your observation. This brings us to NGC2359, a bright nebula that seems to respond well to UHC filters. While in the area check the galactic cluster NGC2374. Try it if you have one and let us know your results. Beware; this emission nebula is not very bright. NGC2367 is another interesting galactic star cluster. No I didn’t forget M41. I have passed it up in order for us to realize there are also many nice galaxies in this constellation.

While there are many nebulae in Canis Major, there are no planetary nebulae with an NGC designation; at least not according to the SAC database.

The following objects in Gemini will be for the March column. Starting at the feet, find the open cluster check out NGC2129, then hop about 1° to the northeast and find the open cluster IC2157, for an IC cluster it shouldn't be difficult to find. Next let your scope drift to NGC2158, almost 0.5° to the east. Finally, in the same 1° field is M35 (I just couldn’t resist)! Note the difference amongst these four clusters in size, richness and beauty. Next is NGC2266, a nicely compressed open cluster about 2° north of 3rd magnitude Mebsuta. Instead of a double star I’m adding something that might be a challenge – NGC2371/2372. There seems to have been some confusion with this object in the past but it is now clear these two are a double lobed planetary nebula. Do you see both of them? Last on the list is NGC2392 and is also known as the Eskimo Nebula. Try as much power as the night permits to see as much detail as possible, don’t forget your filters and also report color seen. Don’t let prior reports taint your results.

(Continued from page 5)

Directions to Thunderbird Park

Take the Loop 101 to 59th Ave. Turn North onto 59th Ave. (toward the Albertson's & Fry's Supermarkets) go about 1 1/2 miles on 59th Ave. until the road starts to climb the hill. The entrance to the park is on the left, 4/10 of a mile past the light at Deer Valley Rd. Go to the right of the amphitheater and follow the signs to the sight. Rangers will be there to guide you if you get misplaced (easy to do if you’ve never been there).
Flatiron Star Parties

Head west on I-10 to the 339th Ave exit (exit 103). Turn North (right) and go two miles to Indian School Rd. Turn West (left) on Indian School and go 2 miles to 355th Ave. Turn North (right). This will turn into Wickenburg Rd. Follow this road for about 12 miles. Just after mile marker 23 you will go through Jackrabbit Wash and pass a cattle guard sign. There is a dirt road just after the sign, marked by white painted rocks. Turn on to this road and follow it about .9 miles. Just after you pass through a wash, you’ll see the field on your left. If you hit the cattle guard, or the dirt road you’re on is next to a fence, you’ve missed the correct road. Go back and look for the white rocks. (see detail map above).

ATM & Astro-Imaging Subgroup Meetings

The ATM (Amateur Telescope Making) and Astro-Imaging sub groups meet at Thad’s Shop, Precision Guitar, on the Tuesday before the General meetings. The address is: 4442 N. 7th Ave, Phoenix. To get there:

Precision Guitar, is located at 4442 N. 7th Ave, suite # 6. Specifically, this is the SOUTHWEST corner of the STOPLIGHTED intersection at 7th Ave and Campbell. (Campbell is 1/2 mile SOUTH of Camelback, and 1/2 mile NORTH of Indian School) The suite on the end sports a large "Allied Cabinet Refinishing" sign on the front of the facade. We are further in (west) at suite 6. Please see http://www.precisionguitar.net/ShopSatPhotoA.jpg for a bird's eye view map.....
SAC Membership Services

Membership—Memberships are for the calendar year and are pro-rated for new members as follows: Jan–Mar: 100%; Apr–Jun: 75%; Jul-Sep: 50%; Oct-Dec: 25%.

☐ $28.00 Individual Membership  ☐ $42.00 Family Membership
☐ $14.00 Newsletter Membership  ☐ $7.50 Nametag for members
(will be mailed to address below)

Magazine Subscription Services

The following magazines are available at a discount to club members. Check the magazines you wish to subscribe to or renew, and pay the club treasurer. Please allow 3-4 months for the order to be processed.

☐ Sky & Telescope $33.00/yr  ☐ Astronomy $29.00/yr

Make Check Payable to: SAC

Please Print

Name: ____________________________  Bring completed form to a meeting or mail it with your remittance to:

Address: ____________________________  SAC Treasurer

City: ___________ St: ____ Zip: ________  c/o Al Stiewing

Phone: ____________________________  16210 Desert Holly Dr

E-Mail: ____________________________  Sun City, AZ 85351

☐ Check here if this is an update of information already on file.

SAC on the Internet

SAC has several E-mail mailing lists. To subscribe, send an email to the email address and put Subscribe in the subject box.

SAC-Announce@freelists.org: SAC-Announce is a mailing list for just club announcements. Typically 3-5 messages per month.

SAC-Forum@freelists.org: SAC-Forum is a general discussion mailing list. Topics should be related to Astronomy or SAC

SAC-Board@freelists.org: SAC-Board is a mailing list for discussions of club business. If you’d like to see how the club is run (or not run), or have a question about the club, this is the list to read. Typically month to month matters are discussed.

AZ-Observing@freelists.org: AZ-Observing while not a Sac list, is well attended by SAC members. This is the list to with observing places around Arizona. Find out where people are going and what they saw.

Printed Newsletter

Sac can save a lot of money if you download the PDF version of the newsletter. PDF files are readable by both PC’s and Macs. When the newsletter is published, a message will be sent to the address indicated above with the URL of the newsletter. Check the box below if you don’t have access to the internet or if your prefer a printed copy.

☐ Please send me a hard Copy of the newsletter
**SAGUARO ASTRONOMY CLUB**

5643 W. Pontiac Dr
Glendale, AZ 85308-9117

Phone: 623-572-0713
Fax: 623-572-8575
Email: newsletter@saguaroastro.org

---

**SAC Schedule of Events 2005**

**SAC Meetings**

<table>
<thead>
<tr>
<th>Date</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan 28th, 2005</td>
<td>Jul 22nd, 2005</td>
</tr>
<tr>
<td>Feb 25th, 2005</td>
<td>Aug 19th, 2005</td>
</tr>
<tr>
<td>Mar 25th, 2005</td>
<td>Sep 16th, 2005</td>
</tr>
<tr>
<td>Apr 22nd, 2005</td>
<td>Oct 14th, 2005</td>
</tr>
<tr>
<td>May 20th, 2005</td>
<td>Nov 18th, 2005</td>
</tr>
<tr>
<td>Jun 17th, 2005</td>
<td>Dec 16th, 2005</td>
</tr>
</tbody>
</table>

**ATM & Astro-Imaging Group Meetings**

<table>
<thead>
<tr>
<th>Date</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan 25th, 2005</td>
<td>Jul 19th, 2005</td>
</tr>
<tr>
<td>Feb 22nd, 2005</td>
<td>Aug 16th, 2005</td>
</tr>
<tr>
<td>Mar 22nd, 2005</td>
<td>Sep 13th, 2005</td>
</tr>
<tr>
<td>Apr 19th, 2005</td>
<td>Oct 11th, 2005</td>
</tr>
<tr>
<td>May 17th, 2005</td>
<td>Nov 15th, 2005</td>
</tr>
<tr>
<td>Jun 14th, 2005</td>
<td>Dec 13th, 2005</td>
</tr>
</tbody>
</table>

**SAC Star Parties**

<table>
<thead>
<tr>
<th>Date</th>
<th>Sunset</th>
<th>Astronomical Twilight Ends</th>
<th>Moonrise</th>
<th>Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan 8th, 2005</td>
<td>1740</td>
<td>1908</td>
<td>0706</td>
<td>F</td>
</tr>
<tr>
<td>Feb 5th, 2005</td>
<td>1807</td>
<td>1931</td>
<td>0549</td>
<td>F</td>
</tr>
<tr>
<td>Mar 5th, 2005</td>
<td>1831</td>
<td>1954</td>
<td>0434</td>
<td>F</td>
</tr>
<tr>
<td>Apr 2nd, 2005</td>
<td>1853</td>
<td>2018</td>
<td>0319</td>
<td>F</td>
</tr>
<tr>
<td>May 28th, 2005</td>
<td>1918</td>
<td>2053</td>
<td>0532</td>
<td>C</td>
</tr>
<tr>
<td>Jun 25th, 2005</td>
<td>1945</td>
<td>2131</td>
<td>2313</td>
<td>C</td>
</tr>
<tr>
<td>Jul 30th, 2005</td>
<td>1932</td>
<td>2108</td>
<td>0126</td>
<td>C</td>
</tr>
<tr>
<td>Aug 27th, 2005</td>
<td>1901</td>
<td>2029</td>
<td>0009</td>
<td>C</td>
</tr>
<tr>
<td>Sep 24th, 2005</td>
<td>1822</td>
<td>1946</td>
<td>2253</td>
<td>C</td>
</tr>
<tr>
<td>Oct 29th, 2005</td>
<td>1742</td>
<td>1946</td>
<td>0428</td>
<td>F</td>
</tr>
<tr>
<td>Nov 26th, 2005</td>
<td>1724</td>
<td>1851</td>
<td>0312</td>
<td>F</td>
</tr>
</tbody>
</table>

F = Flat Iron; C = Cherry Road