The Denver OBSERVER
Newsletter of the Denver Astronomical Society
One Mile Nearer the Stars
February 2007

Election Time Again

On 2 February 2007, at the Friday General meeting, we will hold elections. Be prepared to pay dues if needed to be elgible to vote.

Nominations are open until just before ballots are passed out at the meeting, so feel free to wade in and join the EBoard. All committee positions are delegated by the EBoard so feel free to let us know of your desire to serve on a committee or make suggestions about the committees. See the article below about the candidates.

Contents

Upcoming Events

February 2007	
2	General Membership Meeting at Olin Hall at D.U. (7:30 p.m.) Dr. Dan Baker - Space Weather
9	E-Board Meeting, 7:30 pm, Chamberlin Observatory.
16-17	EGK Dark Site Dark Sky Weekend.
24	Open House 5:00 pm at Chamberlin Observatory Saturn!

March 2007	
2	E-Board 7:30pm
3	**DAS Banquet** 5:30pm
17-18	EGK Dark Site Dark Sky Weekend
24	Open House 5:00pm

President's Corner

Wayne Green

The election season is upon us. This is the time when we reflect on where we've been, where we are and where we are going.

This past year we've seen improvements in our relationship with the University of Denver. We support efforts to treat Chamberlin as an active research and teaching center while recognizing its significant historic role in the University Hills area. The EBoard has taken steps make funds available to Dr. Stencel on a grant request basis. The grant basis gives DAS the ability to fund his requests from our general funds and to actively solicit outside contributions to raise even more money without involving the University.

We are working closely with Dr. Stencel to develop Dr. Howe's *Director's Office* into a conference room. The decor will be circa-1900 to be contemporary with Dr. Howe's time. This office will be used for conferences, honors and physics classes. It will be a place where we can bring donors to help us preserve the facility, make it the teaching and research center it can be. The space will support our scientific observing program. Dr. Stencel is allowing us to make quality copies of the art and portraits that were removed from Chamberlin for protection from theft.

There is a growing need for amateur astronomers to collaborate with professionals in their observing campaigns. This Christmas we attempted to gather data on a Seyfert galaxy (3C 120). This was in conjunction with our long standing member Dr. Mark Bottorff, and Dr Martin Gaskel of the University of Nebraska. The program was to acquire images overlapping those obtained with a space based X-Ray observing program. The weather prevented us from collecting one photon -- but we advanced our ability to do this work.

We received a donation of an Optec SSP-4 Photometer, with the donor's

desire to make the instrument available for DAS research and education. We are currently developing a program to use the photometer at Chamberlin to establish the observing protocols, and to make the instrument available to Dr. Stencel for use observing Mira Variables at Meyer-Wombel observatory this summer. The current plan calls for DAS Member Naomi Pequette to conduct the observing program. We are working with Deep Space Exploration Society to acquire OH Maser data on 4 Mira variable stars, hopefully in conjunction with this summer's optical program. The SSP-4 is an IR point-source PIN-Diode device, where one electron is liberated for each photon striking the detector.

Next year we are looking to further our science research capability and to collaborate more closely with ALPO, AAVSO, the USNO Washington Neglected Double Star Catalog, and IOTA with lunar and asteroid occultations. Using research we develop enhances our outreach programs and helps showcase the capability of the fine instruments at Chamberlin.

All of this is possible because the great support of all of you.

Finally, we are exploring hosting the 2009 Astronomical League Convention in Boulder in conjunction with the Boulder Astronomy and Space Society and the Longmont Astronomical Society. ALPO and AAVSO have expressed interest in merging their summer meetings with ALCON 2009. We will coordinate with the astronomy programs at DU, CU, SWRI and SSI. This will make for an exciting convention, where we hope to conduct workshops to develop better professional and amateur collaboration.

2006 was a busy year, but the honor of working with many of you to achieve these accomplishments was very rewarding for me. I look forward to continuing this program over the next year. I hope to see more of you join with our observing programs and start a flow of data from DAS and Chamberlin into these national efforts.

Remembering Rich Lane

Rich Lane, a very long time member of the DAS, an avid supporter of our outreach efforts, a champion of Dark Skies, a very active observer, member and team leader of our Public Outreach Teams, past officer and board member of DAS, and a past editor of the DAS Observer passed away Friday the 19th of January 2007. Services were held on the 26th of January. We are preparing an in-depth article about the life and times of Rich for the March Observer. Please send your rememberences to Newsletter@TheDAS.org.

Remembering Vic Winters

Vic Winters was the founder of StarGarden Foundation, an organization dedicated to outreach. His passion for astronomy took him around the globe to photograph the sky. He was an owner of ICSTARS Astronomy, (www.icstars.com), and DayStar Filters. He was a JPL Nasa Solar System Ambassador, editor of the AL's *Reflector Magazine*, a decorated member of and former president of the Astronomical Society of Kansas City and has given thousands of public talks and demonstrations on astronomy through the ASKC and StarGarden Foundation.

E-Board Highlights

The Executive Board meets at Chamberlin Observatory on the weekend of the last quarter moon. We discuss the business of the Society. We welcome input from members and the public.

General Meeting

The March General Meeting is the Banquet!

By popular demand, the banquet will be at the White Fence Farm, on the 3rd of March 2007, starting at 5:30PM. The sign-up form appears as an article and mail-in attacument. This year we have committed to 90 people attending to assure we get the space we want for a nice comfortable banquet.

Please send your form and checks in early this year!

DAS Participation Prize

by ***Darrell Dodge***

The DAS offers a participation prize for DAS members that join in our public activities. This prize is usually a book, software, or a piece of equipment related to Astronomy. This is a way of saying thanks to all that participate.

The next Participation Prize will be awarded at the Banquet!

Public Outreach News

We experienced great success with public outreach this year in spite of a lack of spectacular events in the sky. Comet McNaught teased us early in January with a brief appearance in the western sky, then it went south for vacation. DAS shared observations of the Transit of Mercury with well over 1000 people

this November.

Dark Sky Corner

The Dark Sky Committee is making plans for the summer observing session. The committee reformed late in the summer of 2006, and still managed to deliver more pads with electricity. We will be starting a fund-raising effort to expand support for observers and amateur scientists at the site. Often people announce their plans to head to the site on the DAS Listserver.

If you are not receiving emails redirected by the Listserver and would like to be included please send a note to Secretary@thedas.org.

Chamberlin News

DU is still showing very little progress with the State Historical Grant, issued over a year ago. They are still negotiating contracts and making plans to do the actual work.

Aaron Reid has been steadily working to remove the horrid blue paint from the fine woodwork in what we are now calling the *Director's Office* at Chamberlin Observatory. Dr Stencel and DAS are working to restore the bookshelves over the drawers. Dr. Stencel will place some books that used to live at the Observatory in these shelves upon completion of the work there.

These things do take time!

Public Night Corner

We are seeing more interest in general astronomy from sectors of the public this year. The Scout groups have revamped their programs to cover many more topics and in greater detail than before. Their curricula are more flexible.

February Skies 2007

by **Ron Mickle**

The first week of February finds both Mercury (apparent magnitude M_v -0.9) and Venus (M_v -3.9) shining bright in the west. Mercury will be visible approximately 6º to the lower right of Venus. By February 7, Mercury will be setting 1½ hours after sunset, but progresses noticeably lower by the 12th, and dimmer. On February 1 Mercury's disc will be 78% illuminated, but by the 12th it will only be 25% illuminated and almost a magnitude dimmer. However, Venus remains visible for at least 2 hours during the entire month and its magnitude unchanged. Remember, Mercury and Venus both go through phases similar to that of the Moon.

The celestial highlight of the month is the ringed planet Saturn. There will lots of opportunity to view Saturn this month since it reaches opposition on February 10, which means it will be visible in the night sky the entire month. Saturn reaches M_v 0.0, which is something it will not do again for several decades. Telescopic viewing will show the rings tilted at 15º from edge-on. The two most visible rings, A & B, are separated by the darker Cassini division. Look for this division in Rings A & B. The globe of Saturn has belts and zones running east-west. When the observer's eyes are dark adapted, he or she should be able to make out the subtle hues of the zones.

One of the winter's greatest celestial attractions in the northern hemisphere is M42, the Great Orion nebula (coordinates below). The Orion constellation itself measures 594 square degrees of the sky and is located on the celestial equator, close to the Milky Way.

M42 is a diffused nebula easily visibly to the naked eye. The middle point of light in Orions sword (or "s" words in Jeopardy) is approximately 1,600 light years distant. Binoculars will bring out some nebulosity; it is best viewed with a telescope. The core of M42 is known as the Trapezium. A frequent target for resolving power is the four stars in the Trapezium. Overall, there are five stars 1st m_v or brighter in Orion.

In astronomy the luminosity of a star is as if one were viewing it from a distance of 10 parsecs. For example, Algiebba viewed from 10 pc is 6,604 times more luminous than our sun, or can be expressed as having a luminosity of 6,604 suns. For the laymen, when we speak of how luminous an object is, we are usually referring to how bright the object appears from our viewing position. While this is partially correct, Betelgeuse, with an apparent magnitude of 0.43, is considerably *brighter* than Chi2 Ori with an apparent magnitude of 4.62. But, Chi2 Ori is over six times *more luminous* than Betelgeuse, and almost 2 million times *more luminous* than our sun. Physical characteristics being the same for two stars, the distance from the observer would determine the apparent magnitude, or brightness.

To get a great view of the planets, stars, and other celestial objects, visit the Denver Astronomical Society's next Open House at 5 p.m. on **Saturday, February 24** at the University of Denver's Historic Chamberlin Observatory. For the public, there is a $1 upkeep fee to look through the Clark 20-inch telescope. Members of the Denver Astronomical Society have free access to the Clark 20" at Chamberlin Observatory during Open House.

Description	RA	DEC
M31, Andromeda galaxy	0h 42.7m	41° 16’
M33, Triangulum galaxy	01h 33.9m	30° 39’
Mira, Variable star	02h 19.7m	-2° 57’
Perseus double cluster	02h 21.5m	57° 08’
ι (iota) Cassiopeiae, triple star	02h 29.0m	67° 24’
M77, Spiral galaxy	02h 43.0m	0° 01’
Pleiades	03h 47.5m	24° 06’
M42, Orion nebula	05h 35.4m	-5° 22’
σ (sigma) Orionis, multiple star	05h 38.7m	-2° 35’
M35 cluster	06h 08.9m	24° 21’
Castor, double star	07h 34.6m	31° 54’
M81 galaxy	09h 55.6m	69° 04’

Astronomical Calendar 2007, Starry Night Pro, Sky & Telescope and Astronomy magazines

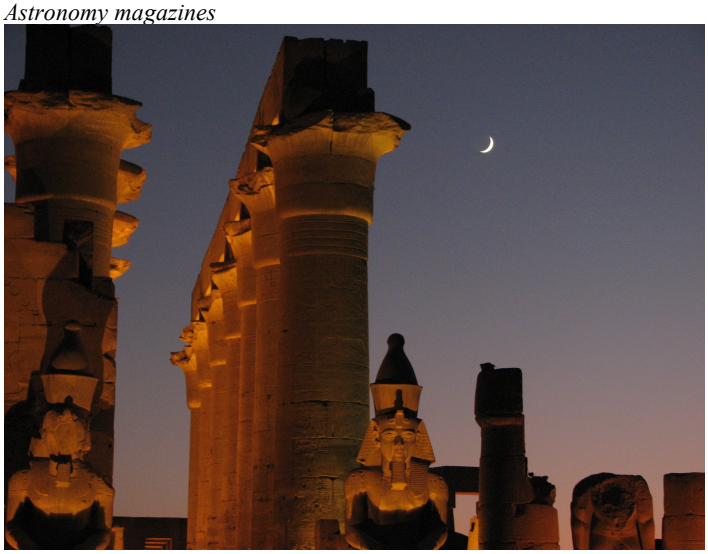

Photo: Ron Mickle, the Moon at the Temple of Luxor along the Nile River, Egypt.

Dusk and Daytime Finder Charts

by **Jim Holder**

If you want to find the intergalactic tramp (globular Cluster NGC 2419), use Uranometria. But if you want to find a comet at sunset or a planet in broad daylight, Uranometria won't help. A quick and dirty way to make charts, especially useful when the Sun washes out the sky, involves John Walker's Your Sky website along with the Harvard Comet site.
Your Sky (www.fourmilab.ch/yoursky) by John Walker, who makes AutoCAD, is also accessible through the Clear Sky Clock sites (such as www.cleardarksky.com/c/DeerTrailCOkey.html?1) by clicking on "Star Map".The Harvard comet site is: http://cfa-www.harvard.edu/iau/Ephemerides/Comets/

From there you can click your way to the orbital elements you will need.
To make your finder chart, begin by getting to the Your Sky site and be sure the location is right. If you want to find a bright daytime comet (such as McNaught seen lately), minimize the Your Sky and find your way to the orbital elements for the comet you seek. Click and drag over the orbital elements and copy (by holding down Ctrl and hitting the "c"). What you copy will look something like:

C/2006 P1 (McNaught)
Epoch 2007 Apr. 10.0 TT = JDT 2454200.5
T 2007 Jan. 12.7961 TT MPC
q 0.170742 (2000.0) P Q
z -0.000109 Peri. 155.9771 +0.1269048 -0.1739154
+/-0.000024 Node 267.4144 +0.6753090 +0.7362590
e 1.000019 Incl. 77.8349 +0.7265348 -0.6539695

Next, get back to the Your Sky and paste what you copied into the "Asteroid and Comet Tracking" "Paste orbital elements below:" box near the bottom (by holding down Ctrl and hitting the "v"). This box is just above the Sun, Moon, and planets ephemeris chart. To be sure it is working, scroll up to just below the big round chart and click the "Update" button. Unless the comet is up at your present time, click the box next to "Universal time" and type in the time (in Greenwich England) when you expect to see the comet here, and then click the "Update" button. Keep trying different times until the comet shows up on the horizon you want. If you can't find it, check the ephemeris in the Harvard site for the comet you want, and figure out what time (if at all) it will be up in your location.
If you want detailed info near the horizon, click the "View Horizon at this Observing Site" button (back on the Your Sky site). This will bring up a view of the northern horizon but it changes time back to the present. Which means you need to type your way back to the future in the "Universal time" box again. If you remember where the comet was after you pasted the orbital elements and updated the chart, you can then type in the part of the horizon you want to see and click the "Update" button.
To tidy up your chart, go down the list and un-check almost everything except "Moon and planets". In the "Show stars brighter than magnitude" type in 1 or maybe 0, and finally change the "Color scheme" to

black on white. Your main guides will be the locations of the horizon, Sun, Moon, and maybe Venus (shown as the female symbol without the Mercury wings on it's hat). After you print your chart, maybe use whiteout on Pluto and Uranus since you won't be seeing them in the daytime with your 10x50s anyway.

Use extreme caution and shade the sun with a building corner or roof overhang. Be absolutely certain that you cannot point your binoculars at the Sun. Better to not see the comet than to not see anything ever again because you boiled the vitreous humor out of your eyeballs with binoculars and sunshine.

DAS Election Ballot

The slate of people running for office, as of press time for the Observer include:

President: Wayne Green, **Vice President** Naomi Pequette, **Secretary** Darrell Dodge, **Treasurer** Brad Gilman. Members running for the **Executive Board**'s 8 positions include: Jack Eastman, Joe Gafford, Frank Mancini, Ron Mickle, Bill Ormsby, Ron Pearson, Keith Poole, Bernie Poskus, Cliff Simpson, David Shouldice, Brian Wilburn, and Dan Wray,

Nominations are open until the start of voting. Speeches will be at the next meeting. Write-in candidates are subject to the candidate's acceptance.

Time, DST, and April 15th.

by **Wayne Green**

In the past few years, the accuracy of pointing instruments towards the heavens has improved to the point that a system based on civil requirements has been replaced with a time and coordinate system. The new way satisfies record keeping for measurements of: time, the Earth's surface, locations of close objects within and around the solar system, stars and material in the local neighborhood, objects at the galactic scale and extra-galactic objects. Keeping track of *'where'* means keeping track of *'when' (*time), and that can get very expensive for us amateurs.

There is local time, civil time, GMT, UTC, and a host of other acronyms related to time. There is sidereal time (what the Right Ascension of the local meridian is right now!), and leap seconds. Computers are pretty confused, where the 2 digit Y2K problem of 'good-enough' worked... until 2000 rolled around and it wasn't good enough anymore! I'm doing good to get the date right.

Julian Days were created by 'Julius' (hence the name, not the emperor Julian) J. Scaliger in 1583, where the lunar cycles, solar cycles and Emperor Constantine's Roman tax schedule (the Indiction) were rolled together to come up with a day starting at noon on 1 January 4713 BCE. We refer to these days by their last 5 digits, where 1 February 2007 is 2,454,133 JD or 2,400,000 + 54,133 [1].

There are people that spend inordinate amounts of money on playing with time. This includes understanding the inner workings of atomic clocks, using simple and sophisticated GPS based systems to maintain oven-controlled crystal time references, making receivers to interpret the precise radio signals from time sources like WWVB in Fort Collins, Colorado. Other expensive approaches to playing with time includes collecting wind-up or weight driven clocks. The quest for precise time has always been in the minds of a few people, most wanting to track quitting time.

John Harrison (1693-1776), a pretty average guy, spent his life and large sums of money seeking the X-prize of his day -- a clock to predict time (and position!) at sea. His first clocks were complicated metal beasts, and he finally produced an elegant clock on the scale of a pocket watch. His H4 clock, was deemed unacceptable to the Admiralty by Royal Astronomer, Neveil Maskelyne due to the inevitable drift of mechanical watches. James Cook, on a voyage around the South Pacific, used a knock off of Harrison's H4 called K1 made by Harrison's apprentice Karkum Kendall, sang its praises and that convinced the King (George) to pay the man his prize [2]

The main problem was that most people want to know when the Sun rises and sets, and when Easter occurs. Outside of that, they really did not care. Greenwich Mean Time (GMT) was established in 1675. Clocks in England were using GMT, but most clocks had two minute hands -- one for the official time, and one for local time. [3] Charles Dowd, had an idea of time zones centered around Washington in 1863, but didn't get busy promoting the idea until around 1870. The distance of 15 degrees of longitude equates to one hour (1/24th) of a revolution of the Earth. Chamberlin Observatory used to sell time to the railroads, by using the Transit Scope to time star passages and a telegraph key to post their results. There are reports from DU's Dr. Howe, that report the position of Chamberlin relative to Washington!

On the cheap side, you can have a clock that is kept to within nano-seconds of the official time at the UNSO, by acquiring an inexpensive GPS receiver that produces a 1-PPS (Pulse Per Second) signal. The math/algorithms inside the receiver merge several GPS messages together to generate the pulse. Remember, light travels 300,000,000 meters per second. A nano-second is 0.000000001 which means light travels ~0.3 meters/second = about 1 foot.

The NIST WWVB radio broadcast is another source of very accurate time. They transmit a 60,000 (60kHz) radio signal making the wavelength 5000 meters or 3.1 miles! The signal carries a digital code embedded inside, giving the codes for the hour,minute,and second related to that minute. Derivatives of these time signals can be received at 5,10,15,and 20 MHz on a short wave receiver.

Part of the WWV signals gives a very accurate indication of when the second starts. One of the bits in the signal even tells popular *'atomic clocks'* to report daylight savings time. This means atomic clocks will respond to the change in DST policy that goes into effect this year without making your current clocks obsolete!

The concept of Julian Dates, which allows us to track long term astronomical records is based on tax collecting, which occurs at Midnight at the end of the 15th of April, that is in the Daylight Savings Time portion of the Calendar that shifts this year on a different date -- that shift is provided for with the WWVB time signals that depend on the taxes you pay. And you better pay on time! Set those clocks on 11 March and 4 November this year.

References:

[1] scienceworld.wolfram.com/astronomy/JulianDate.html

[2] Wikipedia: en.wikipedia.org/wiki/John_Harrison

[3] Wikipedia: en.wikipedia.org/wiki/Time_zone

Background of DAS

This article is included to remind us of what we are doing, and to give you an idea of the scope of involvement of DAS with the community and the directions we are taking with fund raising.

These tidbits are good to pass along to those who are looking to join with us in promoting our goals.

The Denver Astronomical Society is a 501(c)(3) non-profit organization that exists to promote the science of astronomy to the public and to furnish a social environment for its members to engage in astronomy-related activities. The DAS has been in existence for 51 years and for most of that time has provided trained volunteer telescope operators and lecturers for the University of Denver's Historic Chamberlin Observatory. The DAS hosts twice-weekly Public Nights and monthly Open Houses at the observatory, in addition to special viewing programs related to special celestial events, i.e.: visible planets, comet watches, eclipses, transits, etc. The DAS also coordinates and hosts Colorado Astronomy Day every year in cooperation with other front range astronomical groups and the Denver Museum of Nature and Science.

The DAS's Public Outreach program reaches over 5,000 people per year at Chamberlin Observatory and various sites around Denver, including elementary and middle schools, community colleges, senior facilities, corporate gatherings, and nature and wildlife reserves.

The DAS leases and operates a dark-sky site near Deer Trail, Colorado for the benefit of its members and guests as a retreat from the bright lights of metropolitan Denver, this to better observe and study the night sky.

The DAS administers two funds under its incorporation: the Van-Nattan-Hansen Scholarship Fund, for the advancement of students engaged in the study of astronomy and related fields; the Edmund G. Kline Dark-Site Fund, for the maintenance and further development of the Society's dark site at Deer Trail Colorado. We fund grant proposals related to Chamberlin Observatory, working in 2005 to contribute $10,000 to a Colorado State Historic Grant for the preservation of the Observatory. We fund small grant proposals to improve Chamberlin Observatory as a venue for our outreach efforts.

DAS supports its members with a science program. Results of the research by our members serve to enhance the content of our outreach programs and help to promote Chamberlin Observatory as a contemporary teaching and research center. We are actively expanding this activity at this time, and are seeking outside support for our research efforts.

The DAS is supported through its member's dues, and small fees for some events. We receive generous fees from some corporate entertainment events. Funds are used almost exclusively for support of raising public awareness of amateur astronomy, space science, limited science research, and of raising awareness of light pollution. DAS does not pay salaries, and makes limited reimbursements to its members for their travel expenses

DAS Officers AND E-Board

Business of the Denver Astronomical Society is conducted at a separate Executive Board Meeting usually held at 8PM at Chamberlin Observatory, 2930 East Warren Street, Denver, CO 80208. Regular meetings are held at Olin Hall, University of Denver's Main Campus, 2190 East Illif Ave, Denver. Two blocks west of University, on Illif, South Side of the Street.
The Executive Board conducts the business of the DAS at 8 pm. at Chamberlin Observatory. Please see the Schedule of Events for meeting dates. All members are welcome.

OFFICERS:

President Emeritus: Larry Brooks

President: Wayne Green, President@TheDAS.org.+1.303.818.1290

Vice President: Darrell Dodge,303-773-9550 VicePresident@TheDAS.org,

Secretary: Stuart Hutchins, 303-697-4353 Secretary@TheDAS.org

Treasurer: Brad Gilman, 303-723-1205 Treasurer@TheDAS.org

Past President: Steve Solon

EXECUTIVE BOARD

Jack Eastman, Joe Gafford, Dan Wray, David Shouldice, Frank Mancini, Ron Mickle, and Ron Pearson, Bill Ormsby.

ALCor: (Astronomical League Correspondent) Sandy Jerry Sherlin, 303-680-6894 ALCOR@TheDAS.org

Contact Info: DAS INFORMATION LINE: 303-871-5172

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WEB: Darrell Dodge

Denver Astronomical Society Website: www.TheDAS.org, DenverAstroSociety.org

Newsletter Editor: Patti Kurtz, Newsletterr@TheDAS.org,

Wayne Green assisting this month.

DAS 2007 Banquet

You are cordially invited to the Denver Astronomical Society's Annual Banquet.

This years banquet will be at the White Fence Farm on 3 March 2007, starting early at 5:30 PM. The White Fence Farm is located at: 6263 West Jewell Avenue, Lakewood, CO 80232 Their phone number is: 303-935-5945.

Dr. John Stevens will be the speaker, talking about the new direction NASA is taking with its return to the Moon. Dr. Stevens is the Director for Business Development for Lockheed Martin Space Sciences Division. His talk will be about the Crew Exploration Vehicle: the subtleties of the program, and its role into the future.

The cost for this years banquet will be $27.00 and will include your choice of Chicken or Turkey. This will come with a baked potato, and a non-alcoholic beverage from their menu. Alcohol is available, on a pay as you go basis – at the Farm's going rate. Meals are in the $22.00 range, which means the $27 Banquet Fee gives us some flexibility to reserve a comfortable room. Dinners at the White Fence Farm have a comparatively low fixed cost that include the cost of the facility. Any funds left over will go to the DAS General Fund, and any deficit will come from the General Fund.
Please indicate the number of people in your party, and their choice of meals on the form below. Please include a check payable to the Denver Astronomical Society and mail this form and your check to me at this address:

Wayne Green 7131 Oriole Lane Longmont, CO 80503.	Feel free to email me at President@TheDAS.org Call +1.303.818.1290
Number of Chicken Dinners: Number of Turkey Dinners: Total Number ($27 per person) Check Total $	

We have room for up to 150 people with this arrangement, so we will have a comfortable time at White Fence Farms. The earlier starting time will mean better access to parking. We can stay as long as we want.
This past year has been very successful for DAS, and we all have good reasons to celebrate those successes, meet the new members of the Executive Board.

Planet Madness

Venus and Mercury are well placed this month for observing. Saturn is rising earlier each day, making it an excellent target for public nights. We are planning to feature Saturn this April, Jupiter in July, and Mars in December.

How to Use a Telescope

The January presentation on how to use the telescopes you received for christmas was a limited success. Bad weather chilled attendance. However, there were two people who did attend, and we had a great discussion about the general observing techniques for the sky. Orion's Deep Sky 600 chart makes a very inexpensive introduction to the sky providing you with a map and a list of 600 objects to observe! These are available at S&S Optika, and make a great gift idea when you are looking to introduce someone to the night sky.

Book Signing

Dr. John Balley has a new book, The Birth of Stars and Planets. This book is published by Cambridge press and are available through S&S Optika. Dr. Balley will be on hand 10 March from 11 AM to 3 PM for a book signing. This is a great book, and contains information that he presented at the last Banquet. Let Cathy at S&S know if you want one, and she is prepared to order it and have it on hand for the signing.

About the Denver Astronomical Society

Membership in The Denver Astronomical Society is open to all people. We operate the Chamberlin Observatory helping to add Chamberlin to the National register of Historic Places. First light at Chamberlin in 1894 was a Public Night of viewing, a tradition that The DAS has help to maintain since our foundation in 1952. We are long standing members of the Astronomical League, participate with NASA's Project Astro program.

Our credo is to provide members a forum for increasing and sharing their knowledge, to promote and educate the public about astronomy, and to preserve the historic telescope and observatory in cooperation with the University of Denver.

We are a 501(c)3 corporation, and have established three tax deductible funds: the Van Natten Scholarship fund, the Chamberlin Restoration Fund, and the DAS Dark Sky Site Fund. Donate often and remember to make checks payable to one of the funds above. More information about DAS, our activities, and the special tax deductible funds is available on our web site at www.thedas.org.

Membership Application Form

Name_____

Address_____

City _____

State/ZIP_____

Phone Number_____

Email_____

Receive Paper Newsletter (Y/N) _____

Regular Member ($35) _____

Sky and Telescope Subscription($32) _____

Astronomy Magazine ($29) _____

Donations:

Van Nattan Scholarship Fund _____

Chamberlin Restoration Fund _____

EGKDS Dark Sky Fund _____

DAS General Fund _____

TOTAL: _____

Please make Dark Sky Site donations payable to **EGKDS Fund** Please make other checks payable to **Denver Astronomical Society.** Mail check(s) together with this form to **Brad Gilman, 7003 S Cherry St, Centennial, CO 80122-1179.**

The Denver Astronomical Society

C/O Chamberlin Observatory

2930 East Warren Avenue

Denver, CO 80210