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Editors Note: We hope you like the new look. This effort to update the WASP will be an ongoing process over the next several months. We are asking for your input on design, articles you write and wish to be included, as well as links to interesting website articles. For correspondence, please include “WASP” in the subject line of e-mails you send. E-mails can be sent to: publications@warrenastro.org

IN THE PRESIDENT’S FIELD OF VIEW

ANNUAL WAS HOLIDAY BANQUET

Thursday, Dec. 18th
You are all invited to the Warren Astronomical Societies Annual Holiday Banquet. If you have attended this “must do” event in the past, ’nuff said. If not, you’ve gotta check it out! Great venue, great food, great speaker (this year: Mark John Christensen and “Dawn of the Shuttle [Folly]”), and the elite of the elite of the South East Michigan amateur astronomy community.

You too can “rub elbows” with such celebs as Dave “Dr Einstein” Bailey, Steve “the wit” Uitti, Ken “Mr. Totality” Bertin, Dr. Phil “Living Better With Chemistry” Martin, and others.

Place: DeCarlos Restaurant and Banquet Center in the Fiesta Room.
6015 E. 10 Mile Road near Mound
(note... there is another DeCarlos at a different location ... don’t go there!)

Time: Open Bar opens at 6:00pm...dinner around 7:30pm

Cost: (This is the best part) $25 per person
Reservations required ...

Map It: Yahoo Maps
HOLIDAY BANQUET (cont.)
Send check and number of people attending to:
Steve Uitti
WAS Banquet
10933 Buckingham Ct.
Allen Park, Mi. 48101
313-389-5609
or give to Steve at upcoming Macomb or Cranbrook membership meeting.

Family style meal includes:
- Boneless Chicken Breast
- Roast Beef with mushrooms
- Meatballs and Gravy
- Mostaccioli w/meat sauce
- Scalloped potatoes
- Buttered corn
- Tossed Green Salad
- Rolls, Coffee, Tea
- Cherry Cheesecake

Happy Holidays, Bob Berta
President, Warren Astronomical Society

IN THE NEWS
LIQUID MIRROR TELESCOPES ON THE MOON
NASA Science News for October 9, 2008
A team of internationally renowned astronomers and opticians may have found a way to make 'unbelievably large' telescopes on the Moon. FULL STORY at:
http://science.nasa.gov/headlines/y2008/09oct_liquid_mirror.htm?list1076889
(Thanks to Bob Berta for pointing us to this article)

IMPORTANT NOTICE:
PLEASE NOTE: Sky and Telescope has changed their policy. They no longer want the WAS treasurer to renew subscriptions. Just send in your renewal at the club rate ($32.95), being sure to indicate that you are a member of WAS. Once a year they send the treasurer a list of people who have subscribed to Sky & Telescope for verification. This takes effect immediately.

WAS Meetings scheduled for 2008
Cranbrook Meetings: Every 1st Monday
Dec. 1
Macomb Meetings: Every 3rd Thursday
Nov. 20 Dec. 18 (Banquet Date)
The next meeting of the Warren Astronomical Society is scheduled for November 20 at Macomb Community College. The next Cranbrook meeting is scheduled for Monday, December 1.
After each meeting of the Warren Astronomical Society, some club members go to a restaurant for a snack and informal chat. All members are invited to join us there. We generally leave from the Macomb and Cranbrook meetings about 10 PM, and meet at the restaurant a few minutes later. We order food from the menu, sit around and chat for about an hour, and leave the restaurant between 11:30 PM and midnight. After the Macomb meeting, club members meet at:

National Coney Island
28901 Groesbeck Hwy
Roseville, MI 48066-2334
just south of 12 Mile Rd.
Roseville
Phone: 586-772-1324

After the Cranbrook meeting:
Red Coat Tavern
31542 Woodward
on the east side of Woodward, two blocks north of 13 Mile, just north of Burger King in Royal Oak
Phone: 248-549-0300

Warren Astronomical Society
Minutes of Board Meeting
October 6, 2008
Cranbrook: The meeting was called to order at 6:40 PM.
Guests: Ken Bertin, Doug Bock, Lee Hartwell, Stephen Horvath

The Warren Astronomical Society Paper (WASP) is the official monthly publication of the Society. Each new issue of the WASP is e-mailed to each member and/or is available online at warrenastronomicalsociety.org. Requests by other Astronomy clubs to receive the WASP, and all other correspondence should be addressed to the Publications Director, Larry Phipps, at publications@warrenastro.org. Articles for inclusion in the WASP are strongly encouraged and should be submitted to the editor by the 28th day of each month. Any format of submission is accepted, however, the easiest forms for this editor to use are plain text files. Most popular graphics formats are acceptable. The preferred method of submission is electronically via e-mail with attachment to the editor. Alternative submissions include printed form delivered in person, or via US mail. Disclaimer: The articles presented herein represent the opinions of the authors and are not necessarily the opinions of the WAS or the editor. The WASP reserves the right to deny publication of any submission.
Officers' reports:
Bob Berta discussed the results of the president's meeting at Cranbrook the previous weekend.
Gary Ross discussed inviting Sandra Macika and the scoutmaster at the D-Bar-A ranch to give presentations in 2009.
Marty Kunz discussed the work he has done at Star-gate, including ripping out the old metal shelves.
Stephen Uitti reported the current balance at $4400.
Jonathan Kade reported that he had begun work on beg letters for the banquet.
Larry Phipps reported that the October issue was complete.

Old business:
Paul Goldsmith talk – Bob reported current registration numbers for the Paul Goldsmith event. The board discussed possible reasons for the current, rather low registration numbers, and the advertising that had been undertaken for the event- in the WASP, on warrenastro.org, and via Dick Gala's mailing list. The board then discussed further steps that could be taken to boost attendance in the final two weeks.

New business:
Stephen Harvath is selling one of his mounts and offered it to the club first.
The meeting adjourned at 7:30 PM.

Warren Astronomical Society
Minutes of General Meeting
October 6, 2008
Cranbrook
The meeting was called to order at 7:35 PM.

Guests:
Jim Wolford from Rockport, IL attended. He is a member of a Chicagoland club, but works in Metro Detroit and is considering joining the WAS.

Officers' reports:
Bob Berta announced that, in addition to winning the astrophotography contest at the GAZE with his image of the Heart Nebula, he won a sky quality meter. He tested the skies at Stargate the previous week and compared them to Gladwin – Stargate rated a 5.3 on their scale, while Gladwin rated between 6.3 and 6.4. The meter measures background sky glow. Those interested in using it at sites of interest can ask Bob for a loan.
Gary Ross thanked the speakers of September for motivating themselves in his absence. He noted that the scoutmaster of the D-bar-A camp would be coming a talk in early 2009.

Marty Kunz noted that he ripped out the old metal shelves from the observatory. He noted that the next open house was November 8.
Oakland Community College students will be in attendance. For the sake of guests, Stephen U. and Bob B. noted that those wishing to use equipment at Stargate should contact Bob, Marty, or email the Yahoo list.
Stephen Uitti reported the budget at $4400.
Jonathan Kade announced that he was putting together beg letters for the banquet. He is hoping to have the Radio JOVE receiver together for Bill Beers's star party later in the month.

Larry Phipps announced that the October issue of the WASP would be up soon and noted that new items were available for sale. He thanked contributors, though he noted that the most desirable kind of article is the personal account of an observing event – send them if you can!
Having gotten his somewhat glitchy video camera out of mothballs, he recorded Phil Martin's presentation in September and put together a DVD thereof. This DVD is available for check out through Steve Uitti, Librarian, or purchase through Larry Phipps for a cost of $8.00 ea. (two dollars of each purchase goes to WAS).

Bob Berta led a review of outreach events for September. The Astronomy at the Beach event was a huge success, with approximately 200 people the first evening and (the park estimates) 4500 over the course of the second day.

Stephen U., Jonathan, and Diane Hall led a pack of scouts and their families in observing in Grosse Pointe Woods Lakeshore Park on September 19, about 75 people; and a school class and their families at Spindler Park September 26, about 30 people. Star-gate was heavily attended in the off-weekends, with 120 people (several scout groups and others) in attendance on September 27 and a scout pack of about 30 in total on October 4. A very effective month for outreach!

Interest groups: Double Star – Riyad reported that the subgroup met several times in September and will meet again at the November open house.

Solar – The sun is still dead. A spot was reported in September, but didn't last very long. The solar wind is in a record lull.
Discussion – Gary Gathen reported that the group discussed cryptograms and lean manufacturing. Dave Bailey discussed several topics from his syllabus.

New business:

2008 Banquet: Work on putting together the 2008 banquet must begin. Gary Ross will find out what Mark John Christenson needs regarding technology. The board must award the armchair astronomy award. Gus Povirk should be contacted to see if he can provide piano accompaniment. And somebody’s gotta sell tickets and contact the banquet hall.

Calendar:

Dr. Phil needs images and calendar orders. If you can offer either, please contact him or the board.

Old business:

Ken Bertin discussed the reasons good attendance at the Goldsmith lecture is essential. Bob B. discussed the topic and the procedure. He noted that the club was subsidizing up to 10 high-schoolers to bolster interest in astronomy.

Merchandise:

So where are those jackets, anyway?

General meeting:

Observing reports: Attendees of the GAZE reported five consecutive nights of beautiful skies. Non-attendees clenched their fists. Observers at the open house October 4, including Marty, Riyad, Larry P., and Jonathan, observed a nebulous patch in an arm of M33.

Member:

Bill Kippen suffered a ruptured appendix, but is recovering. Jim Shedlowsky is recovering from surgery at home. Brian Klaus continues to make great progress.

In the news:

Hubble repair delayed STOP tiny asteroid destined to be meteor has been tracked STOP will hit Sudan tomorrow STOP the Chinese space program has hit another milestone with a successful spacewalk STOP

38 people attended the meeting.

The meeting adjourned at 10:04 PM.

Warren Astronomical Society Minutes of General Meeting

October 16, 2008

Macomb

The meeting was called to order at 7:35 PM.

Visitors: Jim Howser, a former member, and Roy Handyside, a visitor.

Officers’ reports:

Bob Berta reported that tickets for the Paul Goldsmith lecture the following day are very nearly sold out. He thanked members who were attending and noted that the club provided tickets to several students.

Gary Ross announced the presentation schedule for 2008 through 2009. He passed around a sign-up sheet for 2009 presentations.

Bob Berta, substituting for Marty Kunz, reviewed recent public outreach events. He noted that the club had received notes of appreciation from Webelos scouts troops 51 and 85.

Stephen U., Jonathan, and Diane Hall led a pack of scouts and their families in observing in Grosse Pointe Woods’s Lakeshore Park on September 19, about 75 people; and a school class and their families at Spindler Park September 26, about 30 people. Stargate was heavily attended in the off-weekends, with 120 people (several scout groups and others) in attendance on September 27 and a scout pack of about 30 in total on October 4. A very effective month for outreach! The next open house is November 8.

Jonathan Kade gave a recap of the month’s Cranbrook meeting. He noted that beg letters for the annual banquet were underway and would be mailed shortly.

Stephen Uitti reported the club’s treasury balance at approximately $5000. He circulated a sign-up sheet for the 2009 WAS calendar. He noted that Dr. Phil Martin wanted any dates of interest that should be labeled and whatever astrophotography or astro images members could contribute. He has not yet heard back from the potential donor of the 25" Pyrex blank.

Larry Phipps noted that the club was making an effort to mail the WASP out to members who could not obtain it on the internet.
Interest groups:

**Library** – Stephen U. reviewed how the library works for the benefit of visitors. Bob Berta donated two general science DVDs to the library: one on the Antikythera mechanism and one on evolution.

**Double Star** – Riyad Matti announced that the double star group would meet again at the next open house.

**Discussion** – Gary Gathen reminded members that the next discussion group meeting was the following Thursday and asked that they send in suggestions of topics. A topic that has been submitted is: “What happens when Moore’s law stops?”

General meeting:

**Member Updates** – Bill Beers noted that Jim Shedlowsky was back out of the hospital after having had to go back in. Dick Gala reported that Brian Klaus’s condition continues to improve.

**Observation Reports** – Bob B. noted that the Great Lakes Star Gaze was a successful star party – the first night OK for visual, the second perfect for photography. He was able to complete a fantastic image of the Heart Nebula and began work on an image the Soul Nebula. He won a sky quality meter as well as sites they would like to measure.

**Stephen U.** noted that he split Polaris with his 10” Dob and a cheapo Samsung digital camera. He also recounted struggles with an uncollimated laser collimator.

**Dr. Dale Partin** gave an account of trying to observe Iota Cassiopeiae, a fine multiple-star system, with someone else’s 6” Schmidt-Cass. He was only able to make out two stars. He collimated the scope and was amazed by the improvement. Lesson: Cassegrains need collimation too!

Break: 8:30-8:50

Elections:

**Bob Berta** stood unopposed for a second term as president. He was unanimously re-elected by a voice vote.

**Gary Ross** stood unopposed for a second term as first vice president. He was unanimously re-elected by a voice vote.

**Marty Kunz** stood unopposed for a second term as second vice president. He was unanimously re-elected by a voice vote.

**Jonathan Kade** stood unopposed for a second term as secretary. He was unanimously re-elected by a voice vote.

**Stephen Uitti** stood unopposed for a second term as treasurer. He was unanimously re-elected by a voice vote.

**Larry Phipps** stood unopposed for a second term as publications director. He was unanimously re-elected by a voice vote.

**John Kriegel** stood unopposed for a second term as outreach director. He was unanimously re-elected by a voice vote.

Presentation:

**Jonathan Kade** gave a walkthrough demonstration of the new warrenastro.org website, pointing out new innovations such as the blog and tabbed calendar and noting areas of continued work such as the photo galleries.

**Dave Bailey** gave a naked-eye-and-spacesuit perspective on views of celestial bodies from other worlds: Bigger Than the Moon. He concluded that planetary observers had their best shot at paradise on one of seven moons of Uranus, all of which featured *seventeen* objects that should be visible as disks. Illustrations provided made for a much more realistic view from the outer solar system than we are used to from the covers of sci-fi novels! Many non-intuitive and fascinating aspects of the moons of the outer planets were covered.

Thirty-one people attended the meeting.

The meeting adjourned at 10:05 PM.

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**ASTRONOMICAL EVENTS**

**NOVEMBER, 2008**

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<thead>
<tr>
<th>Date</th>
<th>Event</th>
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<tr>
<td>1</td>
<td>Venus 2.6N of Moon</td>
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<td>1</td>
<td>Moon furthest South (-27.2)</td>
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<td>2</td>
<td>Moon at apogee</td>
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<tr>
<td>2</td>
<td>Neptune stationary</td>
</tr>
<tr>
<td>3</td>
<td>Jupiter 2.0N of Moon</td>
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<tr>
<td>6</td>
<td>FIRST QUARTER</td>
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<tr>
<td>6</td>
<td>Neptune 1.0S of Moon Occn</td>
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<td>8</td>
<td>Uranus 3.7S of Moon</td>
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<tr>
<td>13</td>
<td>FULL MOON</td>
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<td>14</td>
<td>Moon at perigee</td>
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<td>15</td>
<td>Moon furthest North (27.1)</td>
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<td>Pollux 4.9N of Moon</td>
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<td>19</td>
<td>LAST QUARTER</td>
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<tr>
<td>20</td>
<td>Regulus 1.9N of Moon</td>
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<tr>
<td>21</td>
<td>Saturn 5.0N of Moon</td>
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<tr>
<td>24</td>
<td>Spica 2.8N of Moon</td>
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<tr>
<td>25</td>
<td>Mercury superior conjunct.</td>
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<tr>
<td>27</td>
<td>27 NEW MOON</td>
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<tr>
<td>27</td>
<td>Mercury 3.7N of Moon</td>
</tr>
<tr>
<td>27</td>
<td>Mars 4.1N of Moon</td>
</tr>
<tr>
<td>28</td>
<td>Uranus stationary</td>
</tr>
<tr>
<td>28</td>
<td>Antares 0.1S of Moon Occn</td>
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<tr>
<td>29</td>
<td>Mercury 0.5S of Mars</td>
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<td>29</td>
<td>Moon furthest South</td>
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<tr>
<td>29</td>
<td>Mercury 3.6N of Antares</td>
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<tr>
<td>29</td>
<td>29 Moon at apogee</td>
</tr>
<tr>
<td>30</td>
<td>Mars 4.2N of Antares</td>
</tr>
</tbody>
</table>

PAGE 5
The Mighty Globular M22 in Sagittarius

WAS resident astro-artist Jerry Kuchera sends this beautiful sketch of the mighty globular M22 in Sagittarius, which is sadly leaving us for the winter. Feast your eyes on this until it comes around again in the spring. High resolution full-field sketch after the jump. You can access the full screen/full resolution image at the WAS website HERE: http://blog.warrenastro.org/2008/11/astro-imaging-old-fashioned-way.html

Solar Update

The National Association for Amateur Radio maintains a website to promote interest in Amateur Radio communications and experimentation, represents US Radio Amateurs in legislative matters, and maintains fraternity and a high standard of conduct among Amateur Radio operators. Interestingly enough, a major influence on how radio waves propagate in other than straight line paths is electromagnetic radiation; both in Earth’s atmosphere, and solar-terrestrial interactions. As the Sun’s activity has a great influence on our electromagnetic field, amateur radio enthusiasts monitor sun activity regularly. For more information concerning radio propagation, visit the ARRL Technical Information Service Propagation page http://www.arrl.org/tis/info/propagation.html. To read this week’s Solar Report in its entirety, which includes updates on sunspots, solar flares, and Coronal Mass Ejections (CME), check out the W1AW Propagation Bulletin page http://www.arrl.org/w1aw/prop/.

Propagation Forecast Bulletin
From Tad Cook, K7RA
Seattle, WA
(Thanks Norman Dillard for pointing us to this information)

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Online Software Tools
Earth Space 4-D: Visualizing the Ionosphere using Google Earth

An animated, “4-D” visual of the earth from space is available for viewing the ionosphere using Google Earth. With this application, you can view total electron content, weather, terrain, atmosphere, and movies of changes over the last 24 hours. Downloading additional KML files will expand the capabilities of the program. Downloads, details and user guide at: http://terra1.spacenvironment.net/~ionops/ES4Dintro.html

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### Warren Astronomical Society
#### 2008 Presentations

<table>
<thead>
<tr>
<th>DATE</th>
<th>LOCATION</th>
<th>PRESENTER</th>
<th>SUBJECT</th>
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<tr>
<td>20 - Nov</td>
<td>Macomb</td>
<td>Sandra Macika</td>
<td>Lick Observatory and Extra-Solar Planet Discovery.</td>
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<td>1 - Dec</td>
<td>Cranbrook</td>
<td>Intro by G.W. Ross</td>
<td>FILM FESTIVAL</td>
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<td>18 - Dec</td>
<td>Macomb</td>
<td>Mark John Christensen</td>
<td>Dawn Of The Shuttle (Folly)</td>
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<tr>
<td>5 - Jan</td>
<td>Cranbrook</td>
<td>Ross / Keeler</td>
<td>Early Winter Meteors, &amp; the New Boy Scout Astro-facility</td>
</tr>
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<td>15 - Jan</td>
<td>Macomb</td>
<td>Gary Gathen</td>
<td>The Constellations of H. A. Rey</td>
</tr>
<tr>
<td>2 - Feb</td>
<td>Cranbrook</td>
<td>Larry Phipps</td>
<td>10 Greatest Astronomical Discoveries of the Last 35 Years</td>
</tr>
<tr>
<td>18 - Feb</td>
<td>Macomb</td>
<td>Diane Hall</td>
<td>Lost Constellations</td>
</tr>
</tbody>
</table>

Please contact the 1st V.P. (program chairperson) to:
1. Schedule new presentation.
2. Alter scheduled presentations.
3. Add a subject title to your presentation.
4. Change the subject title of your presentation.

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### 2008 Stargate Observatory Open House Schedule

![Stargate Observatory Image]

NOTE: Depending on weather at the time, open house dates are:

**Nov. 08, Dec. 06**

1. Normal closing time will depend on events, weather, and other variables.
2. The observatory may be closed one hour after opening time if no members arrive within the first hour.
3. Contact me for other arrangements, such as late arrival time.
4. An alternative person will be appointed to open the observatory if I cannot attend a scheduled date or opening time.
5. Members may arrive before or stay after the scheduled open house time.
6. Dates are subject to change or cancellation depending on weather or staffing availability.

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### Childhood's Future

**The Southern Pinwheel M-83 in Hydra**

by R Jay GaBany

I will never be able to travel beyond our planet - even though I would jump at the opportunity (in a heart-beat!) were it offered. It's just not in the cards - I was born too soon and remain rooted to the ground. So, the farthest I can reach into space is confined to the borders of astronomical images that I (attempt to) create for my self-satisfaction and to share with others. Not surprisingly, I have discovered that a telescope and camera can be an efficacious substitute for a rocket with a full tank of fuel:

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7. An e-mail will be posted no later than 2 hours before starting time incase of date change or cancellation.
8. It is best to email me up to 2 hours before the posted opening with any questions you may have. I will not be able to receive e-mail after 2 hours before open time. Generally only strong rain or snow would prevent the open house...even if it is clouded over I plan on being there. Often the weather is cloudy but clears up as the evening progresses.

Marty Kunz
When I’m comfortably home in front of my monitor trying to increase the shadowy contrast of an exposure that is resisting my efforts, all earthbound ties evaporate and time passes without notice- I feel like I am actually out there, exploring the scene that my instruments have captured. I become an adventurer when processing a picture, unconstrained by day-to-day cares; it’s where I derive my greatest pleasure as a hobbyist and a dreamer. As a result, like overheating under the warmth of my morning bedroom, I often tarry too long, immersed within the Universe of my picture projects.

I have always found that travel invokes new perspectives when looking back at your point of disembarkation. Curiously, this paradox exists with virtual journeys, too, because the farther I wander into the recesses of eternity, the closer I approach the places where character dwells within each of us- our capacity for surmounting overwhelming challenges, our compassion to selflessly offer assistance to others and our willingness to disburse our time and hard-won treasure reminding viewers (and ourselves!) that we are part of, not a part from, the Universe.

I suspect similar revelations will also visit those who touch the places, that we can only contemplate, some time in childhood’s distant future.

May 27- June 20, 2006, April 7-21, 2007
RCOS 20- inch, SBIG STL-11000
615 minutes Luminance, 120 minutes Red, 72 minutes Green and 162 minutes Blue (All 1X1)

To see this image, please access the following link and click on “Larger image” to see the entire picture:
http://www.cosmotography.com/images/small_new_m83.html
Thank you, again, for your continued interest. I’ll be back in touch, soon, with another picture that I hope you will find interesting!

Jay

***********************
DO YOU NEED HELP PUTTING TOGETHER A TALK FOR THE CLUB, YOUR KIDS SCHOOL, SCOUTS, ETC.? WAS has 4 members who are certified as contacts for the Astronomical Society of the Pacific. Lee Hartwell, Marty Kunz, Dave Bailey and Bob Berta are members who can provide talks for various groups using special “kits” provided by the ASP. They have done a lot of presentations and these are recorded with the ASP. As a result we get FREE kits from ASP that can be used to do presentations...and these are available for ALL members to use. Currently we have over 20 kits on a variety of astronomical topics suitable for a wide range of ages and astronomical science knowledge. The kits are complete with a talk outline, visual aids, etc. that will help the presenter give a first rate talk. You are free to borrow the kits and use them for your own talks. The only requirement is that when done the kits must be returned AND information re: the group, size, date are given to Lee or Bob so they can enter the information in the on-line database at the ASP. By doing so we qualify for even more free kits.

Following is a list of 20 of the kits we already have. Each is suitable for a complete talk...or you can combine them as you wish.
1. How do we find planets around other stars?
2. Is our solar system unique?
3. Telescopes tour of the sky...how do stars and planets form?
4. Where are the distant worlds?
5. Where are we searching for other planets?
6. Why do we put telescopes in space?
7. A universe of galaxies
8. Telescopes as time machines
9. Media and resources for instructors
10. Where are the black holes?
11. Gravity and the fabric of space
12. Media and resources tool kit.
13. Ready to observe?
14. What power is your telescope?
15. Can you see the flag on the moon?
16. Why doesn’t it look like the photos?
17. Shadows and silhouettes outreach tool kit.
18. Local transit authority.
19. Trip around the triangle.
20. Shadows in space; phases and eclipses.

***********************
The Chemical Weather Report

“Sunny tomorrow with highs in the mid-70s. There’s going to be some carbon monoxide blowing in from forest fires, and all that sunshine is predicted to bring a surge in ground-level ozone by afternoon. Old and young people and anyone with lung conditions are advised to stay indoors between 3 and 5 p.m.”
Whoever heard of a weather report like that?

Get used to it. Weather reports of the future are going to tell you a lot more about the atmosphere than just how warm and rainy it is. In the same way that satellite observations of Earth revolutionized basic weather forecasting in the 1970s and 80s, satellite tracking of air pollution is about to revolutionize the forecasting of air quality. Such forecasts could help people plan around high levels of ground-level ozone—a dangerous lung irritant—just as they now plan around bad storms.

“The phrase that people have used is chemical weather forecasting,” says Kevin Bowman of NASA’s Jet Propulsion Laboratory. Bowman is a senior member of the technical staff for the Tropospheric Emission Spectrometer, one of four scientific sensors on NASA’s Aura satellite.

Aura and other NASA satellites track pollution in the same way that astronomers know the chemical composition of stars and distant planetary atmospheres: using spectrometry. By breaking the light from a planet or star into its spectrum of colors, scientists can read off the atmosphere’s gases by looking at the “fingerprint” of wavelengths absorbed or emitted by those chemicals. From Earth orbit, pollution-watching satellites use this trick to measure trace gases such as carbon monoxide, nitrogen oxide, and ozone.

However, as Bowman explains, “Polar sun-synchronous satellites such as Aura are limited at best to two overpasses per day.” A recent report by the National Research Council recommends putting a pollution-watching satellite into geosynchronous orbit—a special very high-altitude orbit above the equator in which satellites make only one orbit per day, thus seeming to hover over the same spot on the equator below. There, this new satellite, called GEOCAPE (Geostationary Coastal and Air Pollution Events), would give scientists a continuous eye in the sky, allowing them to predict daily pollution levels just as meteorologists predict storms.

“NASA is beginning to investigate what it would take to build an instrument like this,” Bowman says. Such a chemical weather satellite could be in orbit as soon as 2013, according to the NRC report. Weather forecasts might never be the same.

Learn more about the Tropospheric Emission Spectrometer at tes.jpl.nasa.gov.

Kids can learn some elementary smog chemistry while making “Gummy Greenhouse Gases” out of gumdrops at spaceplace.nasa.gov/en/kids/tes/gumdrops.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

Caption:
Example of visualization of data from the Tropospheric Emission Spectrometer. These frames are from an animation that steps through transects of the atmosphere profiling vertical ozone and carbon monoxide concentrations, combining all tracks of the Aura satellite during a given two week period.

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THE SWAP SHOP

This column is for those who are interested in buying, trading or selling items. At the present time, you may submit ads of items for sale to Larry Phipps, 313.532.4451 (publications@warrenastro.org). The ad will run for six months. The month and year the ad will be removed is also shown.

FOR SALE: Coulter mirror tube including diagonal mirror & mount. The tube has some scuffs but should paint up nicely. It measures 75" long x 19.75" ID. $10. Picture avail. by E-mail (astro88848@yahoo.com) 248/528-9235 (Glenn). [12-2008]

FOR SALE: Discovery PDHQ Dobsonian Telescope, 12.5", f5, (94% pyrex mirror reflectivity), 1 1/4", 2" Crayford focuser, Base plus 2x2’ Platform, 12v anti-dew system, Telrad Reflex Sight, Aluminum foam lined lens case, Meade lenses: 40 mm super wide, 32 mm super plossl, 8.8 mm ultra wide, 12.4 mm super plossl.
4.7 mm super plossl, 2x “shorty” Barlow. **Sirius Lenses:** 25 mm plossl, 17 mm plossl, 10 mm plossl.

**Filters:** 1 1/4” 13%, 25% Moon, 1 1/4” variable polarizer (moon), 1 1/4”, 2” Oxygen III, 1 1/4” Narrow Band, 1 1/4” Blue, Green, Red, Yellow, 2” Fine Focus Adapter, Orion Collimating Cheshire, Orion LaserMate Collimator, Red Beam Flashlight, Desert Storm “Aluminum” Cover, Transporting Dolly. Initial Purchase Price: $3500. Asking Price: **$1900**. Contact Al McDonald, 248-343-1643. [03-2009]

**FOR SALE:** Orion Skyquest xT8, 8” Dobsonian Telescope, 1200 mm; f/5.9, crayford style focuser that accepts 2” and 1.25” eyepieces. Comes with Object Locator. Enjoy fully computerized object capability. Also comes with **Sirius Lenses:** 25 mm plossl and 10 mm plossl, 9x50 right angle finder, and the Orion Lasermate Deluxe Collimator. Bought in April 2008. Still under warranty until April, ’09. Asking price: **$550** or best offer. Contact John Kosmo at 586-427-6014 [04-2009]

**WASP SURVEY**

In the June, 2008 issue of the WASP, a survey was introduced to members asking for feedback on areas of interest to be included in future issues of the WASP. The survey was posted on the WarrenAstro blog site in the form of a poll. The results of that poll are now in, and listed below.

**POLL QUESTION:** Of the following topics, which do you most want to see in the WASP?

If you have other material you want to include, please email it to the list or to our publications director Larry Phipps at publications@warrenastro.org

**CHOICES AND RESULTS**
- Board Meeting Minutes, 7 votes, 11.48%
- Upcoming events: Star Parties, Picnics, etc., 7 votes, 11.48%
- Presentations and Meeting Schedule, 6 votes, 9.84%
- WAS Subgroup Reports, 6 votes, 9.84%
- Astro Chatter, 5 votes, 8.20%
- President’s Field Of View, 5 votes, 8.20%
- Swap Shop, 5 votes, 8.20%
- Online or new software tools / applications, 4 votes, 6.56%
- Astronomical Events, 4 votes, 6.56%
- Deep Sky Observing, 4 votes, 6.56%
- Solar Updates, 3 votes, 4.92%
- In the News, 2 votes, 3.28%
- NASA’s Space Place, 1 votes, 1.64%
- Moon Calendar, 1 votes, 1.64%
- Astronomy quiz, puzzles, etc., 1 votes, 1.64%

Upon review and discussion, WAS officers have already committed to expanding areas of interest such as upcoming events, and presentations. This editor will make every (reasonable!) effort to include more of what you want to see, and read. As editor, I am in search of reporters to help all of our members by submitting information and articles, including web links. Chances are high that if you are interested, then someone else is too! If anyone has a suggestion for additional ideas for categories to include in the WASP, please, send them in.

Larry Phipps
Publications Director / Editor