

OBSERVER

Newsletter of the Denver Astronomical Society
One Mile Nearer the Stars

Image copyright 2006 Joe Gafford

Antennae Up!

At the Texas Star Party on April 27, 2006 Joe Gafford singled out one of the two elliptical galaxies (NGCs 4038 and 4039) known together as the Antennae in Corvus. Astronomers think that the galaxies' long, curved tails are a result of a collision between the two. For this image of NGC 4038 Joe used an SBIG ST-2000XM CCD camera on a JMI NGT18 telescope with 10-, 10-, 7-, and 10-minute LRGB exposures, respectively.

SPECTACULAR SUMMER

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J U N E S K I E S

June will be a real treat for naked-eye and binocular observers. The Beehive Cluster (M-44) is the center of attention this month. Look west for M-44, Saturn, and Mars in the early evening. *Continued on page 5*

PLANETS

Planet	When	Where	Mag
Mercury	Early evening	WNW	-1.0
Venus	Early morning	E	-3.8
Mars	Early evening	WSW	1.7
Jupiter	Evening	S	-2.4
Saturn	Early evening	WSW	0.4

TOP FIVE JUNE OBJECTS

Object	Type	Constellation	RA	Dec	Mag
Core Caroli	Double Star	Canes Venatici	12h 56m	+ 38	2.9
M3	Globular Cluster	Canes Venatici	13h 42m	+28	6.2
M5	Globular Cluster	Serpens	15h 18m	+2	5.6
M13	Globular Cluster	Hercules	16h 41m	+36	5.8
M51	Galaxy	Ursa Major	13h 30m	+47	8.4

President's Corner

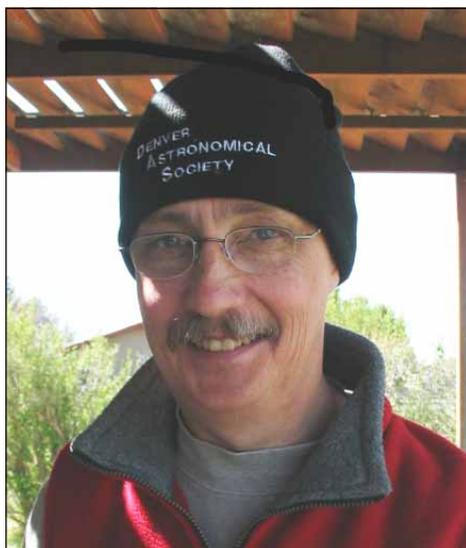
There have been some recent questions about volunteering with the Dark Sky Site efforts, and questions about joining the committee and/or work gangs. The process is pretty easy: show up and you will be pressed into action! The DSS committee meets before each EBoard meeting.

It is hard to make plans without input. While everything cannot be accommodated, having user input goes a long way to creating a better solution. The DSS is generating interest with other clubs in the area: I am asked about it often.

Getting good input applies to all DAS activities. We are looking to revamp the website, clean up those bad links, and add information relevant to astronomy activities where you spend your time. To this end, you can join in the fun with activities like Chamberlin and outside outreach events, the scholarship fund, telescope making, the auction and Colorado Astronomy Day in

October. You can become a "cub" reporter for the newsletter or become a scope operator with the Public Night teams.

On the science side, you can participate with AL observing certificates, join with us in creating a science program centered on the

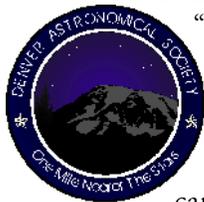


Wayne Green, president of the Denver Astronomical Society.

Clark Telescope and other DAS resources or work on projects related to antique telescopes. We want to offer basic workshops about astronomy topics of interest. Let us know what topics we might consider.

Send me your ideas, comments, complaints (those I delegate to Darrell Dodge!), words of encouragement and most of all — your requests to volunteer!

Thanks to Keith Poole for volunteering to coordinate this year's picnic!—Wayne Green



DAS Schedule

JUNE

- 3 Open House at Chamberlin Observatory (Begins at 7:30 P.M.)
- 9 General Meeting (7:30 P.M.)
- 16 E-Board meeting, 8 P.M.
- 22-25 Rocky Mountain Star Stare
- 24-25 EGK Dark Site Weekend

JULY

- 1 DAS Annual Picnic (begins at 4:00 P.M.) and Open House at Chamberlin Observatory (Begins at 7:30 P.M.)
- 7 General Meeting (7:30 P.M.)
- 14 E-Board meeting, 8 P.M.
- 18 Father's Day
- 20-23 Weekend Under the Stars
- 22-23 EGK Dark Site Weekend

Public nights are held every Tuesday and Thursday evenings beginning at the following times: October 1 - March 31 at 7:00 P.M.
 April 1 - September 30 at 8:30 P.M. at Chamberlin Observatory
 Costs to non-members are: \$3.00 adults, \$2.00 children.
 Please call (303) 871-5172 for reservations.

DAS Officers

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The Observer is available in color PDF format from the DAS website.

The Executive Board conducts the business of the DAS at 8 P.M. at Chamberlin Observatory. Please see the Schedule of Events for meeting dates. All members are welcome.

the das . org

All Decked Out at the Broadmoor

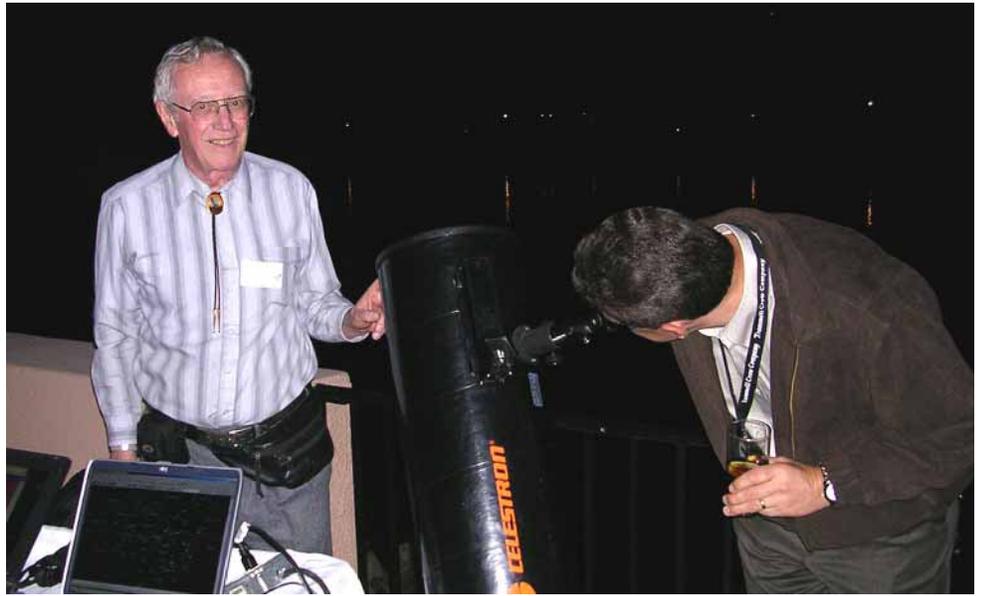
Article and Photos by Steve Solon

As it has been several times in the past few years, the DAS was, once again, asked to set up its astronomical shoppe for guests at the Broadmoor Hotel in Colorado Springs. It has always been our pleasure to introduce folks to the Moon, planets and stars and this trip down south was no exception.

Now, the weather — ah, yes, well . . .

We've grown quite accustomed to unpredictable spring meteorology here along the front range, which is why Luna and the planets are our dear friends; their light can burn through some pretty murky overcast, preventing a star party from being a wash — such was the case for the folks from Trammel Crowe, who were our guests.

DAS members Wayne Kaaz and Steve Solon braved the clouds and occasional drizzle (not to mention the unbelievably narrow service hallways of the Broadmoor) to squeeze some ooohs and ahhhhs from the assembled with their first-ever views of Saturn, the Moon, and Ursa Major twins Alcor and Mizar. They also provided



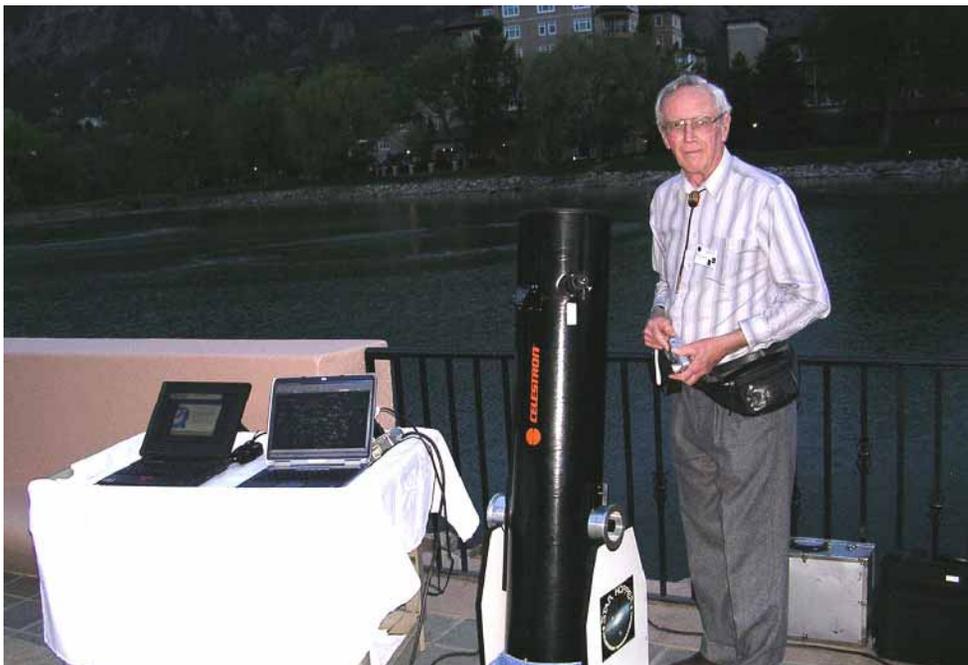
Top Image: Wayne Kaaz shares his view with a hotel guest. Bottom Image: Wayne's setup at the Broadmoor star party.

running laptop displays of the heavens and a Cassini Saturn mission DVD for all to enjoy.

Other specialty entertainers for the evening included HawkQuest, with their

display of avian raptors, and Nature Sanctuary's troupe of wolves and tiger cubs, which never fail to generate a collective, "Awwwww."

For its efforts, the DAS received a very generous donation to its Public Outreach program, ensuring continued growth of programs and equipment to enthuse and entertain future astro-folk everywhere.



The Edmund G. Kline Dark Site: Observing and imaging under some of the region's finest skies. For site information, please visit the DAS website.

updates

Visiting Mauna Kea

Article and Photos by John Anderson

One of the grandest astronomical sites in the world sits atop a premier tourist destination: The Big Island of Hawaii. Last spring Judy and I vacationed on the Big Island and toured several of the telescopes on the summit of Mauna Kea and their support facilities lower on the island.

There are a number of misconceptions surrounding the facilities on Mauna Kea, misconceptions that the rental car and tour companies do not bother to correct, or possibly foster. On the chance you might be planning a trip to Hawaii, here are some tips.

If you have an "in" with an astronomical group or contact on the island, use it. We met a University of Hawaii graduate student who opened several doors we would have missed without his assistance. Mentioning that we were members of the DAS seemed to help.

We wanted to see telescopes: the Kecks, the Subaru, Gemini, etc. A bit of our own research on the web and that by our travel agent turned up the following: normal rental cars are not allowed to travel to the summit. Several sources (including AAA) noted that they were not allowed on the saddle road across the island. One company



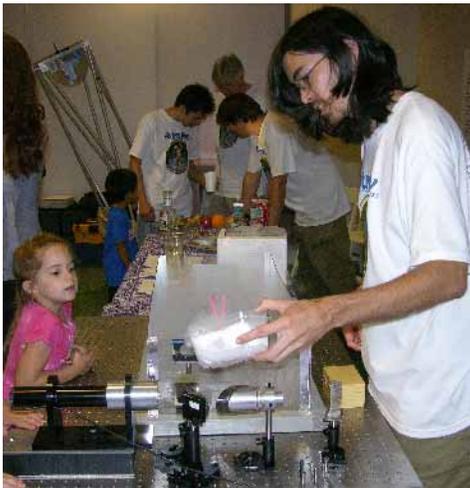
Top Image: Subaru visitor's center in Hilo. Bottom image: Astronomy Day Hilo: Using a laser and dry ice, graduate student Mike Connelley demonstrates telescope optics to a budding astronomer.

does rent 4-wheel drive vehicles for trips to the summit, but everyone knows they are "prohibitively expensive." A bit more searching found several tour companies offering trips to the summit. These trips cost between \$95 and \$190 per person (the higher priced trips appear to offer a permanent \$10 or so discount). These tours variously provide a gourmet sandwich or a barbecue lunch at the Parker ranch, a warm parka, a ride to the summit, a fantastic sunset, a view of the heavens through the visitor center's telescopes or a tour of the stars through the company's binoculars, and a talk by an expert guide. Notice anything missing? Other than a bit of fluff and pictures in the advertising brochures or web pages, there is almost no information about the big scopes! From what we later saw, the tour vehicles arrive *en masse* a couple of minutes before sunset, circle the Keck parking lot, off-load you next to the already

open Gemini dome, hustle you back in the vans as the sun's glow fades, make a potty stop at portable johns, and rush down the mountain to deposit you at the visitor center for their mini star party.

Speaking of sunsets, several people familiar with Mauna Kea's summit told us that the green flash is often visible from near the Gemini scope as the sun sets over the flat roof of the Subaru. We looked for it, but clouds obscured the horizon.

Judy read the fine print in the rental car contract and could find no prohibition against taking the car over the saddle road, so I stopped at the office and asked. The manager grudgingly admitted that since October 2004 rental cars are allowed to travel the saddle road and go as high on Mauna Kea as the Onizuka visitors center (9,000 ft.), but not to the summit. Next was a call to Harpers <http://www.harpershawaii.com/>, the company that rents 4-wheel drive vehicles (as well



May Skies

Continued from page 1

Mars will traverse through M-44 and eventually pass Saturn. The asteroid Vesta passes north of M-44. Meanwhile, speedy Mercury will be at its best for '06. Look WNW in the early evening sky throughout the month for the fleet-footed messenger of the gods.

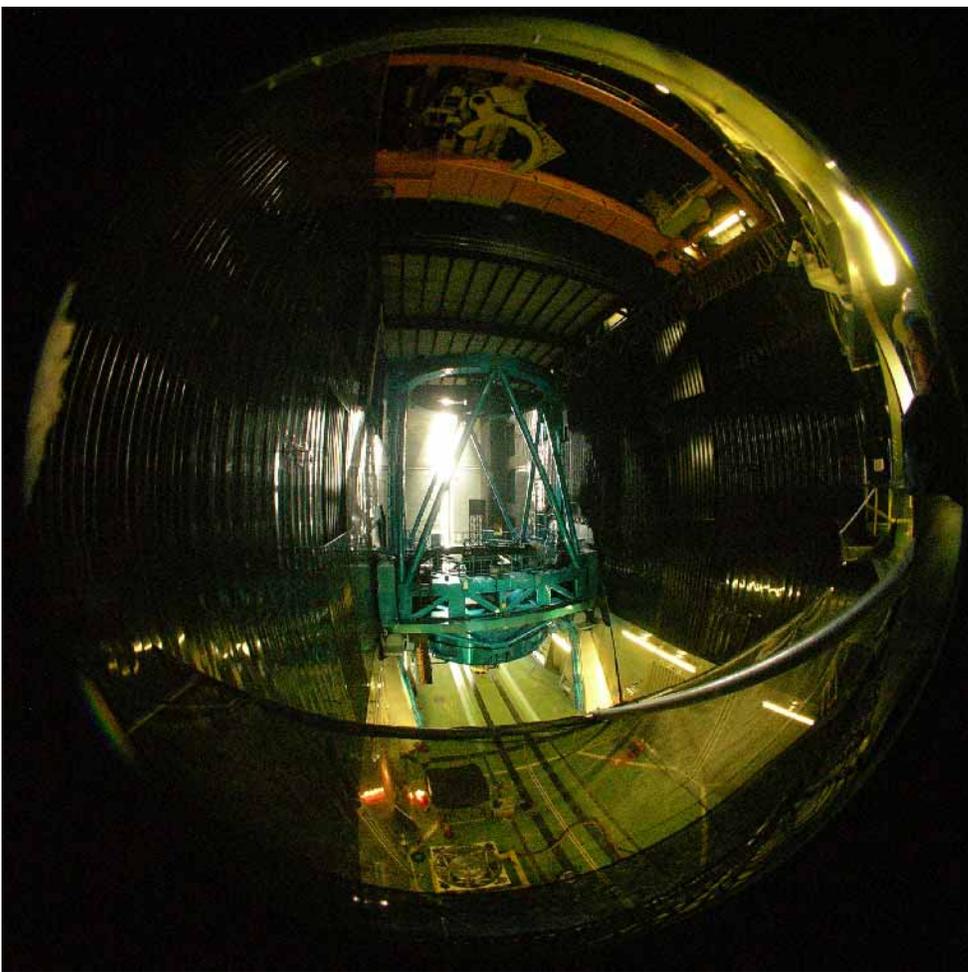
Events:

- 3 First quarter Moon
- 7 Moon passes very close to Spica (3:00am MDT)
- 8 Moon near Jupiter
- 11 Full Moon
- 14 Vesta passes 2(North of M-44
- 16 Moon passes close to Uranus
- 17 Mars passes Saturn
- 18 Last quarter Moon
- 20 Mercury at greatest eastern elongation
- 21 Summer Solstice (5:26am MDT)
- 22 Moon, M-45, and Venus in conjunction (Morning Sky)
- 25 New Moon
- 27 Moon near Mercury (morning sky),
Bootid Meteor Shower (Look NW 1:00-3:00 am)
- 28 Moon near Saturn (morning sky)

For further information consult:

Astronomical Calendar, Astronomy and Sky & Telescope Magazines

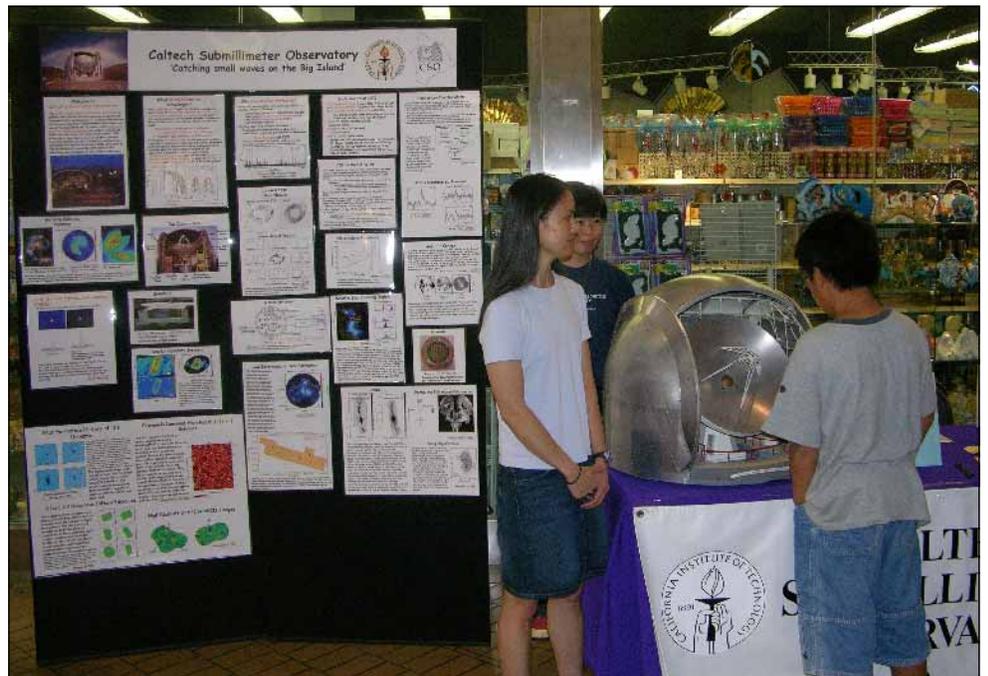
Prepared By: Dave Tondreau, Carla Swartz, Doug Dreher, Todd Thomas, Stuart Hutchins, Bryan Wilburn, Gary Goodale and Bill Ormsby

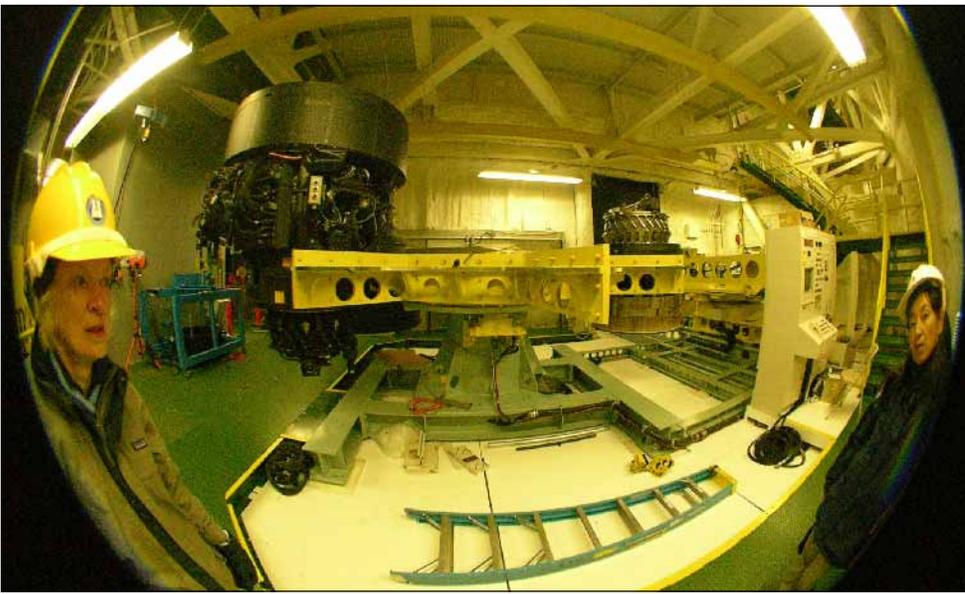


Top Image: The Subaru from an observation catwalk. Bottom image: Astronomy Day Hilo: Science displays throughout the mall draw attention from shoppers.

as RVs, busses, dump trucks, etc.), “Sure you can take one of our SUVs to the summit; \$110 for a 24-hour (minimum) rental.” Whoa, that prohibitively expensive 4-wheel drive car just turned into an \$80-\$250 savings for the two of us over the sunset tours. I can live on a Subway sandwich and pack a heavy sweater, and we do not get the bums rush off the summit — we have a chance to look around. (Oddly, Harpers bars you from driving their SUVs on unpaved roads, except the Mauna Kea summit road. Do not bottom out the SUV, their turn-in inspection of the undercarriage is extensive.) By the way, after the first hundred yards of “discourage the family sedan” ruts, the summit road is far shorter, smoother, and less imposing (no 1,000-foot cliffs) than our own Pikes Peak road.

Continued on page 6





Subaru's lazy Susan for changing the focal configuration. The focal configuration changer mechanism is above the scope.

Okay, the real deal on the summit is Subaru (*sue-BAR-ou*, not our pronunciation of the car). About 15 days a month, they offer an excellent 30-minute English (and/or Japanese) tour of the telescope, led by an extremely knowledgeable guide. You must sign up for the tour several months in advance; their web site <http://www.naoj.org/> will guide you through the process in great detail. If the web site claims the tours are full at the time you want to visit, call the information phone number and ask if there are any openings. We did this, mentioned DAS, and received a private, hour and a half tour!

The only scopes "open" to visitors on the summit are the Kecks and the U of H 88. The Kecks have a small visitors' gallery with pictures/diagrams explaining the operation of the scopes and some of their achievements. A small, glass enclosure provides a dark, limited view into one of the scope's domes. Several flights of stairs lead to a similar visitors' platform at the U of H 88. The Keck gallery has the only normal rest rooms open to the public on the summit.

The Onizuka Visitors' Center offers tours at 1 P.M. on Saturday and Sunday which include entry to two (unnamed) summit scopes. You must have your own 4-wheel drive vehicle to participate. We did not go

on this tour and do not know its extent. The Center offers other programs, see <http://ifa.hawaii.edu/info/vis>. It is the site of the Hilo astronomy club star party the second Saturday of the month during the school year.

The Onizuka Center is a cramped hodgepodge of gift shop, snack store, astronomical displays, "theater," and storage room. Prices are high. The several movies they show are an interesting interlude during your hour long, mandatory, acclimation wait before ascending to the summit. We attended the Hilo club's star party and found it quite good. The talk was informative and humorous. In addition to the Center's scopes, several members set up their own scopes.

The Center's complement of scopes deserves some discussion. The premier scope is a Meade 16. This is:

- a. the worst scope ever made,
- b. the worst culminated scope on the planet,
- c. the most over-powered scope ever,
- d. all of the above.

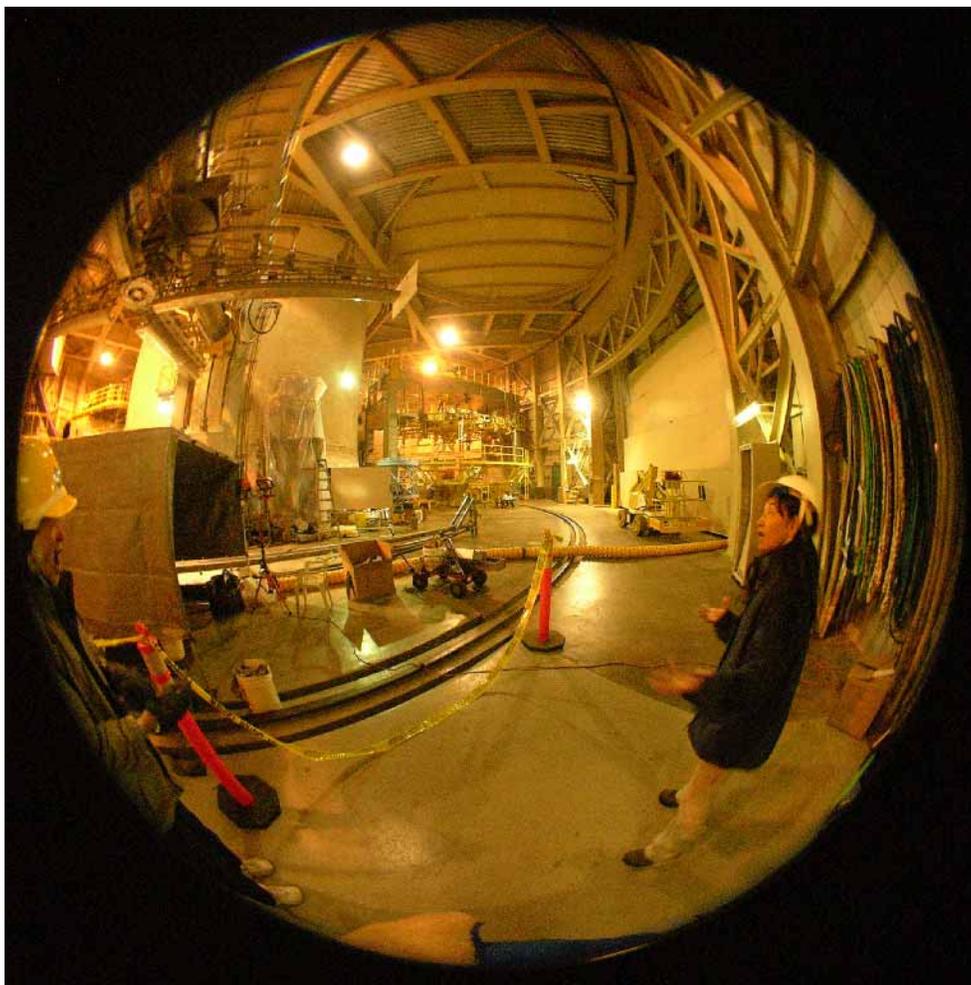
Saturn looked like a fuzzy tennis ball. I asked if we could try a longer eyepiece and was told that the current one provided the LARGEST view. A Celestron 14 provided an acceptable, but also over-powered view

of Jupiter. Several small "dobs" were also set up for the public, but the big Meade drew the hordes of tourists descending the mountain from their fantastic sunset experience. To one side, ignored by the masses, was a slender white tube: a TeleVue 102 on an Astro-Physics 1200 mount! The student volunteer manning this orphan allowed that she did not know how to use it and maybe it had the wrong eyepiece. Upon finding that I knew something about the AP and had brought my own eyepieces, she willingly retreated to the interior of the Center for a hot coffee. The scope was not polar aligned and had no finder, but I had a ball searching for southern wonders not visible from 40° North (the Center is ~19.7° N). Periodically a tourist would wander over and ask what I was looking at — Messier, NGC, etc. objects left them cold and they would eventually ask if I would turn to Saturn — "Dear, DEAR, come here, it really does have RINGS!!!" Several days later I had a discussion with one of the Center's staff on eyepiece selection. They have a number of eyepieces, some of them good.

I doubt that DAS members need warnings about the vagaries of weather atop a 14,000-foot mountain. Just be prepared for anything — the sun was shining when we went into the Subaru — we exited to find two inches of fresh snow. However, one should be prepared for a deluge of legal notices not associated with our casual drives to Mt. Evans or Pikes Peak. Children under age 16 are not allowed on the summit of Mauna Kea, nor are pregnant women. You must not summit within 24 hours of scuba diving, and you must rest one hour at the visitors' center before your trip to the summit. It is not clear if these are "legal" restrictions or just very strong suggestions; whichever, they should be heeded as the nearest medical facility is over one hour away. The Subaru requires signed liability releases mailed or faxed to them before confirming your tour.

The summit scopes have base facilities lower on the island. Most are clustered





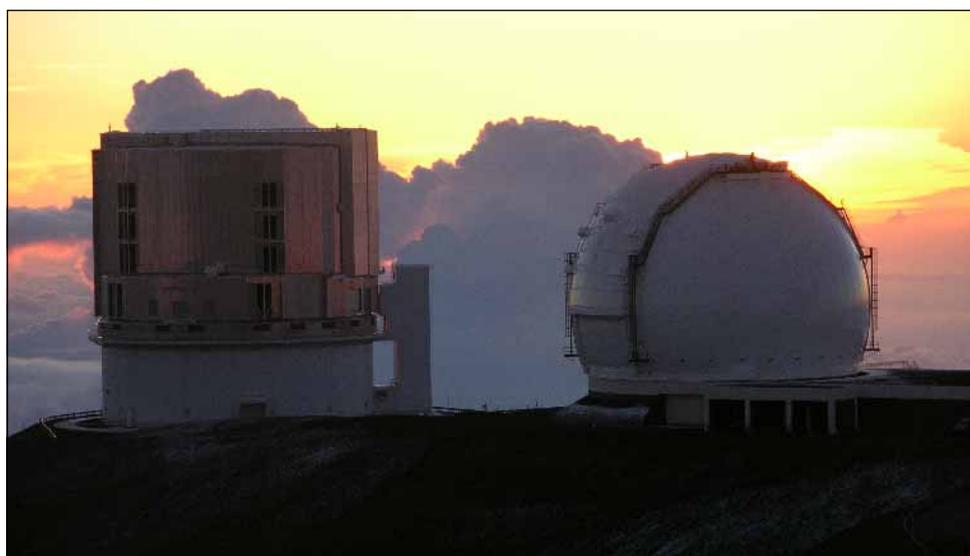
Top Image: Under the Subaru: "The Dish Washer" for cleaning and re-silvering the mirror.
 Bottom image: Subaru and one Keck at sunset"

along one road on the western edge of the University of Hawaii's Hilo campus. The Gemini building did not appear to have visitors' facilities. As on the summit, the Subaru was the best show. The building's courtyard has a number of plaques describing the scope and some of its discoveries. A door off the courtyard places you in a "room," slightly larger than a broom closet, which is partitioned off from office spaces. This miniscule space is packed with information and displays.

Inside the west gate of the Hilo campus, the Mauna Kea Astronomy Education Center was under construction at the time of our visit. This large, architecturally striking facility is now open. The site <http://maunakea.hawaii.edu/>

[menu.html](http://www.astroday.net/hilites.html) provides current information.

The base facility for the Kecks is in Waimea, a town in the northwest quad-



rant of the island. The facility has a lobby with several Keck models, nice couches and a video recorder to play tapes of the Kecks construction, design, the cultural significance of Mauna Kea, etc. A hallway displays impressive pictures from the scopes. A "dob" in the lobby is aimed at the summit providing a view of the twin Keck domes (if the summit is visible). The courtyard, windows and decorations repeat the hexagonal theme of the scopes. If you do not have another reason to go to Waimea, the center is probably not worth the trip. Waimea is the headquarters for the Parker Ranch; it has several nice gift shops, classy art galleries and jewelry stores. Daniel Thiebaut's restaurant is excellent.

If your trip to the Big Island is in the spring — unfortunately, monsoon season — be in Hilo for Astronomy Day. It is unbelievable; everyone who has anything to do with astronomy and science comes out of hiding and sets up displays in the large Prince Kuhio Plaza shopping mall. The last two years, approximately 15,000 people attended. See <http://www.astroday.net/hilites.html> for schedule, details and pictures of previous years. We were told that future Astronomy Day planning calls for an astronomers' tour of the Mauna Kea telescopes.

Enjoy your trip! We certainly did.



About the Denver Astronomical Society

Membership in The Denver Astronomical Society is open to anyone wishing to join. The DAS provides trained volunteers who host educational and public outreach events at the **University of Denver's Historic Chamberlin Observatory**, which the DAS helped place on the National Register of Historic Places. First light at Chamberlin in 1894 was a public night of viewing, a tradition the DAS has helped maintain since its founding in 1952.

The DAS is a long-time member in good standing of the **Astronomical League** and participates in **NASA's Project Astro** program.

The DAS' credo is to provide its members a forum for increasing and sharing their knowledge of astronomy, to promote astronomical education to the public, and to preserve **Historic Chamberlin Observatory** and its telescope in cooperation with the University of Denver.

The DAS is a 501(c)(3) tax-exempt corporation and has established three tax-deductible funds: the Van Nattan-Hansen Scholarship Fund, the Public Outreach Fund, and the Edmund G. Kline Dark Site Fund. To contribute, please see the bottom of the membership form for details.

More information about the DAS, its activities, and the special tax-deductible funds is available on the DAS web site at www.thedas.org.



**APPLICATION FOR MEMBERSHIP TO THE
DENVER ASTRONOMICAL SOCIETY**

New Renewal

Name: _____
 Address: _____
 City, State, Zip: _____
 Phone numbers: Home () Work ()
 E-mail Address: _____
 Occupation: _____
 Other Interests: _____
 (Students Only) School: _____ Grade: _____

Do you want to download the newsletter in PDF format from our website instead of by postal mail?
 Yes No

Do you want the above information excluded from the yearly roster?
 Yes No

Please Circle All That Apply:

Regular Membership: \$35 Students: \$12 (*Students under age 23*)
 \$ _____

Astronomy Magazine/\$34
 Sky & Telescope Magazine/\$32.95
 \$ _____

Van Nattan Scholarship Fund \$ _____

Public Outreach Fund \$ _____

Total Amount Paid \$ _____

Please make donations to the Dark Sky Site Fund payable to the DAS EGKDS Fund and mail to Steve Solon, 9774 W. Elmhurst Place, Littleton, CO 80128-5199. Please make other amounts payable to the Denver Astronomical Society and mail along with this completed form to Brad Gilman, DAS Treasurer, 7003 S. Cherry St., Centennial, CO 80122-1179.



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