

DENVER OBSERVER

Newsletter of the Denver Astronomical Society

One Mile Nearer the Stars



Inside the Eagle Nebula (M16) in Serpens Cauda
Image: © Steve Bell 2001

The Eagle's Nest

A favorite target of telescopes and cameras, we now know that the gas columns within the Eagle Nebula contain stellar nurseries where stars are born. The far left pillar (the top of which almost fades into the nebula) is about one light-year long from base to tip. M16 and the Eagle Nebula are about 7,000 light-years from Earth.

The nebula lies within the treasure trove of the Milky Way along with other showcase jewels such as M5, M17, M20, M21, and many more. Observers look forward with much anticipation to this time of year in order to reacquaint themselves with "stellar familiars," and befriend new ones.


Martian Mega-Madness

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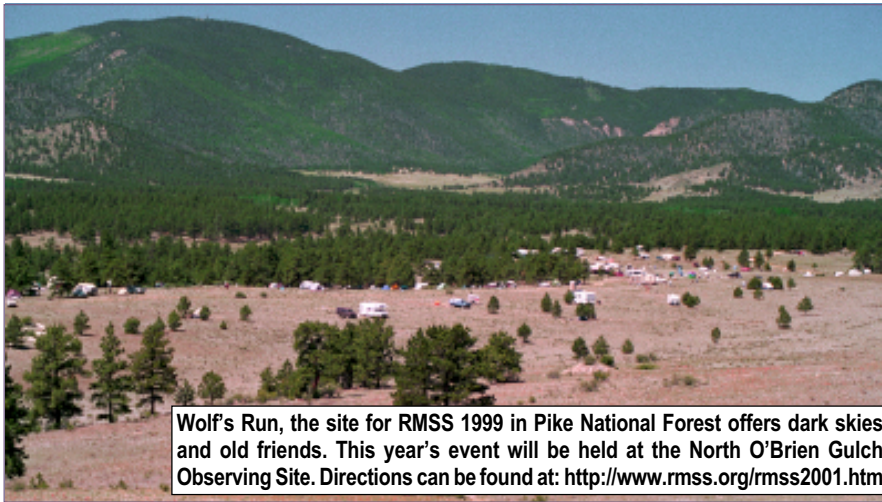
J U N E S K I E S 2 0 0 1

Mars is the main event this month for those of us unable to journey to South Africa for the total solar eclipse on the 21st. The "warrior planet" moves from Sagittarius to Ophiuchus on the 1st, and reaches opposition on the 13th. Also moving from the morning into the evening sky where it remains for most of the night, Mars is its most glorious—glowing about eight times brighter than Arcturus or Vega. Mars's alter-ego **Venus** is brilliant in the early morning hours: By the 11th it will be half-lit in scopes. **Jupiter and Mercury** are hiding in the glare of the sun this month making them unavailable for observers. Dim **Saturn** rises only about an hour ahead of the sun. **Pluto** is in the sky most of the night—can you track and find it?

5	Full moon
13	Last quarter moon, Mars at opposition
21	New moon, Summer Solstice, Total Eclipse of the Sun (Visible in Africa)
27	First quarter moon



Left: From South African skies, Comet Linear A2, imaged on May 9, 2001.
Image: ©Bill Hollenbach, 2001



Wolf's Run, the site for RMSS 1999 in Pike National Forest offers dark skies and old friends. This year's event will be held at the North O'Brien Gulch Observing Site. Directions can be found at: <http://www.rmss.org/rmss2001.htm>

PRESIDENT'S CORNER

Hey, IT'S SUMMER. And the summer observing season is getting off in full swing. Remember the dark sky weekends at the Dark Sky Site (Check each *Observer* issue for details). You don't need a telescope to get involved, members love to share their scopes—the second word in “Star Party” is party. Also remember the camping trips for the summer are just starting. The premier party of the season is “Star Stare” sponsored by the Colorado Springs group on June 21–24. Next is the Montana Star Party on July



20–21, and the “Wyoming

Weekend Under the Stars” is Aug. 16–18. These are wonderful events with great night-time observing, speakers and activities during the day, great site-seeing, hiking, and lots of events for you and your family. Remember, you don't need a telescope to

participate. Often there are 30-inch scopes for viewing pleasure.

If you are interested in getting involved in the Open Houses we could use some help. Bring a scope or just come to help with the other activities. It's a lot of fun and a great evening. Come have some coffee and eats afterwards—you are welcome to come and stuff your face with us. Please park, unload your car, and pull out. Do not park or drive on the grass. We need to continue our good relationship with the parks department.

The Dark Sky Site committee has completed its plans for the summer. This summer we hope to add several pads and skirt the warming hut; spring 2002 we hope to get a vault toilet, followed by more pads. These improvements are made thanks to the generosity of the membership. We continue to ask for financial and volunteer work experience from you.

Please feel free to call any board member or me if you have questions or suggestions.—*Larry Brooks*

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The Observer is available in color

PDF format from the D.A.S. website.

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

D.A.S. Schedule

JUNE

- 1 E-Board meeting, 8 P.M.
- 15 General Meeting at Olin Hall, D.U., 7:30 P.M.—*Speaker: Robert Zubrin, The Mars Society, “The Mars Arctic Research Station Project: Launching the Human Exploration of Mars.”*
- 21-24 Rocky Mountain Star Stare
- 22-24 Dark Sky Site Weekend
- 30 Open House

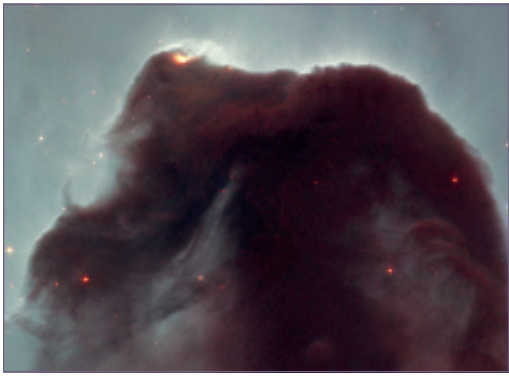
JULY

- 6 E-Board meeting, 8 P.M.
- 20-22 Dark Sky Site Weekend, Montana Star Watch
- 27 General Meeting at Olin Hall, D.U., 7:30 P.M.—*Speaker: Clark Chapman, SWRI, “Near-Earth Asteroids and Impact Hazards.”*
- 28 D.A.S. Picnic/Open House

Public Nights are held every Tuesday and Thursday from 7:00-9:00 P.M. at Chamberlin Observatory

*Costs to non-members are: \$2.00 adults, \$1.00 children
Please call (303) 871-4333 for reservations.*

www.denverastro.org



Hubble Birthday Bash: 11 Candles, 100,000 Pictures
 NASA's Hubble Space Telescope added its 100,000th picture to its immense collection during its 11th birthday in April. "In honor of the birthday and by popular demand, the Hubble team has released a new WFPC2 image of the Horsehead nebula, available online at <http://www.jpl.nasa.gov/pictures/wfpc>. Last year 500,000 online voters, including students, teachers, and professional and amateur astronomers, chose the nebula as an astronomical target for Hubble to observe. Additional images and an animation of the Horsehead nebula are available at <http://heritage.stsci.edu/public/2001may/supplemental.html>."

Sky & Telescope sends only one notice before subscriptions end. The D.A.S. sends only one issue of The Denver Observer after dues expire. The cost of magazines (Astronomy and Sky & Telescope) is in addition to the annual dues. For questions concerning memberships, please contact D.A.S. Treasurer, Chuck Carlson (chcarlso@du.edu). See the back page of this newsletter for more information.

While photographing the dark skies at Rocky Mountain Star Stare 2000, Joe Gafford captured NGC 6888 (The Crescent Nebula) in Cygnus.

Image: © Joe Gafford 2001



Bookstore and More(!) Launches on D.A.S. Website

With the help of Terry Chatterton, our D.A.S. webmaster, I've placed a "Bookstore and More(!)" area on our website. This is an "affiliates" program with Amazon.com—and, as we know, they sell more than books. Proceeds from the sales will go to the club on a quarterly basis if they total \$25.00 or more.

We can make up to 15% of book sales (and DVDs, movies, music, etc.) that are purchased from anyone using a link off of our site. (We get the full 15% if a person purchases off an *individual link* rather than simply clicking through one of the Amazon.com boxes.)

This is a great way to contribute to the club while purchasing items you might already be purchasing through another outlet.

Returning club member Patrick Ryan has graciously volunteered his services as "Bookstore Clerk." He will choose a book or two each month to highlight and create a review for it. I've wanted this kind of review in the newsletter, but there hasn't been enough space.

One of the specialties I'd like to see there is a "Club Members Suggestions" area. We welcome suggestions of titles you particularly enjoy or find useful (preferably astronomy or science-fiction related), and, if you like, I'll give you a page of your own. If a club member wants to create book reviews within his or her page, that could be a part of it.

Club members don't need to know anything about creating web pages with HTML—as long as I get the information in text format, I can place it in the site—it takes me just a few minutes. Members can also be responsible for space movie reviews in the same manner, and perhaps a "music to observe by" area. I'd love to hear your suggestions!

So far, the book categories are: Astronomy, Cosmology, In the Field, Astrophotography (CCD and film), Archaeoastronomy, and Science Fiction. If I'm missing anything, please let me know. Tell your friends!

If you're interested in participating or suggesting titles, please e-mail or call me. Thank you—*Patti Kurtz*

Note from the editor:

Newsletter contributions (ccd and film astrophotos, members with telescopes, star party candid, short observing anecdotes, observing and imaging tips, etc.) are welcome and encouraged. This is your chance to strut your stuff! **Please submit by the 15th of each month as follows:**

Film: Glossy prints by mail** or scanned and uploaded (high res.) to the listserve upload area.

CCD: Uploaded to the listserve upload area (resolution as high as possible, please).

Text: Articles should be no more than 250 words, please. Paste into an email and send to me at: pkurtz@starfirecreations.com.

If you don't receive a confirmation email from me, I didn't get your email. Also, be sure to let me know if you've uploaded a file. Thank you!

***Patti Kurtz (call for mailing address)*
 (303) 948-5825

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observers deck

Directions to the Dark Sky Site

The D.A.S. Deer Trail Dark Sky Site is about 60 miles east of the “mousetrap” in downtown Denver.

Take I-70 east to the Deer Trail exit (exit 328), turn left at the end of the exit ramp, and turn left again on CR 217 (after the Texaco station). Take CR 217 just over 1/2 mile, and turn right (east) onto CR 34. Stay on CR 34 about 6 miles until you get to CR 241. Turn left (north) onto CR 241 and continue about 1.5 miles – you’ll see a culvert with a wide gate on the right (east) side of the road.

Directions to D.S.S. from Denver, arrival from the North (for after-dark arrivals):

Take I-25 eastbound to exit 316 (Byers). Turn left at end of ramp which puts you on eastbound US-36. Take US-36 east 17.2 miles to CR 241. Turn right (south) onto CR 241 and continue for 6.2 miles. The D.S.S. entrance is on the left between two tall posts.

Note: Travel distance from Denver using the North route is actually 3.9 miles shorter than the traditional route. The first 5 miles of CR 241 going south from US-36 is narrow and somewhat rough. Be careful.

Warming Hut Rules

- The last people on the site must turn off the lights and the heat.
- A microwave will be provided for warming food. Please clean up after yourself.
- No pots and pans, appliances, or other supplies are to be left in the shed.
- No personal supplies are to be left in the shed overnight.
- Do not donate furniture or other things unless you clear it with the D.S.S. committee first.
- No food left overnight in the shed.
- No sleeping overnight in the shed.
- Quick naps are permitted if you feel you might fall asleep on the way home. We would prefer you get your nap rather than falling asleep on the road. However, we don’t want it to become a tent for camping.
- Clean up after yourself before you leave the site.
- Please clean up all food that drops or is spilled, otherwise it will attract mice and insects.

Observing in the Land of Dry Rainbows

by Sandy Shaw

Sipping my tea on a chilly morning in Big Bend National Park last December, I could see reflected in my amber liquid, the clear blue sky and golden leaves of the cottonwood trees surrounding my campsite. After starting green chiles to roast for seasoning scrambled eggs, I opened my logbook to review recent astronomical observations as strains of fiesta music drifted in from a Mexican village just across the river.

Located in southwestern Texas about 900 miles from Denver, the park is surrounded on three sides by the big bend in the Rio Grande River, giving the park its name. For more than a decade I’ve taken winter camping trips to Big Bend, drawn by its desert environment, myriad hiking possibilities, natural hot springs, varied geology, serendipitous archaeological sites, strange plant and animal life, and relative solitude. Since getting back into astronomy about five years ago, I’ve been observing there as well.

Skies at Big Bend are very dark; the park is less developed, thus less lighted, than most national parks. Almost no towns are nearby, so there are virtually no light domes. Night skies are generally clear, especially in winter when weather patterns are favorable. In summer, winds shift,

bringing transparency-killing industrial pollution from Houston, Monterrey, and Mexico City, and particulates from power plants near Piedras Negras. Because the park is uncrowded most of the year, there are many places to set up telescopes conveniently close to paved roads without the annoyance of blasting bright passing headlights. The southern tip of the park reaches just below 29° north latitude, allowing views 11° farther south than we can see from Denver. Another bonus of winter observing at Big Bend is weather much warmer—usually—than that of Denver.

A Medley of Color

At Big Bend, bold and delicate rainbows are everywhere—in the rocks, in the plants, and even in the animals. Rising high above my campsite, the multicolored striations in Castolon Peak display layers of wine, brown, orange, ivory, copper, charcoal, and ochre. Sedimentary formations around Ernst Tinaja, an immense natural stone water tank, present amazing bands of purple, pink, white, and gold. Subtle rings of rose and chartreuse on the aptly named Rainbow Cactus smile shyly at me from under translucent golden spines. Javelinas, campground browsers that look like hairy

Dark Sky Site Guidelines

The Dark Sky Site (D.S.S.) is for the use of D.A.S. members and their guests. If you are neither, please contact an officer of the D.A.S. for a “guest pass,” and read the D.S.S. Guest Policy (below). Please remember that any light disrupts your eye’s dark adaptation and can ruin astrophotography. Most members (astrophotographers may be the exception) are happy to share views from their telescopes, however, please introduce yourself and ask permission upon approaching a telescope owner. Please follow these simple guidelines to maintain a positive experience for everyone:

- ★ Try to arrive before dark. If you must arrive after dark, please turn off headlights when turning into the site, and try to arrive from the north.
- ★ Don’t park on the graded graveled roads.
- ★ Turn off or disable all dome and trunk lights in your car (or cover with layered red tape or duct tape)
- ★ Use only dull RED FLASHLIGHTS.
- ★ NO OPEN FIRES. NEVER.
- ★ If you’re the last person to leave, close the gate.
- ★ If you leave before everyone else, ask for assistance in getting out of the site without headlights.

Other suggestions:

- ★ Wear warm clothing.
- ★ Bring your own toilet paper in case that in the porta-pottie has run out.

o b s e r v e r s d e c k

gray pigs with tusks, sport jaunty white bristly collars like living mammalian rainbows. But Big Bend is in the Chihuahuan Desert, one of North America's four great deserts, where rain is scarce most of the year and water is a rare and precious resource. These glorious rainbows are dry.

Stellar Promises Come True

In December I auditioned a new observing site: a paved parking area with a low southern horizon only about 15 minutes away from my tent in a campground on the west side of the park. As evening's cloak of darkness slowly swept across the sky, the site fulfilled its promise. Brilliant Venus disappeared beyond the western horizon, trailing a long cone of zodiacal light. With the sky fully darkened, the black silhouettes of Trap Mountain to the northeast, the twin pointed peaks of the Mules Ears, and a low ridge to the west framed a huge expanse of starlit sky. From this site I could completely trace out the enormous constellation of Eridanus, the River, flowing in a great curving line from its source, Beta (β) Eridani, just west of Orion, all the way to bright Achernar, the river's mouth, a star too far south to be seen from Denver. By midnight another star not visible from Denver had risen: Canopus, the second brightest star in the nighttime sky, sparkled like a desert diamond with red, blue, yellow, and green glints near the horizon. Shortly before dawn, the great globular Omega Centauri, declination $-47^\circ 29'$, could be seen with the unaided eye.

Another excellent observing place near a campground is a graveled pullout immediately adjacent to the main road on the east side of the park. At this site the night sky is a huge inverted black velvet hemisphere with a low horizon in every direction. It was easy to picture the entire constellation of Orion, not just the brighter bits we see in Denver, but also the faint stars comprising the warrior's lion skin shield (from 15 Orionis to the six Pi [π]s) and the dim stars outlining the hunter's upraised club (from Mu [μ] to the two Chi [χ]s). Two drawbacks to this site are occasional headlights—but flashes are mercifully brief and infrequent—and the necessity to re-erect tents each night. Javelinas



An adobe ruin at Big Bend melts back into the earth.

Image: © Sandy Shaw 2001

in the nearest campground have learned to savor humans' food and have discovered that the easiest way to get it is to rip into all possible food containers, including tents. It was imperative that I collapse my fabric home when away. Returning to the campsite after a long night of observing to set up my tent in the dark was a chore that palled quickly.

A third developed camping area is in the Basin, the cupped interior of a reddish mountain range that is completely contained within the park. Driving up the winding road into the Chisos Mountains for the first time many years ago, the rosy sunset alpenglow on the ruddy peaks made the drop over the pass into the Basin seem like descending into the interior of a glowing copper crown. Stargazing programs are held regularly in the Basin amphitheater. Tent camping thrills here are black bears (although most have migrated, perhaps temporarily, to Mexico) and skunks which, I was told, entertain themselves at night by nosing open zippered tents and prancing about on the formerly sleeping but suddenly alert occupants.

A Nighttime Visitor

Just after setting up my scope one night, the rumbling of a car engine warned me that white lights were coming. As the auto approached in the darkening gloom, I rec-

ognized a white van with green stripes—a ranger vehicle. “Oh, oh,” I thought, “busted.” Upon seeing my scope the ranger, who had apparently met other astronomers skulking in the dark beside deserted park roads, immediately recognized my purpose and enthusiastically joined me for awhile to look at some night sky wonders. Before he left to continue his rounds, we enjoyed Jupiter, Saturn, M42, and a few faint fuzzies. On succeeding nights I met the same ranger many times, recognizing him by voice alone because I never saw him.

Attractions Galore

Between observing sessions, Big Bend provides many attractions. Hiking, four-wheel driving, traveling to Mexican border towns, and visiting archaeological sites are just a few of them.

Developed hiking trails, primitive routes marked by cairns, and plot-it-yourself route-finding treks allow walkers to hone map and compass skills in three environments—riparian, desert, and mountain. On one hike I came across an unmapped site where a battered tin bathtub and a collapsed water tower lay among the creosote bush out in the middle of the desert. Another time I had a close encounter with a pack of javelinas; when I spotted them in the shadow of an arroyo, they exploded in all directions like a

Continued from Page 5.

volcano of hairy beasts. I edged away, speaking politely and hoping that the big, burly one staring at me was not offended by my uninvited and unexpected presence.

Several four-wheel-drive roads allow explorers to boldly go where many have gone before. Ruins of a mercury mine, the trail to Ernst Tinaja, and campsites by the Rio Grande are among the treasures accessible from back roads. One hot afternoon, sharp rocks on a 4WD road shredded one of my tires. I discovered that changing a tire under the blazing desert sun is not as much fun as it sounds.

For two dollars, you can hail the international ferry—a guy with a rowboat—and ride across the Rio Grande to two Mexican villages, Boquillas and Santa Elena. In Boquillas, I enjoyed an impromptu guitar concert while sampling tiny but tasty tacos. In Santa Elena, one restaurant served cabrito, a delicacy of succulent roasted young goat simmered in a flavorful red chile sauce. No passport is necessary to visit either town.

Ancient Ruins

Archaeological sites abound in the desert landscape. Rock mounds in Mexican cemeteries bear silent witness to the hard lives of border people. Rock and adobe ruins, many with artifacts like dusty lanterns, carefully mended shovels, china shards, and rusted Model-Ts, await the curious hiker. My favorite archaeological site is the ruin of a hot springs bathhouse. Its low limestone walls hold enough transparent blue-green water at a perfect 105° to provide a luxurious soak. Watching the full moon rise over the distant mountains while basking in the warm water is a truly heavenly experience.

The December 25th eclipse rounded out last winter's observing trip. At about 20% coverage, it was a beautiful sight. Wanting to share "my" eclipse, I set up viewing headquarters outside the nearest store, brandishing a pair of solar filters to waylay potential customers.

In February I returned to Big Bend, craving another dose of my desert paradise and eager to complete an observing program. Spring had arrived and the cottonwood leaves reflected in my teacup were no longer

golden but green. Tufts of the trees' "cotton," looking like tiny globular clusters in the daytime sky, drifted through my campsite in a warm, lazy breeze. Bluebonnets and purple namas carpeted the desert hills, gifts from the unusually heavy winter rains. Bicolored white and lavender mustard flowers scented the air with a honeysuckle-like fragrance.

After dark I hurried to one of my favorite observing spots, heady with anticipation. I was focusing on a faint galaxy when a green-striped white car pulled up. Footsteps approached hesitantly and slowed to a stop. "Say..." a familiar voice called, "weren't you here in December?"

If You Go to Big Bend National Park

Winter temperatures range from the low 20s at night to the 80s in daytime; summer daytime temps often exceed 100°. In addition to three developed campgrounds that charge \$8.00 per night, there are numerous primitive roadside and backpacker sites for which permits are free, and one RV area with hookups. Meals and motel-type lodgings are available in the Basin. Avoid visiting during the boisterous spring break season, usually in March, when the park becomes an unruly packed zoo of noisy campers.

Check the website <http://www.nps.gov/bibe/home.htm> for information including weather conditions and campsite availability. For any DAS member considering a trip to BBNP, this desert lover would be happy to share books, photos, trail and road guides, directions to unmapped sites, and an extensive collection of topographical maps; please call me. Email me at m6m7@hotmail.com if you need my phone number.

Sandy Shaw is an active observer and member of the D.A.S. She currently holds seven observing certificates from the Astronomical League.

Welcome New Members!

The following folks have joined the Denver Astronomical Society during April. Welcome!

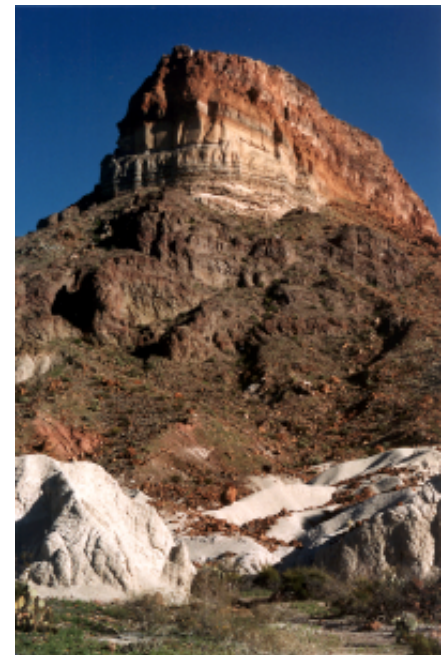
- David Trumble
- Kenneth Bentley
- Randy West
- John Kieser
- Maciek Ziernicki

M.A.R.S. Regional Convention News

As a result of an invitation from the Western Colorado Astronomy Club (WCAC), the MARS region will have a regional convention this year. The meeting will be held as part of the WCAC's annual star party on Sept. 14 and 15th. The actual meeting will take place at a site (to be determined) in Grand Junction, while the observing part of the star party will take place atop Grand Mesa—about 30 miles east. Work has only just begun on the plans so many of the details remain to be settled and by next month's issue of the *Denver Observer*, we should have more to tell you.

An essential part of any convention are presentations by amateur and professional astronomers. If you would like to give a talk at the meeting please e-mail me at sherlinj@aol.com or postal mail me at 17002 East Prentice Dr., Centennial, CO 80015-2412. You may also use my address to request convention information until the WCAC has established its star party web page in the near future.

Skies from the top of Grand Mesa can be dark and transparent so we invite you to mark September 14 and 15th on your calendars and come to Western Colorado for 3rd Annual Western Colorado Star Party.—*Jerry M. Sherlin, MARS Regional Chairman.*



Big Bend's Castolon Peak displays its rainbowed strata above the author's campsite.

Image: © Sandy Shaw 2001

updates

2001 Van Nattan-Hansen Scholarship

The Van Nattan-Hansen Scholarship Fund Committee, in cooperation with the Denver Astronomical Society, is now accepting applications for 2001 scholarship awards. *These awards are open to graduating high school seniors and undergraduate college students with majors or planned majors in astronomy, physics, astrophysics, or mathematics.*

William R. Van Nattan (1921-1971) loved astronomy. His enthusiasm continues to enrich, enlighten, and capture the interest of others through his many and varied contributions to astronomy. He was a founding member of both the Denver Astronomical Society (DAS) and the National Amateur Astronomers (NAA). As chairman of the Denver Planetarium Committee in 1955, he was instrumental in providing a planetarium for the people of Denver at the Natural History Museum. For many years Van Nattan assisted in teaching astronomy at the University of Denver's Chamberlin Observatory.

Charles Hansen was also an avid supporter of Denver astronomy. Upon his death he left a significant portion of his estate to the Denver Astronomical Society for use in supporting the Fund.

To honor their memories, this scholarship fund was established by the Denver Astronomical Society in 1973. Through the gifts and contributions of many friends of astronomy, the Fund continues to provide scholarships to high school and



Jerry Hawker at Fox Park on 7/28/00 with his beautiful then-new 18-inch Obsession. *The Denver Observer* editor would love to publish your photos of you and/or fellow club members at star parties or D.A.S. events, with or without telescopes. Image: Joe Gafford

undergraduate students of astronomy and related sciences.

HOW TO APPLY

Scholarships will be awarded to students on the basis of demonstrated interests in astronomy and related sciences. All requests for consideration should be accompanied by the following information:

- Enrollment equivalent to a half-time load for the academic term as defined by the institution
- Transcripts showing a grade point average of at least 3.0 on a 4.0 scale (or equivalent)
- A dated and signed letter of intent demonstrating the applicant's interest and the declared major
- Letters of recommendation from at least

2 reputable sources

Information provided by all applicants becomes the property of the Van Nattan-Hansen Scholarship Committee. Please send copies of required information as appropriate. Documents cannot be returned.

Applicants will only be considered if their information is received no later than 1 July, 2001. Please mail to:

**The Van Nattan-Hansen
Scholarship Committee
P.O. Box 150743
Lakewood, CO 80215**

Scholarship awards shall not discriminate on the basis of race, color, sex, age, ethnic or national origin, religion, or disabilities. The decision of the Van Nattan-Hansen Scholarship Committee shall be considered final.

June Speaker is Man With a Mission

The D.A.S. welcomes Dr. Robert Zubrin as its guest speaker on June 15 at Olin Hall. The title of his talk is "The Mars Arctic Research Station Project: Launching the Human Exploration of Mars." Zubrin is the founder and President of the Mars Society, an international organization dedicated to furthering the exploration and settlement of Mars by both public and private means. Additionally, he is president of Pioneer Astronautics, an aerospace research and development company located in Lakewood.

Zubrin, an inventor and author, has published more than 100 technical and non-technical papers in the field, and was a member of Lockheed Martin's "scenario development team" charged

with developing broad new strategies for space exploration. He is known internationally as one of the most creative engineers working in the aerospace industry today, and he and his work have been the subject of articles in numerous publications including *The New York Times*, *The Boston Globe*, *The Washington Post*, *Fortune Magazine*, and *Newsweek*. He's been featured in numerous documentaries on U.S. Public Television, the Discover Channel, and the B.B.C.

Zubrin, the author of *The Case for Mars: How We shall Settle the Red Planet and Why We Must*, and *Entering Space: Creating a Spacefaring Civilization*, has promised to bring copies of his books to sell and autograph at the meeting.

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About the Denver Astronomical Society

The D. A. S. is a group of amateur and professional astronomers that share a mutual interest in the heavens. The D.A.S. operates the University of Denver's Chamberlin Observatory, along with its prized 1894 Alvan Clark 20-inch refracting telescope. Our members have been involved with the first public planetarium at the Denver Museum of Science and Nature and the Smithsonian Astrophysics Observatory's "Moon Watch" program. The D.A.S. successfully petitioned to have the Chamberlin Observatory listed on the National Register of Historic Places.

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. To these ends we have established three tax deductible funds: the Van Nattan Scholarship Fund, the Chamberlin Restoration Fund, and the D.A.S. Dark Sky Site Fund. This last fund was established in order to construct and maintain observing facilities near Deer Trail in eastern Colorado.

Please call our Info Line at (303) 871-5172 and drop by the General Membership meetings. Become a member and enjoy speakers, facilities, events, and our monthly newsletter, *The Denver Observer*.

APPLICATION FOR MEMBERSHIP TO THE DENVER ASTRONOMICAL SOCIETY	
New <input type="checkbox"/>	Renewal <input type="checkbox"/>
Name: _____	
Address: _____	
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E-mail Address: _____	
Occupation: _____	
Other Interests: _____	
(Associates Only) School: _____ Grade: _____	
Do you want to download the newsletter in PDF format from our website instead of by postal mail?	
Yes <input type="checkbox"/>	No <input type="checkbox"/>
Do you want the above information excluded from the yearly roster?	
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<i>Please Circle All That Apply:</i>	
Regular Membership: \$30 Associate: \$10 (Age 22 and younger)	
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Astronomy Magazine/\$29	
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Total Amount Paid \$ _____	
<p><i>Complete this form, or a copy, and mail it with your check or money order payable to The Denver Astronomical Society;</i> D.A.S. Treasurer, Chuck Carlson; 1521 So. Vine St.; Denver, CO 80210</p>	



Denver Astronomical Society

c/o Chamberlin Observatory
2930 East Warren Avenue
Denver, Colorado 80208

JUNE'S SPEAKER:

Dr. Robert Zubrin,
President and Founder
of The Mars Society,
*"The Mars Arctic
Research Station Project:
Launching the Human
Exploration of Mars."*

join us