Desert Skies

Tucson Amateur Astronomy Association

Volume XLV, Number 6 June, 1999

Calendar of Events

BEGINNERS LECTURE: Friday, June 4, 6:30 pm at the Steward Observatory Auditorium - Room N210. This month's topic is ***The Summer Sky*** by Jeff Brydges.

GENERAL MEETING: Friday, June 4, 7:30 pm at the Steward Observatory Auditorium - Room N210. Topic is ***Members Night.***

BOARD OF DIRECTORS MEETING: Thursday, June 10, 7:00 pm at Steward Observatory Conference Room N305.

STAR PARTIES & EVENTS:

- June 5 – TAAA Beginners Star Party at TIMPA
- June 10 – C.E. Rose Elementary School Star Party
- June 12 – "Telescopes for Telethon" MDA Public Star Party at Old Tucson
- June 12-19 – Grand Canyon Star Party
- June 19 – Girl Scouts Star Party
- June 19 – Whipple Observatory Public Star Party
- June 25 – Girl Scouts Demonstration Activity

Newsletter Schedule: Deadline for articles: Monday, June 14. Printing: Tuesday, June 22. Folding Party: Wednesday, June 23. Mailing: Thursday, June 24. The newsletter is scheduled to be in the mail at least one week prior to the following month's General Meeting.

Cover: Our gracious hosts of the 1999 TAAA Annual Picnic, Ed and Pat Vega, watching the sunset from their incredible Skywatcher's Inn in Benson, AZ. A fun time was had by all. Photo by Phil Farnam.

TAAA Web Page: http://www.tucsonastronomy.org **TAAA Phone Number: (520) 882-1950**

Office/Position	Name	Phone	E-mail Address
President	John Kalas	620-6502	jckalas@aol.com
Vice-President	Andrew Cooper	795-3585	acooper@pobox.com
Secretary	Ingrid Saber	797-3834	
Treasurer	Terri Lappin	579-0185	tlappin@as.arizona.edu
Member-at-Large	Robert Callanan	818-1315	bacallanan@juno.com
Member-at-Large	Daniel Manrique	762-8192	dcmanrique@aol.com
Member-at-Large	Bill Lofquist	297-6653	wlofquist@aol.com
Chief Observer	Open		
AL Correspondent (ALCOR)	Laurel Dunlap	544-7780	laureus@earthlink.net
Astrophotography SIG	Ray Wallace	294-1197	
Newsletter Editor	John Kalas	620-6502	jckalas@aol.com
Star Parties	Maureen Babcock	579-3099	roo3@aol.com

TAAA Mission Statement:

We are a resource for anyone interested in astronomy. It is our mission to nurture a person's natural curiosity about the night sky. By giving people a knowledge and understanding of astronomy, we enhance their enjoyment of the solar system and beyond. Through our public activities and school evening observing sessions, we bring astronomy to persons of all ages. Our regular meetings and observing sessions offer members a forum to meet others with similar interests and experiences and to learn from one another.

Membership in the TAAA:

Regular membership	$ 23
Senior (over 60) membership	$ 21
Student membership	$ 15
Add for Family membership	$ 5
Add for Astronomical League (optional)	$ 3
Add for contribution to Southern Arizona Section of I.D.A. (optional)	$ 3 (recommended minimum)
Add for Sky & Telescope Magazine	$ 29.95 (NEW)
Add for Astronomy Magazine	$ 29

Rates for membership are given above. Family Membership includes two adults plus minor children. Members may subscribe to **Sky & Telescope** or **Astronomy** magazine (or both) at the time of membership renewal, saving substantially over the regular subscription rates. To assure we understand what you are paying for, please identify which class of membership and what options you want. Send one check made payable to *TAAA* to cover membership dues, magazine subscription(s) and any contributions to:

Tucson Amateur Astronomy Association
P.O. BOX 41254
Tucson, AZ 85717

4 Easy Steps to Membership Renewal:

1. Pay your dues 2-3 months early. Your month of membership expiration is listed on your newsletter mailing label.
2. Find your membership class and its rate. Add the Family Membership rate to this, if applicable.
3. If you desire membership in the Astronomical League or magazine subscription(s) or wish to make a donation, add the appropriate amounts to your membership rate. If a magazine subscription renewal is desired, include the magazine renewal notice, if possible. Be sure to identify which options you are paying for.
4. Write one check, payable to *TAAA*, and send it to the address given above.

Call the Treasurer if you have any problems.

Send address changes to the above address.

Desert Skies Publishing Guidelines:

All articles, announcements, news, etc. must be submitted by the newsletter deadline noted above. Materials received after that date will appear in the next issue. All submissions are retained by the editor unless prior arrangements are made. Partial page article submissions should be submitted in Word compatible files via e-mail or on a floppy disk. Full page articles, artwork, and photos should be camera ready. We will not publish slanderous or libelous material! Send articles, announcements, etc. to:

TAAA - Desert Skies
c/o John Kalas
3470 W. Red Bird Court
Tucson, AZ 85745

or e-mail: jckalas@aol.com

Desert Skies is published monthly by the Tucson Amateur Astronomy Association, PO Box 41254, Tucson, Arizona 85717

President's Message

Congratulations to the incoming officers for 1999-2000; Andrew Cooper (V.P.), Terri Lappin (Treas.), Ingrid Saber (Sec.), returning M.a.L., Bill Lofquist, and new M.a.L's Daniel Manrique and Robert Callanan. I would like to thank outgoing M.a.L's John Polacheck and Dave Reynolds for their support during this past year.

WHAT A PICNIC!! Ed and Pat Vega, together with their great staff at the Skywatcher's Inn, hosted a terrific 1999 TAAA Annual Picnic on Saturday, May 8th. A great turnout coupled with an incredible facility made for a very enjoyable outing. The improvements that Ed and Pat have made to the inn were impressive. On behalf of all of the TAAA, I sincerely appreciate the efforts of the Vegas and their staff in making this year's picnic so much fun. See the great photos, taken by TAAA member Phil Farnam, later in this newsletter.

As I begin my second year as president of this outstanding organization, I appreciate the support that so many members have given to the club. The results of those efforts show. Membership now stands at nearly 325 with a higher level of active participation than in years past. We hope to continue this trend by making the association rewarding to all members. Toward this objective, it is important for members to let the officers know of their ideas and suggestions to improve the value of the club. Won't you help? We are good listeners and implementers.

This month there are some fun activities scheduled; another Beginners Star Party at TIMPA on 6/5, the "Telescopes for Telethon" MDA Public Star Party at Old Tucson on 6/12, and a Whipple Observatory Public Star Party on 6/19. See the announcements later in this newsletter under **Star Parties & Events**. This month's meeting is a Members Night with many presentations already scheduled. The meeting is dedicated to providing a place for members to showcase their astronomy-related activities. Get out those slides or photographs or tell us about your project or interest.

As a very busy month of May winds down and the school year ends, we see a decline in school star parties in June and beyond. The next few months will be a time to rest up for the next school year's activities. The club is very appreciative of the sacrifice that the school star party volunteers make each month to promote astronomy education to the people of Tucson. Take a well-deserved rest.

John Kalas

Meeting Information

Beginner's Lecture
"The Summer Sky"
Jeff Brydges

Jeff Brydges will present a lecture about objects in the night sky at this time of year. Jeff is an accomplished observer, having observed with several different telescopes of varying sizes. He will mention objects such as globular clusters, galaxies, and double stars that are of interest to the beginning observer. He will also be showing several constellation photographs that he has taken.

Main Lecture
Members Night

This month's meeting is dedicated to TAAA members and gives them an opportunity to present their astronomy-related projects or interests. Presentations already scheduled include; Cosmic Impacts: The Doomsday Threat by James McGaha. Recent science fiction movies (Deep Impact and Armageddon) have brought public attention to the threat of possible impacts from space. Just how real is this threat and what would be the consequences of such an impact? Can we do anything to prevent it? The survival of civilization may depend on it.

Erich Karkoschka will present The Planets This Month, Distance to Naked-Eye Stars, and the Satellites of Uranus. Dean Ketelsen will show some recent astrophotos and talk about a new telescope. Andrew Cooper will show us his new telescope. Terri Lappin will share her experiences with helping a student build a telescope over the internet. Ray Wallace will present information about a guidescope mount. There will be an SA-IDA update by Dr. Ed Vega and John and Joshua Polacheck will present a chapter in the history of astronomy about Copernicus. There is more room for additional presentations, so call John Kalas at 620-6502 and jump in.

Club News

Congratulations Erich!

EDITOR'S NOTE: Two articles were received this month congratulating Erich Karkoschka for his recent discoveries. Both are presented below.

From Dean Ketelsen:
Congratulations go to TAAA member Erich Karkoschka, who recently discovered a new satellite of Uranus from archival Voyager 2 data. The discovery was announced in IAU circular #7171 and follows:

S/1986 U 10

E. Karkoschka, Lunar and Planetary Laboratory, University of Arizona, reports the discovery of a previously unknown satellite of Uranus in seven Voyager 2 images, at a signal that is between 3 and 15 times the background noise. Observed over the 5-day arc 1986 Jan. 18-23, S/1986 U 10 was at apparent mag about 6.5-9.5 (brightening as the spacecraft approached Uranus), corresponding to a mean opposition magnitude of V about 23.6 and diameter roughly 40 km (assuming an albedo similar to that of nearby satellites). With orbital motion 564.25 +/- 0.10 deg/day, an assumed circular orbit in the plane of Uranus' equator yields an orbital radius of 76,416 km. Conjunction in orbital longitude between S/1986 U 10 and Uranus XIV (Belinda) occurred on 1986 Jan. 24.7 UT.

From Laurel Dunlap:
CONGRATULATIONS go to TAAA/TAL member Erich Karkoschka for his recent discoveries related to the planet Uranus. On March 29,1999 Erich published some of the first ever documented storms, observed on the planet Uranus. Erich Karkoschka along with Heidi Hammell, and

Club News (cont.)

Congratulations Erich! (cont.)

other Hubble Space Telescope researchers, used HST Data from 1994 through 1998 to take images of Uranus in both visible and near-infrared light. Erich created a time lapse movie (shown at the May meeting) of the images, showing the storms, and a clearly discernible wobble in the ring system as it spins. The movie can be downloaded for viewing at the following NASA website:
http://science.nasa.gov/newhome/headlines/ast29mar99_1.htm. According to Karkoschka, the wobble is probably the result of the planet's flattened globe like shape, and the gravitational pull of it's many moons:
http://antwrp.gsfc.nasa.gov/apod/ap971126.html

On May 19, 1999, Erich Karkoschka discovered an 18th moon orbiting the planet Uranus. He discovered the moon while studying Voyager 2 images taken in 1986. The moon has been estimated at 25 miles in diameter, and is called; Satellite 1986 U-10. To view the news release go to: http://spacescience.nasa.gov/whatsnew.html and follow the links to the May 19 release date. You can also find the CNN article at:
http://www.cnn.com/TECH/space/9905/19/uranus.moon/index.html

Erich Karkoschka is fondly known for his informative planetary reports at our monthly TAAA/TAL club meetings. He is a long time supporter of the Astronomical League, and member of the TAAA. However, Erich has greatly enriched our understanding of this interesting planet, with his most recent findings.

Uranus is among my favorite elusive objects to track each year. For those of you who would like to locate ~5.75 mag Uranus this year, you will find him in the constellation Capricorn between ~4.2 mag Iota Capricorni, and ~4.07 mag Theta Capricorni. By the time you read this newsletter, Uranus will be rising at midnight, and be highest in the sky (and still visible), just before dawn. Uranus becomes easier to view later in the summer and fall. With these new discoveries, my old friend, Uranus, reveals more of his mystery; and thus, becomes far more than a simple greenish disc...at prime focus.
Thank You, Erich!

"Telescopes for Telethon" MDA Public Star Party

Thanks to chairperson, Chuck Ball, this event is really starting to take shape. On Saturday evening, June 12th, the TAAA, in conjunction with Old Tucson, will sponsor a fundraising activity for the Muscular Dystrophy Association at Old Tucson. The activity was prompted by a proposal from David and Wendee Levy that astronomy clubs around the nation support this worthwhile charity through a star party venue. Old Tucson was gracious enough to allow us to use their facility to stage the event. MDA will provide all of the necessary publicity and donation collection personnel and equipment. There are several prizes for the largest donation during the evening. Due to the large potential size of the public turnout, the TAAA is not scheduling the usual Empire Ranch club star party on that evening in hopes of encouraging all TAAA members to bring out their telescopes to support this activity. David Levy will be in attendance as well. This has the potential to be a great total club activity. Won't you help? See the details under **Star Parties & Events**.

EDITOR'S NOTE: Kevin Bays, TAAA member from Yuma, advised the club that the Yuma astronomy club celebrated Astronomy Day on Saturday, 5/22, with a public star party in the Yuma area. They included collection boxes at the event to collect donations to MDA. Kevin is forwarding a check for approximately $40. to the TAAA for inclusion in our donations to the MDA that will be collected at our 6/12 activity. Many thanks to the Yuma group.

New TAAA Officers for 1999/2000

The May meeting election results are in and the following people will be the TAAA officers for the upcoming year:

President -	John Kalas
Vice President -	Andrew Cooper
Treasurer	Teresa Lappin
Secretary -	Ingrid Saber
Members-at-Large -	Bill Lofquist
	Robert Callanan
	Daniel Manrique

Robert and Daniel are the new faces on the Board of Directors as Members-at-Large. Please join us in welcoming them to the board.

Member News

We welcome the most recent members who have joined the TAAA: Lee Ewing, Robert Hall, Steven D Hulderman, Joseph G. Jakoby, John Merriman, Kyung-Joon Shin, John Sosville, and Mario R. Trieste. Let's get to know one another!

Grand Canyon Star Party
12-19 June, 1999

It is still not too late to join us at the Grand Canyon. If you have a slow weekend planned on the 12th or the 19th, think about coming up and joining us with some excellent observing at the Canyon. It is only a 6 hour drive or so and a nice respite from the climbing temperatures down here in southern Arizona. Of course, the bad part is that you have to drive through Phoenix to get there! Don't worry about bringing a scope, there will be plenty there!

For all those bringing scopes, fee waivers are "in the mail" and you should all have received them by 1 June. Please let me know if you do not to make sure I know you are coming. I'm still getting folks e-mailing me that they are coming every day, and the total count seems very high - I'll let you know at the meeting on the 4th who all is coming. In the meantime, let me know if you have any questions at 293-2855 evenings. It will be a great time - see you there.
Dean Ketelsen

TAAA Polishing Machine

Some time ago, the polishing machine was moved from the club's mini-storage facility to the optics shop of member, Bob Goff. Bob worked to improve the machine over the past several months. He has not been able to continue

Club News (cont.)

TAAA Polishing Machine (cont.)

work on the unit due to his uncertain health. It was decided to move the machine out of his shop and back into storage again. Our original mini-storage facility had acquired some additional items since the machine was removed, so returning the machine would be difficult. Therefore, the club took advantage of an offer by the TIMPA organization to use a portion of their secure storage barn. On Saturday, 5/22, the polishing machine was placed into storage at TIMPA. The club thanks Bob Goff for his efforts toward making the machine more useable.

Computer and Electronics in Astronomy Subgroup

Meeting Announcement by Roger Tanner

Now that I 'seem' to be back on a normal work schedule, I am trying to revive this subgroup. To start, I have setup a meeting with James McGaha (760-2100) to visit his backyard observatory. The meeting is Sunday, June 27, 1999, at 7:00 PM at James' house at 5100 N. Sabino Foothills Dr. See James at the meeting or me for details on how to get there. We visited his backyard observatory a few years ago where he demonstrated a satellite-tracking program for the LX200 series of telescopes. This year James has started a nova search program using the same 12" LX200 telescope, his Photometrics CCD camera and some software to automate this process. He takes many CCD images of galaxies each night and blinks them against previously taken images, and looks for new 'stars'. This is a difficult and long process, one amateur that has discovered many supernovas, takes thousands of galaxy images to find each one. James is still in the process of debugging the system.

Any club member is welcome, we are focusing on the applications of computers and electronics in astronomy. You don't have to be an expert in this; we have a wide variety of people in this group. You just have to be interested in the subject. More meetings are planned with observatory tours and new telescope and mount concepts in the planning stages.

From The Mailbag

We've received the following information that may be of interest to members. Unless stated differently, these items will be available at the Treasurer's table at this month's meeting (or call Terri before the middle of the month). This column is for the benefit of TAAA members. Mention of an event, product, or service does not imply an endorsement by the TAAA.

The First Annual White Sands Star Party will be held Sept 3-5. The cost for the star party runs from $40 for individuals to $60+ for families. After Aug 6th, these rates will increase by $20. The schedule of events includes lectures, observing, and tours of the National Solar Observatory and the Apache Point Observatory. This information will be available at the Treasurer's table until the August meeting (or call Terri).

We've received an announcement for a new book: **Sharing the Universe** by Seth Shostak, which is about SETI research.

We've received an announcement for a "Precession of the Equinoxes Historical Planesphere", which is said to illustrate precession and shows the orientation of the stars thousands of years in the past or future.

Star Parties & Events

TAAA Beginner's Star Party at TIMPA

June 5 (Saturday)

Every other month the TAAA invites all members out to the TIMPA site for an "extra" star party to enjoy a night of observing. What makes this event special is that our novice members can get help with observing issues or equipment problems. There will be experienced members present who would be more than happy to help. If you don't own a telescope, don't worry. There will be lots of scopes set up and everyone is invited to look through them. This is a great way to check out the different telescope designs before you make that all-important decision to buy. There is no scheduled talk for this activity. Just come out with lots of questions and we'll do our best to get you the answers you need. Arrive at about 7:00 pm for a group question and answer session. It should be dark enough to observe by 8:00 pm. Of course, the planets, Mars and Venus, will be available earlier. If you have friends who might be interested in amateur astronomy, bring them along. With the warmer weather, be prepared for mosquitoes and bring insect repellent. Last year they were somewhat bothersome. Directions to the TIMPA site are located on the outside flap of this newsletter.

C.E Rose Elementary School Star Party [Southwest]

June 10 (Thursday) No. of scopes: 8

C.E. Rose would like a few telescopes out for a math and science night at the school. Potential total attendance may be several hundred, so eight scopes will be required. Set-up at 7:00 pm with observing from 7:30 to 9:00 pm. Rose Elementary School is on 12th Ave., 2 blocks south of Ajo Way. Turn right onto Michigan south of the school and take the second (staff) entrance. At the back of the parking lot take the entrance into the playground area and set up near the basketball courts. Dean Ketelsen (293-2855) is the star party leader. A signup sheet will be at the June meeting.

"Telescopes for Telethon" MDA Public Star Party

June 12 (Saturday)

As mentioned earlier in the **Club News** section of this newsletter, the TAAA has teamed up with Old Tucson and the Muscular Dystrophy Association to host an MDA fundraising star party. David Levy has agreed to personally support the activity with an appearance. There will be media coverage (television and radio) of the event. To accommodate the requirements of these groups, TAAA members are asked to arrive before 7:00 pm and set up to

Star Parties & Events (cont.)

"Telescopes for Telethon" (cont.)

be ready by 7:30 pm. The TV crew will be filming in the daylight to capture the telescope field for broadcast later that evening on the news. The publicity for the event will have the start time at 7:30 pm. We realize that this is a little early and that it does not get dark until about 8:15 pm but there will be the planets to view and telescopes for the public to look at. **Please do not arrive late (after 7:30 pm) as it will be difficult and hazardous to drive in and set up after the public starts arriving.** The exact location for the telescope field has not been determined as of newsletter printing. There will be TAAA members directing members to the telescope location. This event has the potential to draw many people, perhaps a thousand over the evening. Please support the club by participating in this worthwhile activity.

Sahuaro Council Girl Scouts [NORTHEAST]

June 19 (Saturday) No. of scopes: 3

This event will be held at the Girl Scouts' 3101 N. Sabino Canyon Rd. facility from 8:00 – 9:30 PM. Please plan to set up at 7:30 in the flat area just past the north parking lot. Take Tanque Verde Rd. east to Sabino Canyon Rd. Left on Sabino Canyon Rd., turn left again into the Girl Scout facility which is just before the Tanque Verde Wash bridge. There will be about 120 Girl Scouts ages 7-11 and parents. The Girl Scouts will be participating in other activities and will be split into round robin groups of 30-35 at a time. A star party leader is needed for this event. A signup sheet will be at the June meeting.

Whipple Observatory Public Star Party

June 19 (Saturday)

Saturday, June 19, a Star Party will follow the Summer Saturday program at the FLWO Visitors Center. The Visitors Center opens at 10 a.m. with presentations for children and adults lasting until 4 p.m. Call 670-5707 for program information. An informal lecture on astronomy by Observatory staff will begin at 7 p.m. Observing will begin after 7:30 p.m. courtesy of telescopes provided by the Tucson Amateur Astronomy Association and Sonora Astronomical Society. Small flashlights and binoculars are useful to bring.

Please cooperate with staff directing parking when you arrive. The parking spaces nearest the building are reserved for TAAA/SAS members and their telescopes. Visitors should park along the driveway or in the parking area outside the gate or along the road as directed. (Please note: Visitors will be allowed to park cars next to the building in the space usually reserved for telescopes until 5 p.m. At that time, visitors will have to move their cars to other parking spaces so that telescopes may be set up.)

For more information call 670-5707. In case of threatening weather, call 670-5707 after 4 p.m. on the 19th for information about star party cancellation. Directions to the Whipple Observatory Visitors Center are located on the outside flap of this newsletter.

Sahuaro Council Girl Scouts [NORTHEAST]

June 25 (Friday) Demonstration Activity

Due to the proximity to the full moon, our final night in this round of several Star Parties with the Sahuaro Girl Scouts will be a demonstration activity rather than an observing session. It will be held at the Girl Scouts' 3101 N. Sabino Canyon Rd. facility from 8:00 – 9:30 PM. Please plan to arrive at 7:30 in the building just at end of the north parking lot. Take Tanque Verde Rd. east to Sabino Canyon Rd. Left on Sabino Canyon Rd., turn left again into the Girl Scout facility which is just before the Tanque Verde Wash bridge. There will be about 120 Girl Scouts ages 7-11 and parents. The Girl Scouts will be participating in other activities and will be split into round robin groups of 30-35 at a time. A leader is needed for this event. A signup sheet will be at the June meeting.

1999 TAAA Annual Picnic (Photos by Phil Farnam)

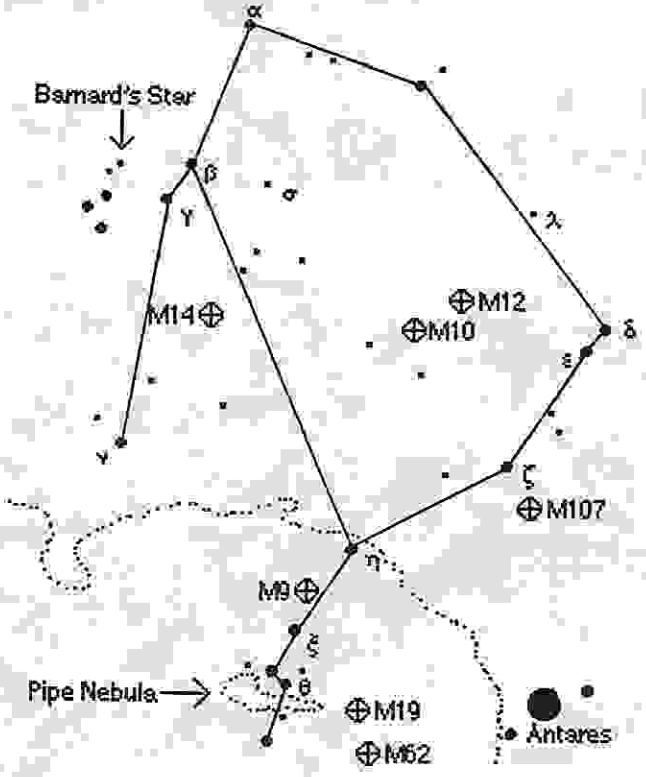
1999 TAAA Annual Picnic (cont.) (Photos by Phil Farnam)

Constellation Report

Ophiuchus

oh fee u' kus

This constellation, rich in history, is formed by stars of medium brightness. It lies north of Scorpius and reaches highest elevation between 11pm and midnight during the middle of June. Its name comes from a Greek word meaning "serpent bearer," and goes back about 4,000 years. Traditionally, Ophiuchus represents Asclepius, considered to be the god of medicine and son of Apollo and Coronis. When Asclepius happened to kill a snake, another snake came along and brought the first one back to life with herbs, and that is how Asclepius first learned about medicine. He became a physician and eventually honed his trade so well that he began to adopt the serpent's talent for bringing the dead back to life. Hades, ruler of the underworld, was worried by this since it threatened the arrival of new souls into his domain, so he struck a deal with Zeus to kill Asclepius. Since the physician was so accomplished in the science of medicine, Zeus honored him by placing him in the sky with a snake stretched across his body. Thus we see Ophiuchus standing between the two halves of the snake, Serpens Cauda (on his east side) and Serpens Caput (toward the west.) It's interesting to note that the sun spends more time in Ophiuchus than it does in Scorpius, so instead of the scorpion, the serpent bearer could easily have been the next sign of the zodiac after Libra.



Ophiuchus stands on the western edge of the summer Milky Way, so you may choose to start your observations with binoculars. His eastern leg is immersed in the rich star fields next to Sagittarius with his torso stretching northward. A dark nebula worth trying to spot (most easily on film with a wide angle lens) is the Pipe Nebula. It stretches 7° from one end to the other in the area southeast of Theta (θ) Ophiuchi.

Like Sagittarius, Ophiuchus is dotted with globular clusters which are the main draw to the constellation. (See table below.) M12 is an easy target to find toward the west side of the constellation. It is a fairly large (12' diameter) globular lacking a well defined core and showing a clumpy appearance. M10 is a short distance southeast of M12, is of similar size, and its well defined stars are easily resolved in medium sized scopes. Another rich cluster is M14, a pleasing sight through a telescope of any size. Larger instruments will begin to resolve hundreds of individual stars.

Going down the size scale are other clusters of a more difficult nature to find. M9 and M19 are embedded in the Milky Way star clouds. Both are rather small (about 6' diameter) but possess their own unique characteristics. M9 shows a dense core glowing with a soft intensity, and M19, the smallest of the group, has an odd oval appearance.

M62 and M107, near the south and west edges of the constellation respectively, are also small and shining with a subtle light. M62 is a little more interesting due to its brighter core. M107 shows little more than a very small, soft glow.

Object	Coordinates (Epoch 2000) RA	Dec	Magnitude
M12	16h 47.2m	-1° 57'	8.0
M10	16h 57.2m	-4° 06'	7.6
M14	17h 37.6m	-3° 15'	9.4
M9	17h 19.2m	-18° 31'	8.9
M19	17h 02.6m	-26° 16'	8.3
M62	17h 01.2m	-30° 07'	8.2
M107	16h 32.5m	-13° 03'	10.1

Edmund Halley determined that stars exhibit proper motion by comparing his observations to those made in ancient times. Ophiuchus contains Barnard's Star, the second nearest star to Earth and the one with the largest proper motion in the sky. It is now located at RA: 17h 57.8m Dec: 4° 41.5', or 14 minutes in RA directly east of Beta (β) Ophiuchi. It's a magnitude 9.53 star of spectral type M5, and each year this runaway star moves 10.29" practically due north. Careful observations could reveal its motion after only a few years.

Chris Lancaster

Observing Report

DOUBLE CROSS

Acrux is the brightest of the four stars which form the constellation of Crux the "Southern Cross". The other stars are Becrux, (Mimosa) at magnitude 1.3, Gacrux, a magnitude 1.8 red giant, and finally Delta (δ) Crucis at the western tip of the cross. Acrux pronounced (A-kruks), is also a splendid visual binary system which lies at the edge of the dark nebula called the "Coal Sack". This star is the 14th brightest star in the heavens and a member of the "Lower Centaurus-Crux OB Assiocation" of bright blue giant stars.

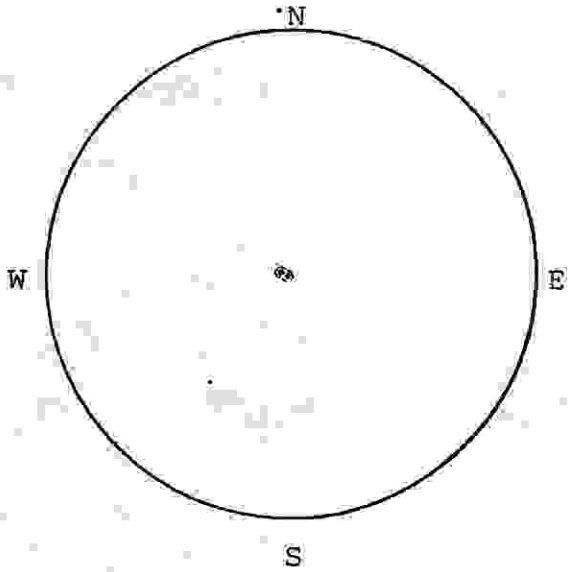
Alpha Crucis A has a spectrum of B1V and a diameter of about 8 suns, with a mass of 18 suns. The individual magnitude of this star is 1.3. Alpha Crucis B is a magnitude 1.8 star, with a spectrum of B4IV. It's diameter of 6 suns and a mass of 14 suns are a little less than it's mate. The two stars put together have a combined magnitude of 1.2. The primary is also a spectroscopic binary with a period of 76 days. All these stars are hot young, massive "helium" type stars with temperatures of 27,000°K, which show strong emission lines of neutral helium. The total luminosity of this system is equal to about 4700 suns.

Acrux's duplicity was first discovered by Guy Tachard a French Jesuit missionary from Siam (Thailand) in 1685. The visual pair seems to be an extremely long period binary. There has been a decrease in separation from 5".4 in 1826, when the first measurements were taken by James Dunlop, to the present 4".0 distance. The position angle has also seen a slight decrease of a serveral degrees, the current P.A. is 112°. At the distance of 410 light years the 4" separation would make the projected separation about 500 A.U.

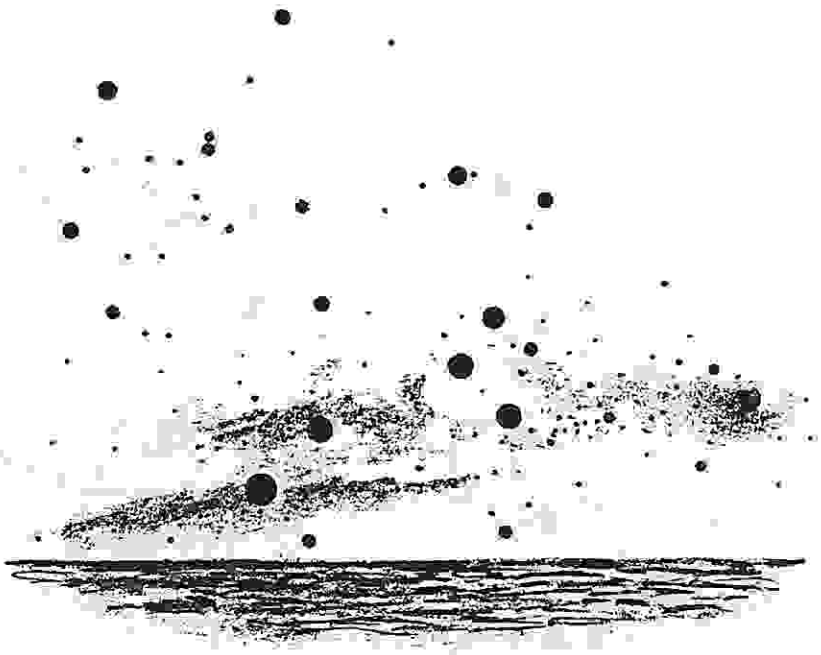
Acrux is a wonderful sight in a small refractor at 100x, with two nearly identical bluish stars. There is also a third star visible in the field. This star has a magnitude of 4.9, and is located 89".8 away with a P.A. of 204°, a sort of icing on the cake. Even at its great distance from the primary this star seems to be a physical member making Acrux a beautiful triple star system. Coordinates for Acrux are R.A. 12h 26m 35.9s Dec. -63° 05' 56".

If you live in the northern United States you'll need to travel south to the Caribbean Islands, Tahiti or the Mexican Riviera to enjoy this pretty duo. It won't take much aperture to resolve this pair, even a small 5cm refractor at 100x will suffice, so you can travel light.

by Jeff Brydges



Acrux in a 60mm refractor at 100x



LOOKING SOUTH FROM MEXICO

Special Report

Attending the Telescope Optics Workshop
by Dean Ketelsen

What is the perfect destination for spectacular scenery, lots of talk about telescopes and telescope making and grown adults performing dangerous operations with power tools? The Telescope OpticsWorkshop, of course! I had the pleasure of attending the 8th annual version in Bellingham, Washington in March, where I was invited to talk about Mirror Lab activities. Held at the beautiful campus of Western Washington University during spring break, the workshop gets full use of auditoriums and labs of one of the science buildings - a perfect venue for this event.

The program was a veritable who's who of well known names in the amateur telescope making community. Chuck Dethloff gave an overview of telescope construction techniques, Mel Bartels on pitch laps and polishing, Peter Abrahams talked about the history of spectroscopic instruments, Dan Bakken on his 41" Newtonian, and Bill Cook talked about designing a 23" Maksutov around a meniscus element owned by conference organizer Krieg McBride. And if all that were not enough, there was some swap meet activities going on and well known glass pusher Carl Zambuto taught a 3 day mirror making class to about 20 newbies, who were occasionally allowed to attend other workshop activities. The class started out with pre-curved blanks and learned about grinding, lap making, polishing and figuring techniques. I'm not sure anyone finished their optics in those 3 days, but they were instilled with the confidence that they could certainly finish the job on their own.

And there were demonstrations too - several folks brought some very innovative instruments and told some of the details of their construction in a show-and-tell session. To stimulate some serious thinking of new directions in scope-making, Kreig had obtained some surplus tabletop glass 1" thick that he had cut into a 38 inch disk. He also built a 54 point support for a potential cell - it was an impressive display of simple ingenuity and working through the details. In one of the more dangerous displays, Kreig displayed how he had managed to make the 38" disk round. Using a decrepid Sears Craftsman circular saw with a diamond blade, he made many straight cuts to approximate a disk, with liberal amounts of water sprayed on the blade to keep the diamonds cool. Then another home made motor driven arbor with an abrasive plate was used to further smooth out the remaining sharp edges of the demonstration part. Kreig works hard to make the workshop both an educational and entertaining event, and sawing 1" glass with an electric saw with water spraying about and the motor smoking was certainly an attention-getter!

My talks regarding some of the gory details of casting, polishing and testing the big glass at the Mirror Lab was very well received. All in all it seemed to be a very well run and organized workshop and I'd like to return on a regular basis. Besides the workshop, I got away to tour the area while I was there. Bellingham sits on the coast close to the Canadian border north of Seattle and on a clear day, which most were, you can see both the Olympic mountains west of Seattle and the Cascades to the east, all covered with snow. It is a beautiful part of the country and a nice change from Tucson. For information regarding the workshop, check their website at www.ac.wwu.edu/~skywise/optics.html.

Carl Zambuto

Kreig's 38" and cell

Sawing glass w/circular saw

TAAA Board of Directors Meeting - May 13, 1999

EDITOR'S NOTE: The minutes of the May 13th Board of Directors meeting were not available for inclusion in this newsletter. Complete minutes will be available for review at the June monthly meeting.

Desert Skies Classified

FOR SALE: 2" dia. Light Pollution Rejection No. 5 filter, ~~$50~~. PRICE REDUCED to $40. Call Duane Neihaus at 529-7767. (7/99)

FOR SALE: WWII vintage Elbow telescope (M75C) with crosshair reticle and dial-in filters (neutral, red and amber). Easily adapted to a camera tripod. Excellent condition, $75. Call Duane Niehaus at 529-7767. (6/99)

FOR SALE: 6" f/8 Newtonian reflector tube assembly with finder, $250. Call Duane Niehaus at 529-7767. (7/99)

FOR SALE: 5", f/4 rich field Newtonian reflector with very solid and vibration free fork mounting and tripod. Byers worm gear drive on polar axis, tangent arm slow motion on dec. axis. Superb diffraction limited optics. Scope won merit award at Riverside and award for optical quality and mechanical excellence at Stellafane. Asking $1000, but will consider all reasonable offers. For private demonstration or for more info call Duane Niehaus at (520) 529-7767. (7/99)

FOR SALE: U.S. Navy Mark110 60mm telescope, two interchangeable Erfle eyepieces vary the power from 12X to 20X, helical focus, fits camera tripod. $125. Call Duane Niehaus at 529-7767. (7/99)

FOR SALE: Celestron Pixel 237 CCD Camera. Uses TC237 chip with 640X480 pixels, each pixel is 7.4 micron. Very fast download speed (less than 12 seconds). Double correlated sampling readout with 12 bid A/D. It has a standard T-thread mount which allows it to be used with a variety of telescope adapters and camera lens. Selling price $1000. Call Ted Wu at 733-3728. (9/99)

FOR SALE: Meade 10" LX-200 f/10 Schmidt-Cassegrain Telescope (1997 vintage), super wedge, field adjustable tripod, control paddle, 8x50 straight-thru finderscope, 1 ¼ " star diagonal, Meade 26mm 1¼ " Super Plossol eyepiece, and cigarette lighter adapter. ~~Asking $2500~~ PRICE REDUCED to $2000. Call Kevin Bays at (520) 783-6003 (Yuma). (7/99)

SERVICE: Custom machine shop work – design and manufacture of telescopes and mountings. Fabrication of small parts or repair of existing hardware. For consultation and price quotes, call Duane Niehaus at 529-7767.

Your ad will run for 4 months unless specified. Month and year of last appearance is last item of ad. For additions or changes to this list, call John Kalas at 620-6502 or e-mail at jckalas@aol.com

Dark Skies for June 1999

DARK SKIES (no twilight, no moonlight) for Tucson in 24-hour MST: 18=6pm, 20=8pm, 22=10pm, 0=12am
RISE, SET, VISIBILITY for sun and bright planets: rise for morning object, set for evening object

Mo/Tu	31/ 1	-	-	Fr/Sa	11/12	21:11	3:37	Mo/Tu	21/22	1:31	3:37
Tu/We	1/ 2	21:04	21:33	Sa/Su	12/13	21:11	3:37	Tu/We	22/23	2:03	3:38
We/Th	2/ 3	21:05	22:20					We/Th	23/24	2:36	3:38
Th/Fr	3/ 4	21:06	23:05	Su/Mo	13/14	21:12	3:36	Th/Fr	24/25	3:11	3:38
Fr/Sa	4/ 5	21:06	23:46	Mo/Tu	14/15	21:12	3:36	Fr/Sa	25/26	-	-
Sa/Su	5/ 6	21:07	0:25	Tu/We	15/16	21:36	3:36	Sa/Su	26/27	-	-
				We/Th	16/17	22:27	3:37				
Su/Mo	6/ 7	21:08	1:03	Th/Fr	17/18	23:12	3:37	Su/Mo	27/28	-	-
Mo/Tu	7/ 8	21:08	1:40	Fr/Sa	18/19	23:51	3:37	Mo/Tu	28/29	FULL MOON	
Tu/We	8/ 9	21:09	2:17	Sa/Su	19/20	0:26	3:37	Tu/We	29/30	-	-
We/Th	9/10	21:10	2:57					We/Th	30/ 1	-	-
Th/Fr	10/11	21:10	3:37	Su/Mo	20/21	0:59	3:37	Th/Fr	1/ 2	21:15	21:47

Weekend Sa/Su	Sun Set	Sun Rise	Mercury Set	Mercury Vi	Venus Set	Venus Vi	Mars Set	Mars Vi	Jupiter Rise	Jupiter Vi	Saturn Rise	Saturn Vi
5/ 6	19:26	5:15	20:31	5	22:41	-4	2:32	-1	2:37	-1	3:27	3
12/13	19:29	5:15	20:59	4	22:36	-4	2:05	-1	2:14	-2	3:02	2
19/20	19:31	5:16	21:12	3	22:27	-4	1:40	-1	1:50	-2	2:37	1
26/27	19:32	5:17	21:12	4	22:16	-4	1:16	0	1:26	-2	2:12	1
3/ 4	19:32	5:20	21:00	5	22:01	-3	0:54	0	1:01	-2	1:46	1

Vi=Visibility
-3 brilliant
0 conspicuous
3 moderate
6 naked eye limit
9 binoculars limit

By Erich Karkoschka

"Telescopes for Telethon" MDA Public Star Party
Saturday, June 12th
Please Support This Activity