Desert Skies

March, 1994

The Newsletter of the Tucson Amateur Astronomy Association (TAAA)

Eastern United States at Night

GENERAL MEETING - Friday, March 4, 7:30 pm at the **NEW** Steward Observatory Auditorium - room N210. March's speaker is Dr. Guy Consolmagno, who will be talking about "The Solar System and Three Examples."

6:45 pm - pre-meeting "Beginners lecture" by Teresa Lappin will be "Telescope Accessories." All are welcome! ("old" Steward obs. room 204). See enclosed map for directions!

EXECUTIVE MEETING - Thursday, March 10th, 7:30 pm at Flandrau Science Center's Conference Room

30" TELESCOPE DESIGN, LAND & FUNDRAISING MEETING - Wednesday, March 16, 7:30 pm at the home of Sharon and Duane Niehaus - call 797-4189 for directions.

STAR PARTIES: March 5th - Picnic and Star Party at Kitt Peak - see enclosed info.
March 5th - Empire Ranch for those not going to Kitt Peak.
March 12th - Public Star Party at Gilbert Ray Campground.
March 12th - Empire Ranch for those not going to Gilbert Ray Campground.

Next Newsletter Deadline - March 16 - Submissions to Teresa Lappin this Month!

COVER: Galaxy clusters in Virgo? No, this negative print taken from an Air Force satellite shows dramatically the lit-up night time face of the Eastern United States. **Back Cover** - This view shows a composite of the entire country. Both views are from the most recent slide set ($30) available from the International Dark Sky Association, and are reproduced with permission from IDA. While these views show most cities with populations greater than about 5,000, some of the close up slides show towns with populations less than 500.

TAAA EXECUTIVE

President	Dean Ketelsen	293-2855
Vice-President	Terri Lappin	579-0185
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Recording Sec.	Sharon Neihaus	797-4189
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Mem. Coord.	Gary Rosenbaum	579-0185
Past President	Tim Hunter	299-2972
Newsletter	Dean Ketelsen	293-2855

MEMBERSHIP IN THE TAAA

Individual	$20.00/year
Family	$25.00/year
Senior Citizen (over 60)	$18.00/year

Sky & Telescope subscription (optional) $20.00 (as of July, 1992)

Rates for membership in the TAAA are given above. Members may subscribe to Sky & Telescope at the time membership renewal, saving more than 25% off the cost of a regular subscription. The subscription term must match your membership period.

Send one check, made payable to: Tucson Amateur Astronomy Association, to cover both membership and subscription to: TAAA, PO Box 41254, Tucson, AZ 85717. It is best to pay your dues 2-3 months before your membership actually expires.

Desert Skies Publishing Guidelines

* All articles, announcements, news, etc. must be submitted by the **newsletter deadline listed 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 on Wordperfect compatable files on a floppy. 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
PO Box 41254
Tucson, AZ 85717

Send ADDRESS CHANGES to:
TAAA
Attention: "address change"
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. a) Decide if you want Sky & Telescope, then add $20 to your membership rate.
   b) Include Sky & Telescope's renewal notice, if possible.
3. Write one check, payable to TAAA.
4. Send it to TAAA, P.O. Box 41254, Tucson, AZ 85717.

Call the Treasurer if you have any problems.

March's Featured Speaker - Guy Consolmagno
"The Solar System and Three Examples"

Dr. Guy Consolmagno, of the Vatican Observatory Research Group at Steward, will present a slide-and-theory talk about how the systems of icy moons around Jupiter, Saturn and Uranus can constrain our ideas about how the solar system was formed.

Guy got his first telescope at age 11 - for 16 1/2 books of Gold Bell Trading Stamps. Starting grade school soon after Sputnik, like all kids of his age generation he always thought of himself as a young scientist. Not until high school did the Jesuits teach him the joys of Latin and Greek, Literature and History. So Guy started at Boston College as a history major. However, his best friend from high school was going to MIT, and convinced him to transfer there. They wanted him to declare a major, and he chose "Earth and Planetary Science" thinking that it was the same thing as astronomy. Wrong. Still, much to his surprise, Planetary Science turned out to be loads of fun, and came to the U of A for his PhD.

After five years as a post doc (Harvard and MIT) he asked myself, "Why do astronomy when there are people starving in the world?" So Guy quit it all to join the Peace Corps. While in Africa, he found the answer-- astronomy is important because it satisfies the curiosity in us that makes us different from just well-fed animals. In fact, people in Africa were dying to hear about space and stars and such. So he got another little telescope (paid cash this time), brushed up his amateur status, and gave a zillion talks at schools all across Kenya about astronomy. He also learned how to use that telescope (thanks to his friend and fellow amateur, Dan Davis) and put what he learned into their book, **Turn Left at Orion**.

After the Peace Corps, Guy taught astronomy and physics for 4 years at Lafayette College, then joined the Jesuits thinking that He would be assigned to one of the Jesuit colleges to teach. Instead, they sent him here. Surprise! Seems they realize that the church needs to know about astronomy, too!

Beginner's Lecture
Telescope Accessories

Celestron revolutionized astronomy in the early 70's by making a large, compact, but portable telescope available to the average person. Known as the C-8, this telescope paved the way for the current proliferation of accessories for the amateur astronomer's telescope. Inventors of these gadgets will tell you...if it won't fit a Celestron, its doomed to fail. This month's Beginner's Lecture will discuss accessories for telescopes, both the C-8 types...and for the other kinds of telescopes (refractors and reflectors). We will cover everything from the recommended eyepiece set to motorized focusers, Telrads, and the gadgets of the world of photography.

Frank Lopez of Stellar Vision has agreed to let me borrow some of his toys. Prices for the items will be on hand. If there is interest, we can schedule a "try it out on your own telescope" session at the next star party.

The Beginner's Lecture starts at 6:45pm, 45 minutes before the start of the regular meeting. See you at 6:45pm on March 4th in room 204.

Refreshments

After serving for many, many years as the coordinator for the refreshments, Terri is looking for someone to take it over. It is an easy job... make sure the list is prominently displayed so someone will sign up for the following month and then make a reminder phone call sometime before the meeting. If you are willing to take on this little task, let Terri know.

April Newsletter

Since Dean will be gone much of March, April newsletter submissions should be given to Terri.

Kitt Peak Cookout and Star Party

We have been approved for another picnic and star party at Kitt Peak National Observatory for **Saturday, March 5th**. There will be a sign up sheet at the March meeting and you must be on the list to attend. As usual, we will be limited to a maximum of 30 attendees, however, Kitt Peak Museum docents do not count towards the total, so TAAA members who volunteer there can attend without fear of keeping other members from coming. We will be limiting sign-ups to members only, however.

The picnic and observing will take place at an altitude of 6500 feet at the Kitt Peak picnic area, about 1.5 miles below the Observatory on the main road. The museum offers guided tours of telescopes at 11am, 1pm and 2:30pm. If you have not been to Kitt Peak before, I encourage you to go take a tour. The Observatory closes to the public promptly at 4pm, so after that time, go directly to the picnic area. There is a grill and charcoal will be provided for cooking. In addition to something to bar-b-que, bring a dish to share with other members. Because of the proximity to McGraw-Hill Observatory, the cooking fire will be put out at sunset, which is about 6:30. Please arrive well before that if you plan to cook. Moonrise is about 3am, and we have been asked to leave by then - no camping or sleeping over!

Last October we finally had a fantastic night of observing at this event after 3 consecutive cloud-outs. It should be a great, if not cold, night of observing. Remember, you must be on the sign-up sheet to attend. If you cannot come to the March meeting to sign up, call Dean for consideration.

1994 Messier Marathon on April 9th

For those of you who read the article in the March '94 Astronomy regarding the Messier Marathon, and are inspired to try observing all 100+ Messier Objects in one night, Phoenix's Saguaro Astronomy Club is sponsoring another one this year. Just as last year, they plan to hold it at the East Valley Astronomy Club (EVAC) site near Arizona City, midway between Phoenix and Tucson. The EVAC site is a good one, and is a handy location for observers from both cities. There will be awards for those who observe the most Messier Objects, and all those who observe 50 or more will recieve a certificate. Make your plans now and maps and forms will appear in the April Newsletter and meeting. Note: the EVAC site has moved about two miles from the one some of you are used to - be sure to check next month's map!

Don't Miss Spring Photo Show!

The Photographic Collector's of Tucson Spring Show (swap meet, sale, whatever you want to call it) will be held Saturday and Sunday, March 5th and 6th. For the first time they will be located at the Tucson Convention Center from 10am-4pm both days. Admission is $3 for both days, $2 for each. There are lots of bargains there and you can usually find that gismo for which you have been looking for that camera that was last made in 1938.

Spring Cleaning Raffle and Sale

Several members have donated a number of very nice items to the TAAA which have been accumulating for some months. They include a telerad, some IBM software (Skyview and Stargaze), and a variety of books and items of interest. At the March Meeting we will sell raffle tickets for the nicer items, and sell everything else to raise money for the Land Fund. Similarly, if you have a box of stuff to get rid of, load it up and bring it in. If you want the proceeds, the TAAA gets 20%, and if you want to donate it, please label an approximate value on it for sale. We all win - you clear out some space, the Club gets a few bucks, and you might end up with that gismo of your dreams.

Join Us for the Fourth Annual

Grand Canyon Star Party

The Tucson Amateur Astronomy Association (TAAA), in conjunction with the National Park Service, announces the fourth annual Grand Canyon Star Party, to be held **June 4-11, 1994**. It is the perfect spot for such an event - spectacular scenery by day and wonderfully dark sky by night. Geared towards showing the sky to the visiting novice, many of which have never been under a dark sky before, the excitement, joy and gratitude expressed by the mostly international crowd is very satisfying. And when the hour grows late and the crowds thin, you are left to explore the limits of your telescope in some of the darkest skies in the United States. We guarantee you will make lots of friends and retain a multitude of pleasant memories with which to return home.

Location and Ground Rules:

We will be setting up on the South Rim in a clearing near the Yavapai Museum. The observing area, though near the Yavapai parking lot, will be behind a locked gate during the day and you will be allowed to leave your telescopes set up during your stay. We are also looking for volunteers to give twilight talks to entertain visitors between sunset and when viewing starts. Please indicate if you would like to do this. Although we are not charging for registration, to monitor attendance, and provide proper paperwook if you are bringing a telescope, we are requiring a cursory registration with the approximate dates of your stay and where you will be staying while at the Canyon.

Where to Stay:

Housing is critical at this time of the year. There are no special arrangements available for Star Party attendees, except for a few provided campsites, **for which we will take names starting on March 1.** They will go fast!

Rooms, RV's, &Trailers: If you want a room near the South Rim, make your plans and reservations now! It is never too early to book a room in the summer at the Grand Canyon. If there are none available, you might make alternate plans (ie., campground reservations) and try to pick up a cancellation when you get there. All lodging and motels release no-show's rooms at about 4pm, and since many tour groups overbook, there may be rooms available. For reservations at any of the motels or lodges at the South Rim or for Trailer Village (camping trailers or RV's) call Fred Harvey Inc at (602) 638-2401 **as soon as you make your plans!** Expect long telephone waits while making your reservations.

If you can tolerate a 7 mile drive, you can also try the following Motels at Tusayan (All area code 602):

Squire Inn	638-3515
Moqui Lodge	638-2424
Quality Inn	638-2673
Red Feather Inn	638-2414
7 Mile Lodge	638-2291

Camping: To make reservations for campsites at the regular rates ($10 per night), call MISTIX at 1-800-365-2267, no more than 8 weeks ahead.

Proceedure:

If you plan to bring a telescope, please register by sending a long self-addressed stamped envelope to TAAA - Grand Canyon, 1122 E. Greenlee Pl. Tucson, AZ 85719. For questions, please call (602) 293-2855 between 8 and 10pm MST. Come for one night or for all eight, but be prepared for a lack of sleep, with the Canyon calling for you by day, and the wonderful skies by night!

Upcoming Events

Gilbert Ray Star Party

When: 12 Mar., 1994. 6:00–9:00 p.m.
Where: Gilbert Ray Campground, off of Kinney Road south of the Desert Museum.

This is an event co-sponsored by Kitt Peak National Observatory, TAAA, Saguaro National Monument, Flandrau Science Center and the Nature Company. The TAAA has been invited to set up telescopes at sunset. This presents a good opportunity for us to promote the joys of stargazing, club membership and possibly raise more funding for our land fund. In the event of overcast skies, rain, etc. the event will be canceled. To reach the campground take Speedway west past I-10 through Gates Pass (and some spectacular scenery). When you come to Kinney Road make a right (just like if you were going to the Desert Museum) and continue northwest 0.6 miles until you see a highway sign saying "Gilbert Ray Campground" pointing you to McCain Loop Road on the left. The entrance to the campground is on the left hand side of McCain Loop Road.

Announcement

What: Saturday Science
When: Saturdays starting Jan. 29, 9:30 a.m.-12 noon.
Where: Flandrau Science Center

Flandrau Science Center is starting its winter-spring series of Saturday Science workshops for children ages 8-14. Workshops for March are astronomy and physics related and will often allow students to take home what they make during each class. Cost of the workshop is $15 (a real bargain) and children must be pre-registered. If you know of a child this age who is interested, please call Nancy or Molly at 621-4515, 9AM-5PM.

Science Fair

The TAAA will be presenting awards at this year's 40th annual Southern Arizona Regional Science and Engineering Fair which will be held on March 14 - 19th. We are looking for a few members to be on a judging panel which will decide who will receive the awards. It will require a group visit to the Science Fair at the Student Union on the University of Arizona Campus March 15th. If you are interested in participating in this or have questions, contact Terri Lappin or Sharon Niehaus.

Astronomy Day 1994

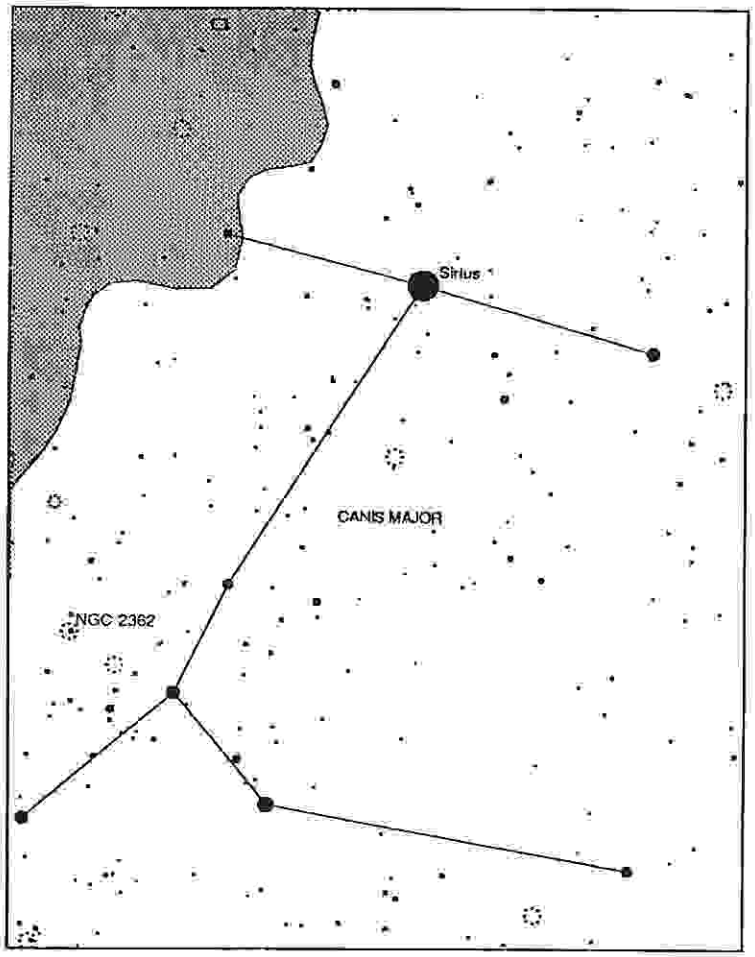
The TAAA is planning an Astronomy Day celebration on May 7th this year. This will be a couple days before the May 10th annular solar eclipse, giving us an opportunity to tell the public what will happen and how to safely observe the eclipse. We are planning a mall display and star party in the evening. We may get a supply of solar eclipse viewers for distribution to the public. Next month's Desert Skies will have more information.

OBSERVER'S REPORT

February again provided clear skies to southern Arizona. TAAA stargazers took in lots of photons during the Empire Ranch star party on Saturday, Feb. 5. Clear skies attracted about 30 members to the dark site and most members stayed as late as their apparel allowed. Cold temperatures drove most members to their cars by 11PM but a few die-hards persisted in gazing until midnight. The following Saturday TAAA members also made a good showing for the Gilbert Ray Star Party done in conjunction with Kitt Peak National Observatory, Flandrau Science Center, Saguaro National Monument and the Nature Company. Although the public showing was not as impressive as the Sabino Canyon star party in January, about 75 people gazed through member's telescopes. Keith Krumm was seen with a new Meade LX200, Jeff Brydges showed up with his 3.5" refractor, Randy Quiroz brought his 10" Meade SCT and President Dean Ketelsen (of course) set up his 20x120 binoculars and unique C-10. Thanks to all those who brought telescopes, if I missed anyone please forgive the oversight. This month will maintain the same schedule as last month. There will again be a public star party set for the 12th at Gilbert Ray Campground and a member only gathering at Empire Ranch star party will be held the Saturday before (March 5th), the day after our monthly meeting If you head out to the "Empire Ranch" (as TAAA members call it-It's real name is the "Empire Cienega Wildlife Conservation Area") remember that the site does not have any facilities, and that you'll be at 5000 feet (dress very warmly!). Also it's a good idea to bring some food to ward off the effects of the cold. For directions, see the map in this newsletter.

Those venturing out to a dark site early in the month will have the spectacular winter milky way east of Canis Major and south into Puppis available near the meridian before midnight. One of the best ways to enjoy this superb area of the sky is with the lowest power ocular your scope can handle. This cluster rich area really allows smaller (4-10 inch) telescopes to excel, especially at magnifications between 30-40 power. I've recently made the upgrade to a 2" Paracorr coma corrector to take full advantage of a 40mm Brandon Erfle I often use with my 10" Dobsonian. Yielding just 35 power with the coma corrector, I gain a whopping 2 degree field of view. Although this is technically too low a power for my telescope, I enjoy the combination the most of any ocular I own. Bright star fields and ease of use seem to bridge the gap between binoculars and telescope viewing. In aiming this wide-field outfit toward Canis Major recently I viewed an open cluster in the tail region of the dog surrounding a 4th magnitude star. The cluster was spectacular but I'd never seen it before. In checking my Tirion Star Atlas 2000 I noticed the cluster was marked but not labeled (one of the few mistakes in this excellent atlas). The 4th magnitude star turned out to be magnitude 4.4 Tau Canis Majoris. Burnham's celestial handbook revealed the cluster to be NGC 2362. NGC 2362 shines at magnitude 4.1 and spans 6 arc minutes of sky. The small size makes it almost impossible to discern with the naked eye. In a telescope this fine group of stars can be compared in appearance to a looser version of M11. In both instances the bright star in the cluster's central portion add visual interest. In this instance though the bright star (Tau) is actually a part of the cluster, lying some 4600 light years from earth. I've added a sky chart below so you too can enjoy this gem of an object. Take note that the variable star UW Canis Majoris lies just to the northeast. Good viewing!

Michael Terenzoni



THE SKY FROM TUCSON
LOOKING SOUTH
March 5, 8:30PM

A RED VARIABLE BRIGHTENS

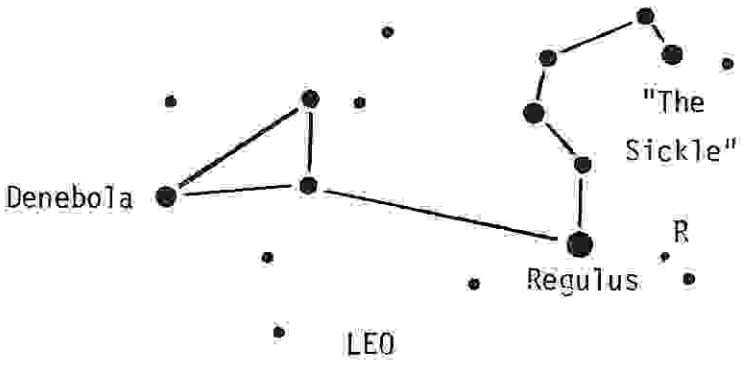
Rising high in the eastern skies on these March nights is one of the heralding constellations of Spring, Leo the lion, with its 1st magnitude blue-white star Regulus. Just 5 degrees west of Regulus lies the red pulsating variable star R Leonis. This star is one of the most suitable long period variables to study with small telescopes or binoculars. R Leonis has been used by The American Association of Variable Star Observers (A.A.V.S.O.) as a "starter's" star for many years, because it is easy to locate and its whole range can be followed with modest amateur equipment. R Leonis is now well placed in our evening skies for observation over the next few months.

R Leonis was first noticed by the German astronomer J. Koch in 1782 and was the 4th of its type to be discovered. R Leonis varies between 5th and 6th magnitude at maximum and usually falls to 10th or 11th magnitude at minimum. Its highest recorded maximum was 4.4 and its deepest minimum was 11.3. R Leonis goes through one cycle in about 10½ months or 312 days, but it can vary by a few days from one cycle to the next. R Leonis's rise from minimum to maximum usually takes 4½ months a little faster than its decline from maximum to minimum of 6 months and this behavior is typical of mira type variables. R Leonis is a M-type giant star which has used up its hydrogen fuel, the core has shrunken and its atmosphere has swollen to gigantic proportions. In 1977 astronomers measured R Leonis and found its angular diameter to be 0".07, by comparison if this star would replace our Sun it would extend out to the orbit of Jupiter, making this one of the largest stars known. R Leonis's spectrum also varies during a cycle, at maximum its M6e and at minimum its M9e. Many astronomers have made comments about R Leonis's deep red color, some have called it "rosy-scarlet" others see a "touch of purple" and this is especially true when it is near minimum. My initial observation shows I was impressed by its red color; also, my notes show that it was the deepest red color I had seen in a star up until that time. The distance to R Leonis is about 600 light years, and at maximum it would outshine the Sun by some 250 times.

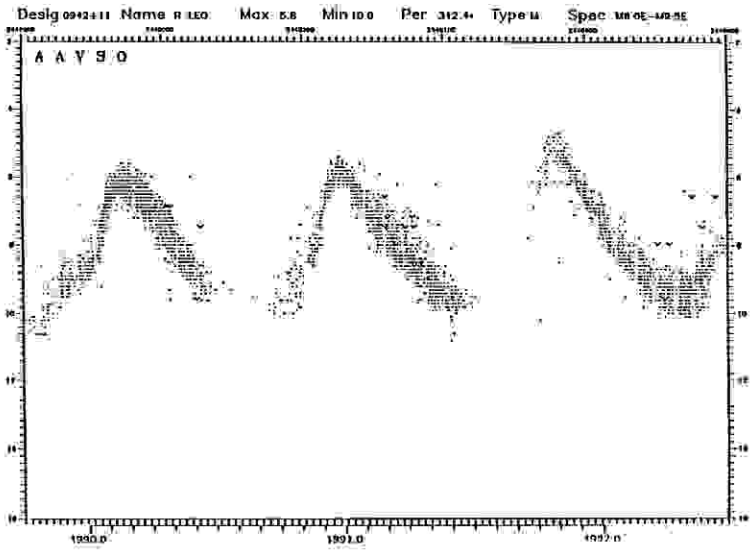
To observe R Leonis a small telescope or binoculars will work quite well. A chart with suitable comparison stars has been supplied with this article, use it to locate and estimate R Leonis's magnitude. To estimate R Leonis's magnitude, choose two stars that bracket R Leonis's brightness, that is, pick one a little brighter and one slightly fainter, then you should be able to estimate R Leonis's brightness to about a tenth of a magnitude. Do this once or twice a month over the next few months and you should collect enough observations to make your own light curve. At this time R Leonis is brightening from its minimum which occurred in early January, and its predicted to reach maximum sometime in May.

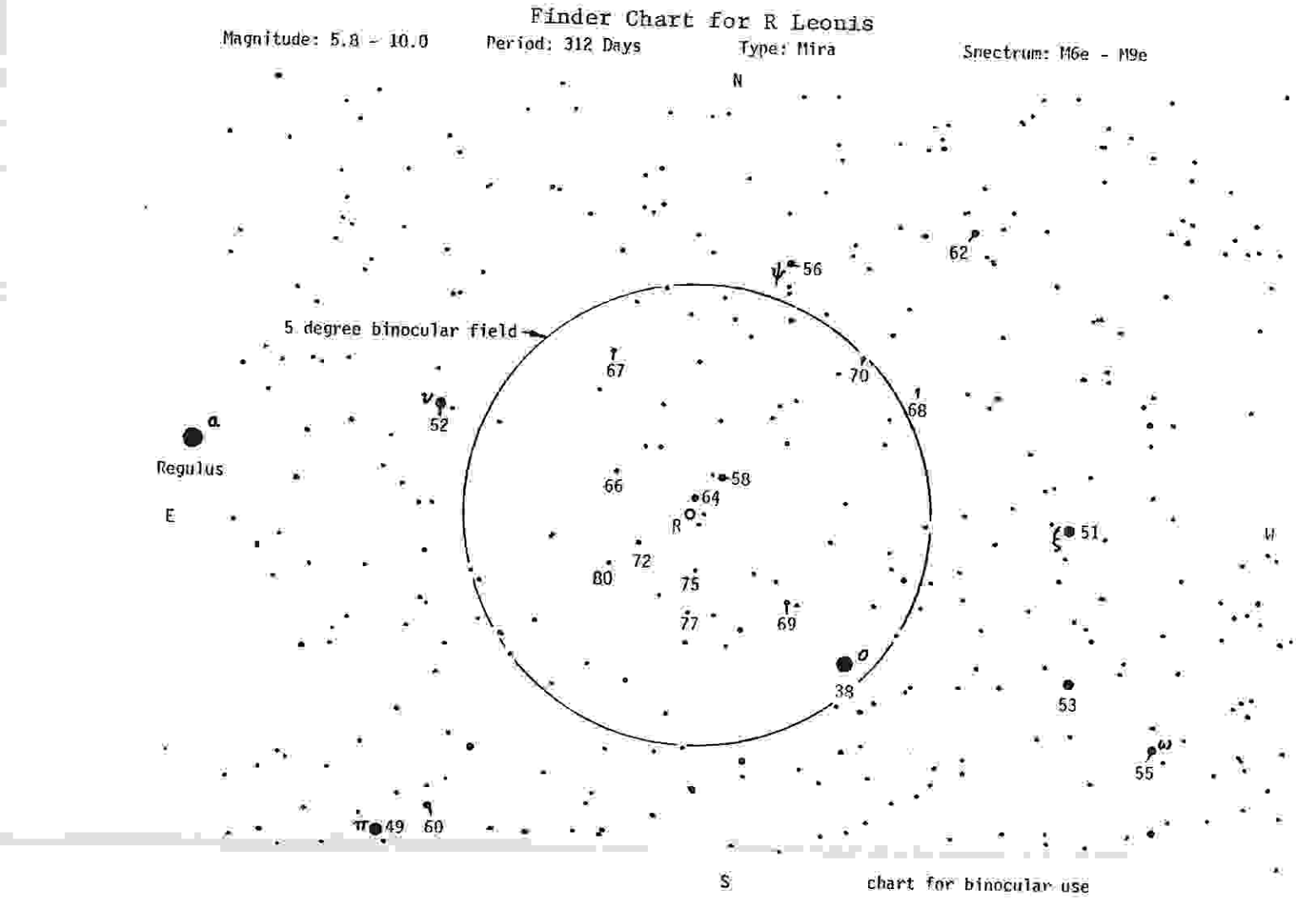
Over the next few months enjoy R Leonis as it brightens and I hope it will help you to gain an appreciation for this dying star that will someday flicker out.

Jeff Brydges



Light Curve 1989–1992





The following comments are from Dr. Ferdinand Baar, who has been involved in amateur astronomy and telescope making for many years in upstate New York.

Binocular View Revisited

I read your newsletter with great interest, especially the article "Reconsidering the Binocular View" by Philip Farnam. I considered his type of approach, plus a number of others, even making prototypes. Finally I stopped fooling around and analyzed the situation of large binoculars and human physiology (I use a 14X70 binoc from Orion). First - the human eye works best for protracted viewing looking straight ahead or downward. This lessens eye fatigue. Secondly, to hand hold something of 4 lbs rock steady is an impossibility. That is not the way muscles work. Motion is made by contraction of a muscle - counter-balanced by an opposing muscle (either individual or by groups). To hold something steady involves a balance of 2 muscles or groups. Furthermore, holding 4 lbs with the arms semi-erect causes the blood to gradually tend to leave the arm, and causes trembles, small but magnified by the optics.

Now, what does all this mean?

1. The Binocs must be supported without hands (a tripod).
2. The tripod must have 3 motions - rotation, elevation, height.
3. To avoid a dislocated neck, the view must be straight ahead or downward.
4. You need a chair of comfortable height.

This can be done if the tripod movements are separated from each other - No ball arrangements! Here comes the curve ball - the sky diagonal is put on the objective side of the binocs! This means that the binocs are horizontal to view the zenith. If the binocs are vertical, you see the horizon. It is a case of "look Ma - no hands!" The rack and pinion of the tripod controls the eye height.

Now for some numbers. The field of view of my binocs is 5°. Now 15°=1 hour of time, so 5°=20' of time. You can let the object drift across the field in 15'-20' intervals - still "Look Ma - no hands!" You are sitting in a comfortable position, after adjusting the focus for best definition and interpupillary distance. You just sit there and let your eyes "drink in" the view. Somebody else wants to look? Fine, you adjust the rack and pinion height by cranking the center post up or down, etc.

continued next page

Binocular View Revisited (cont.)

Problems - the sky diagonal has to cover both binoc objectives, either separate flats or one large piece of aluminized float glass to collimate the system - solvable without too much effort. 2- As with any sky diagonal, the view is upside down and "backend to". However, this is something you adjust to with all scopes until you try to make them read sky maps. This is very low magnification and wide fields, not to be used for separation of close doubles.

The system works, especially in this climate. This January has been horror for cold and snow.

Maybe someday I'll tell you of my earlier experiments such as:

"The belly button monopod!"

"The bean bag monopod!"

The "M&M" bean bag - "emergency relief of hunger pains before dawn!"

TAAA Executive Meeting Minutes - 10 February, 1994

Present were Dean Ketelsen, Gary Rosenbaum, David Harvey, Duane and Sharon Niehaus, Teresa Lappin, Rob Nyberg. Meeting convened at 7:40

1. Land Search - A Land Committee meeting was scheduled for 19 February (later canceled when Dean Couldn't attend). Agenda: Discuss site plan and specific needs of the club to determine criteria to accept or reject sites under consideration. Will Reschedule ASAP.

2. Fundraising News - Teresa and Sharon are moving full speed toward scheduling a TAAA banquet in early fall. They are still looking to schedule a "big name" speaker to attract a large astronomical crowd locally. Dean suggested a "Spring Cleaning" sale and raffle for some of the bigger items at the March Meeting. If people want to keep the proceeds, 20%of sales go to Club. Dean will announce in the newsletter.

3. Liability Insurance - Rob Nyberg was the only one who got a firm quote for coverage - $890 per year for reasonable coverage. A few more will try to get quotes before the next exec meeting.

4. Membership Dues - Duane, Sharon and Teresa claim we need to increase dues, but didn't have the paperwork to prove we were losing money. They did show we are currently breaking even. They will do a more current financial report and depending on liability insurance, address it again at the next meeting.

5. Treasurer's report - Automatic donations steady at $330 per month. Current Treasury total is $24,863.

6. Fultz Inventory - Since the donation of Ellen Fultz last Spring, the contents of her father's optics lab has been in storage. We need to estimate a value for her tax purposes. Dean will arrange a meeting of those who helped with the move to attempt to make estimates from the inventory sheets.

7. Upcoming Events - upcoming events were discussed, besides those announced elsewhere in this newsletter are Astronomy Day May 7th, with activities at Tucson Mall and Sabino Canyon. April meeting speaker is Steven Larson.

8. Other Business - Gary Rosenbaum wanted additional funding for more member's packets. Request was approved unanimously. The Salvation Army is running a day camp this summer and requested our assistance. American Astronomical Society is holding its Winter meeting here in Tucson next January, and would like ~30 volunteers. We will run a request for volunteers in the newsletter soon.

Meeting adjourned at 9:20

Desert Skies Classified

WANTED - Telescope Builders. If you want to make a wooden tube assembly or mount, but don't have the tools, I have a woodshop, and I'd like to improve my woodworking skills by helping you build your tube and/or mount. I have plans and ideas, too. Rob Nyberg, 745-0710 e-mail: 70541.1027@compuserve.com (3-94)

For Sale: Meade 5" APO refractor w/full computer control and 8,000 object memory. New, $3,200. Gordon Gower, 749-0398.(3-94)

Wanted: Someone to fix a 4" SC Bausch & Lomb telescope so that it can track in the Southern Hemisphere. Call Ed Vega: 721-3815 (work) or 747-9323 (home).

Want to Trade: I am interested in trading my Celestron 11x80 binoculars for a pair of 20X80 binoculars. If interested, call Gilbert Friedman at 571-1662.(6-94)

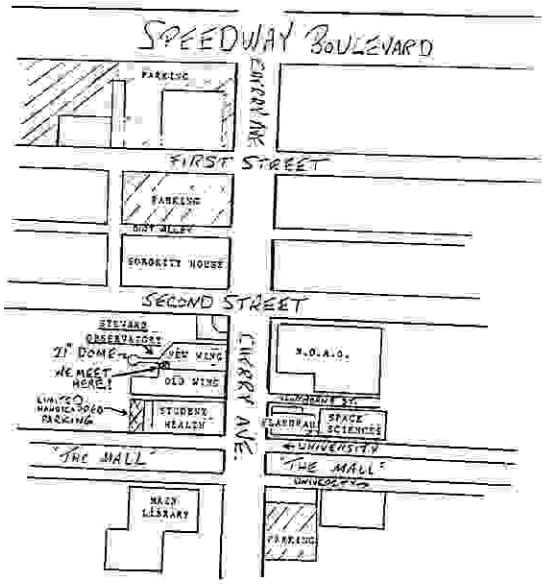
Your ad will run for 4 months unless specified. Month and year of last appearance is last item of ad. For additions or changes to this list call Dean, 293-2855.

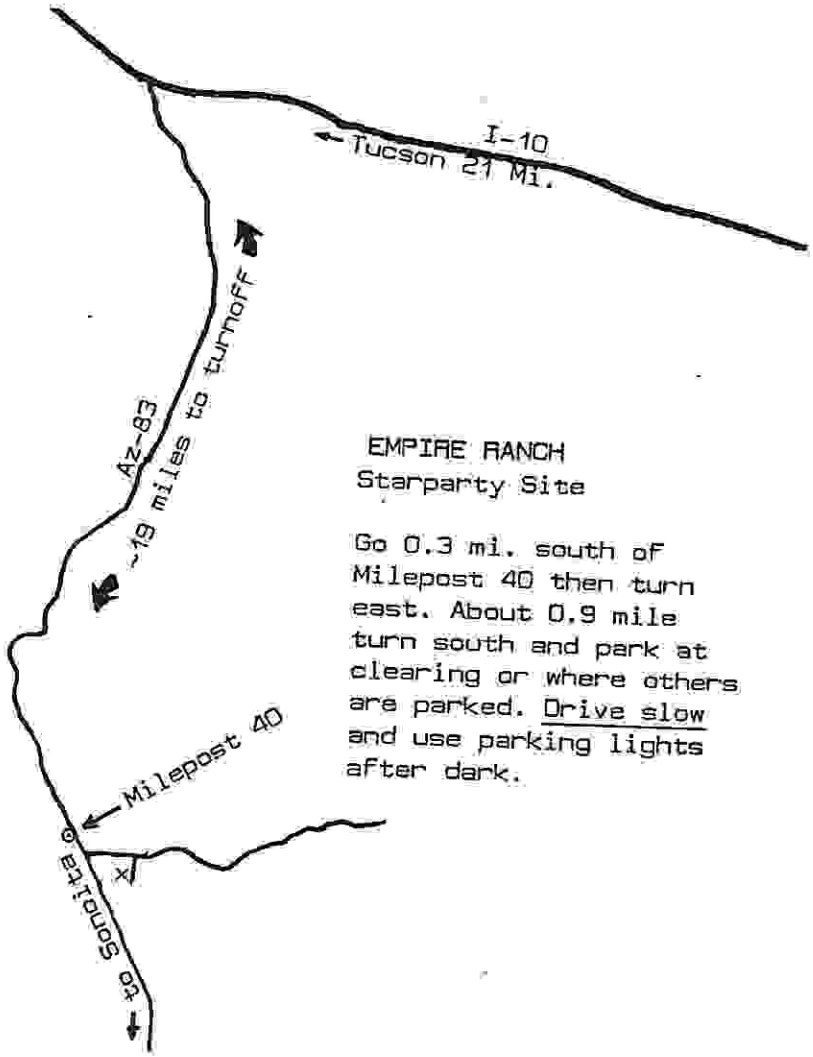
DARK SKIES for Tucson (in MST)

1994	MARCH	no twilight no moonlight
Tu/We	1/ 2	7:43pm - 10:52pm
We/Th	2/ 3	7:44pm - 11:59pm
Th/Fr	3/ 4	7:45pm - 1:01am
Fr/Sa	4/ 5	7:45pm - 1:59am
Sa/Su	5/ 6	7:46pm - 2:51am
Su/Mo	6/ 7	7:47pm - 3:38am
Mo/Tu	7/ 8	7:48pm - 4:19am
Tu/We	8/ 9	7:48pm - 4:56am
We/Th	9/10	7:49pm - 5:20am
Th/Fr	10/11	7:50pm - 5:18am
Fr/Sa	11/12	7:51pm - 5:17am
Sa/Su	12/13	7:51pm - 5:16am
Su/Mo	13/14	8:03pm - 5:15am
Mo/Tu	14/15	8:57pm - 5:13am
Tu/We	15/16	9:51pm - 5:12am
We/Th	16/17	10:44pm - 5:11am
Th/Fr	17/18	11:37pm - 5:09am
Fr/Sa	18/19	12:28am - 5:08am
Sa/Su	19/20	1:18am - 5:07am
Su/Mo	20/21	2:05am - 5:05am
Mo/Tu	21/22	2:49am - 5:04am
Tu/We	22/23	3:31am - 5:02am
We/Th	23/24	4:12am - 5:01am
Th/Fr	24/25	4:51am - 5:00am
Fr/Sa	25/26	- - -
Sa/Su	26/27	- - -
Su/Mo	27/28	- - -
Mo/Tu	28/29	8:04pm - 8:33pm
Tu/We	29/30	8:05pm - 9:42pm
We/Th	30/31	8:05pm - 10:49pm
Th/Fr	31/ 1	8:06pm - 11:51pm

Erich Karkoschka

Meeting Location





EMPIRE RANCH
Starparty Site

Go 0.3 mi. south of Milepost 40 then turn east. About 0.9 mile turn south and park at clearing or where others are parked. Drive slow and use parking lights after dark.