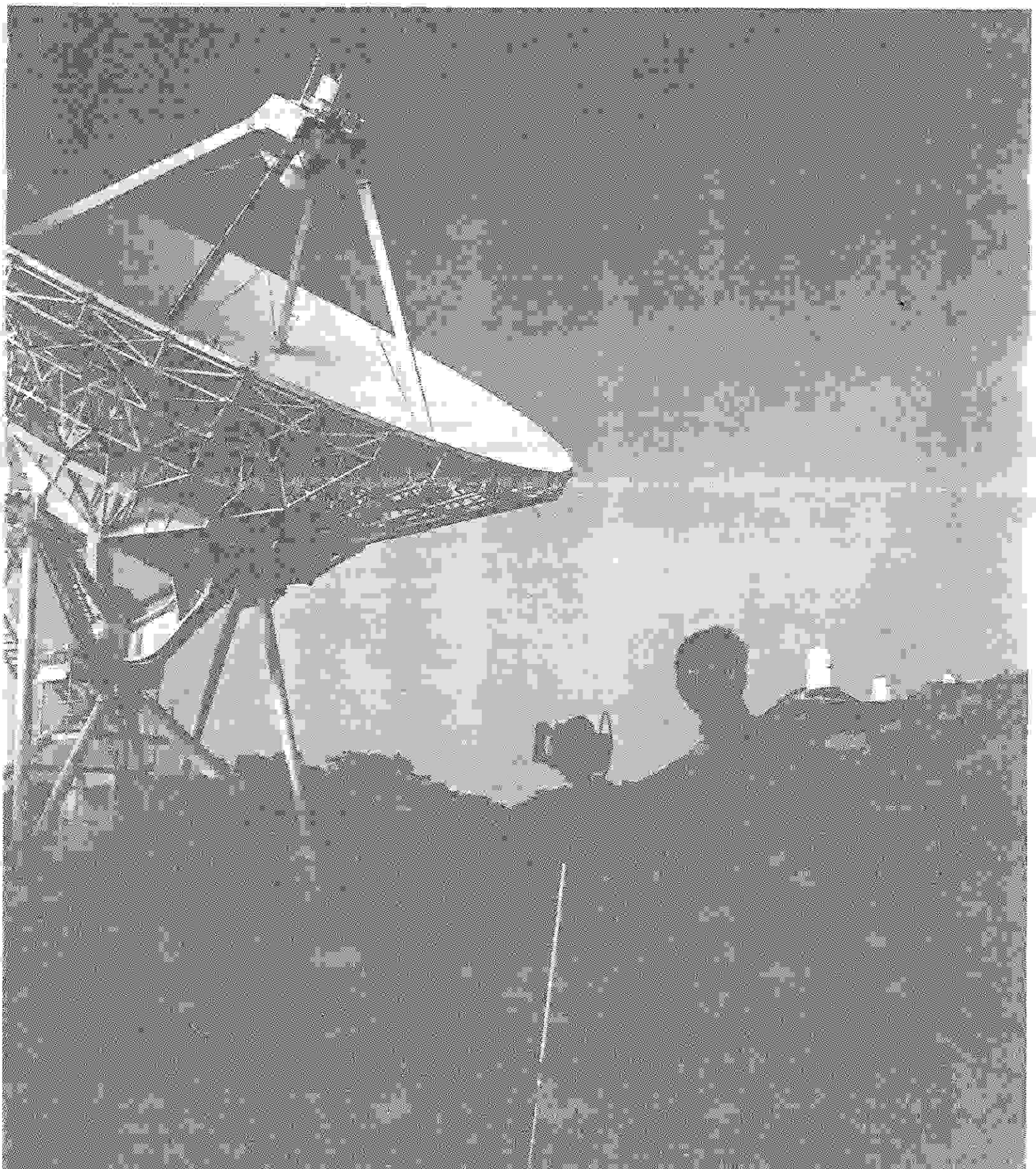
Desert Skies

November, 1993

The Newsletter of the Tucson Amateur Astronomy Association (TAAA)



GENERAL MEETING - Friday, November 5th, 7:30 pm at the **NEW** Steward Observatory Auditorium. TAAA member David Harvey will speak on "The Vatican Advanced Technology Telescope (VATT)"

6:45 pm - pre-meeting "Beginners lecture" by David Levy will be "Observing Comets" All are welcome! ("old" Steward obs. room 204). See enclosed map for directions!

EXECUTIVE MEETING - Thursday, November 11th, 7:30 pm at Flandrau Science Center's Conference Room

30" TELESCOPE DESIGN, LAND & FUNDRAISING MEETING - Wednesday, November 17th, 7:30 pm Location to be announced - call Dean.

STAR PARTIES: November 6 - Star Party at our potential new land! See map inside.
November 8 - Star Party at Sunrise Elementary School - see inside.
November 13 - Star Party at our potential new land!

Planetarium Show - November 6 - We get a personal sky show at Flandrau. See inside for details.

October Newsletter Deadline - November 17th

COVER: We finally had fantastic conditions for a Kitt Peak Star-B-Que with excellent seeing and transparency! **Front:** Chief observer Mike Terenzoni searches for "good Light" near the 80 foot radio telescope of the VLBA (Very Long Baseline Array) near the picnic area. **Back:** Randy Quiroz demonstrates his new GPS receiver at his observing site. Photos by Dean Ketelsen

TAAA EXECUTIVE

President	Dean Ketelsen	293-2855
Vice-President	Terri Lappin	579-0185
Executive Sec.	Rob Nyberg	745-0710
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.

November's Featured Speaker: David Harvey
"The Vatican Advanced Technology Telescope (VATT)"

Most of you know Dave Harvey as the fellow who runs the auditorium controls (with our thanks) for our general meetings. Though a member on and off for about 12 years, he has recently been getting more involved in club activities and was elected to one of our Member-At-Large positions last Spring.

Dave grew up an Air Force brat, and moved around a lot as he grew up. But he remembers the night he first got bit by astronomy as his family returned from a late night at the drive-in movies and he saw the Milky Way for the first time as an 8 year old. He received his first 2.4 inch refractor at age 11, and saved for an 8" reflector at 13. In high school he headed the lunar occultation group of the Omaha Astronomy Association for 3 years. His current interests are astrophotography and orbital mechanics.

For the last 12 years, David has worked for Steward Observatory at the University of Arizona, currently as a Senior Systems Programmer. As such, he is in charge of all telescope control systems for Steward Observatory telescopes. After the recent shakedown of VATT, he is certainly qualified to report on an overview of the project, a closeup of some of the technology, as well as fill us in on some of the upcoming projects.

Beginner's Lecture
Observing Comets

This month the Beginner's Lecture will be presented by one of TAAA's most distinguished members, David Levy, who will be presenting a lecture about observing comets. There are 19 comets which share David's name. Seven of these were visual discoveries and 12 of them were found as part of the Shoemaker-Levy team using photographic techniques. David also found the first Martian Trojan asteroid. This is an asteroid named Eureka which stays in the same orbit as Mars. David is an accomplished observer of the night sky. I remember his descriptions of Halley's Comet through a 6" telescope. Where I saw a fuzzy object, David saw lots of fine structure. He has trained his eyes to see things that the casual observer misses.

In addition to his accomplishments at the telescope, David has written several books including "**The Sky-a users guide**" which often shows up in our lectures and "**Observing Variable Stars**" which is an excellent guide to beginners wanting to learn about variable star observing. He also writes the monthly column "**Star Trails**" in Sky & Telescope. His most recent book is "**The Man Who Sold the Milky Way-A Biography of Bart Bok**". Bart Bok gave several presentations to the TAAA during his time at Steward Observatory. As someone who attended these presentations, I found it a pleasure to read this biography.

The Beginner's Lecture starts at 6:45pm, 45 minutes before the start of the regular meeting. See you at 6:45pm on November 5th in room 204.

Report on "Universe 93"

The TAAA is making an effort this year to teach astronomy to youth in the Tucson area. As part of this effort, the TAAA executive board voted to pay part of the cost for two representatives to attend the Astronomical Society of the Pacific's Teacher's Workshop "Universe in the Classroom". Last July, Teresa Lappin and Sharon Niehaus spent a full week learning several teaching techniques to "bring the universe into the classroom" in a way that children will understand. This workshop included teachers from all over the United States from grade school to junior college levels. During a short presentation after Dave Harvey's talk at the next meeting, Teresa and Sharon will show some of what they have learned and will give an overview of the TAAA Astronomy Education Program which is now a part of the Marana School District's after school activities.

Latest Land News

In the last month, the Executive has made an offer to purchase land, held 3 meetings to discuss items of concern, retained a real estate attorney, met with the realtor 3 times, and the Buenos Aires Refuge management once. A lot of water has passed under the proverbial bridge, and we will attempt to bring you all up to date here.

Background: As many of you may be aware, the TAAA has been searching for land for over 6 years. The purpose of this land is to retain it for our permanent observing site and be able to make improvements on it to make it a little more comfortable than most of the sites we have had access to in the past (toilet facilities, bunkhouse, etc.). Also, the Club has plans for a 30 inch telescope, and we have had a number of reasonable sized telescopes donated to us. A good remote site would serve as the site for this TAAA observatory, as well as a location for members to permanently house their personal telescopes.

The Site: The land we chose at the end of September was a 20 acre site about 25 miles south of Three Points (Robles Junction), or about 40 air miles southwest of Tucson. The driving distance is about 54 miles from the University Campus. A map is enclosed in this newsletter. There are about 4 miles of reasonable dirt road for access.

We considered the site to be just about the best we could get. It is as far from Tucson as is Kitt Peak, though from this site, the lights of Tucson must pass over the 6,000 foot high Sierrita Mountains. The elevation is relatively low at 3150, but this certainly makes winter observing more comfortable. The seeing has been demonstrated to be very good, though a lot of observing has not yet been done from the site.

Concerns: One of the biggest items of interest and concern is that the land is entirely surrounded by the Buenos Aires Wildlife Refuge. While this effectively blocks development for many miles in any direction, there is some concern that the government may condemn our site for addition to the Refuge. In a meeting with Refuge management, they indicated that though they would prefer to have the land without us there, acquisition via condemnation is very unlikely. If we obtained the land "they would be good neighbors", was the impression they left with us. Their major concerns for us was for the occasional controlled burns that take place on the refuge (they would place fire breaks around private property, but smoke would be a concern), and from a security standpoint, with hunters allowed in the area and many break-ins in the Refuge Headquarters.

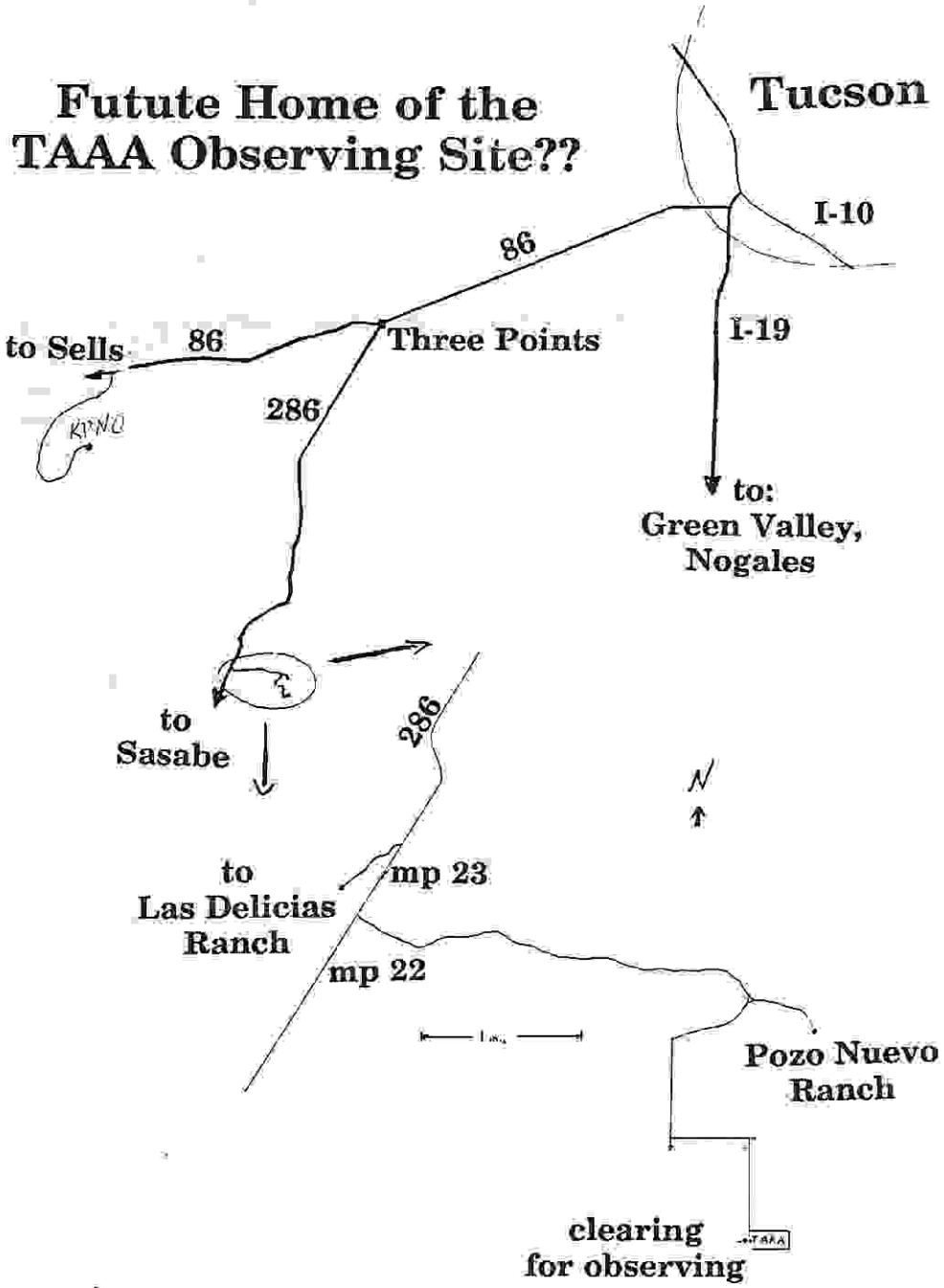
Another concern is the lack of utilities at the site. When the land was deeded, there were no provisions for utility easements, and even if one could gain an easement, the cost of electricity would very nearly equal that of the land. Generators are cheap, but inconvenient and messy. Photovoltaic systems are ideal, but expensive. A combination of the two may be in order. Perhaps a minimal solar power system for a few telescope drives, with expansion of battery capacity or a generator, if we add more electrical demand (heat, computers, well pumps).

Speaking of wells, due to the efforts of new members Tom Burdon and George Velasquez, who have contacts in the construction field, we may be able to have a well drilled for free (as a tax deduction). In addition, they have found companies willing to donate or make great deals on culverts, porta-johns, water tanks, and other items. If all this goes through, we might be able to proceed faster than we thought we could with our limited resources.

Costs and Fundraising: The limiting factor for all of this is funds. The price of the land is $2,000 per acre, or $40,000 total. We currently have $12,000 in the land fund, and another $8,000 in major pledges from mostly past and current executive members. So we are currently

about halfway towards our goal. The Executive is making an effort to contact the entire membership of the TAAA to test the level of support. When the contracts were signed, we were given 30 days to go through a fundraising period, and to back out at that time if it was going poorly. At this point, 25 October, with an underwhelming response and the 30 days about up, we will probably ask for a couple week extension. There are two reasons for this. One is that we have gotten permission to do a mailing to the Friends of Flandrau. We might be able to pick up some donations from that group. Also, with all this activity happening since the last newsletter, many members may not yet have heard of our need.

What you can do: At this point, about all we can say is that if you **ever** felt that you wanted to support the TAAA in it's attempt to obtain land for a permanent observing site, **now** is the time to come forward and pledge your support. There are several ways to help us - see the Fundraising News elsewhere in the newsletter for the various ways of contributing. Contact your favorite Executive member (phone numbers are in the front of this newsletter) and tell them what you are willing to pledge or that you are willing to help in some way. **Do it now!**



It's Subscription Time!

It is time for TAAA members to sign up for Astronomy Magazine subscriptions. The rate is $18.00/year, which is an $24 savings off the newsstand rates and $9 less than the usual individual subscription rate. The sign-up sheet will be at the November meeting and you must pay for your subscription then (make checks payable to the TAAA). If you can not make the meeting, call Duane at 797-4189 to make other arrangements. The subscription money will be mailed in the day after the meeting...no exceptions.

If you already have a current subscription you can extend it by one year at this time. When your current subscription ends, the new one will start up, so you shouldn't get two copies of the same issue.

Any Scopes Available Out There?

Don McCarthy of Steward Observatory sends the following note:

Some of my former Astronomy Campers (and their families) are interested in acquiring telescopes. Instead of necessarily buying new instruments, I have recommended that they consider obtaining used equipment and the TAAA seems to be an excellent possibility. If you could somehow announce the oportunity for TAAA members to sell off telescopes they no longer use or need, it would be appreciated. People could contact me (621-4079 days; or via e-mail at dmccarthy@as.arizona.edu) and then I could make the connection to the Campers. I'm sure these folks are interested in 6-10" type apertures, at least somewhat portable, tracking may not be essential. -Don

Astronomical League Procedure Change

When you become a member of the TAAA you also become amember of the Astronomical League. The TAAA roster is sent tothe AL so you can receive their quarterly publication "TheReflector". The AL at times will sell their mailing list. Ifyou wish not to have your name and address on the list that issold, you MUST notify Derald Nye who is the club AstronomicalLeague Correspondent (ALCOR). Send a letter of this fact to:Derald Nye, 10385 E. Observatory Dr., Tucson, AZ 85747.

Lost at Kitt Peak Star-B-Que

Your president and newsletter editor, Dean Ketelsen, lost his favorite wooden-handled kitchen paring knife at the cookout. If you ended up with it, please call him at 293-2855.

It is Photo Show Time!

Don't forget this twice-a-year event happens again on the weekend of November 6th and 7th. It is a great place to buy or sell cameras, accessories, even telescopes and eyepieces occasionally. It happens at 10am at the Shriner's Temple on Tucson Avenue south of Broadway. See you there!

Possible Asteroid Occultation

Derald Nye reminds us of a possible occultation by the asteroid 19 Fortuna on the night of November 22nd (~2:31 UT 23 November). If you are interested in observing this event, please call him at 762-5504 for a finder chart and latest update.

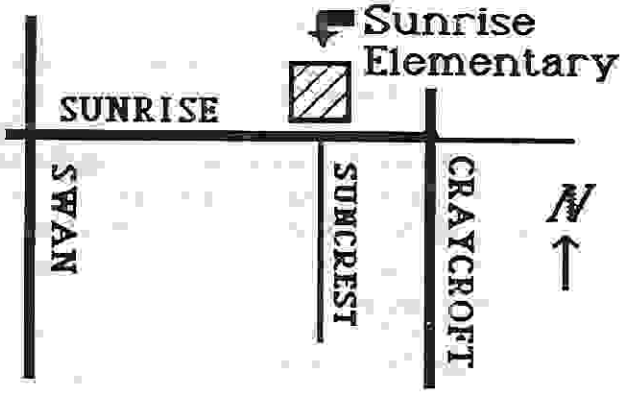
Upcoming Events

Sunrise Elementary Star Party

When: **Monday**, 8 Nov, 1993 6-8 p.m.
Where: Sunrise Elementary School

Now becoming a biannual event for us, this star party at a beautiful elementary school in the Catalina foothills usually attracts numerous families. TAAA is paid a fee for doing this event so come on out! To reach Sunrise Elementary from the south take either Swan or Craycroft north past River Road to Sunrise. The school is opposite Suncrest (which ends at Sunrise). Please see the map at right.

Set up will be in the main courtyard area near the center of the school. Thanks to Sharon and Duane Niehaus for arranging this event once again.



"Beginners" Sky Show at Flandrau Science Center

When: Sat. 6 Nov 11:30a.m.–12:20 p.m.
Where: Flandrau Science Center and Planetarium, U of A campus.
Cost: $2.00 per person.

This is the first time we will have an event using the capabilities of Flandrau's Star Theater and the Minolta Mark IV projector. This star projector is designed after the famous Zeiss projectors, and, as many of us have seen, is a very capable instrument. Minolta planetarium ads in *Sky and Telescope* and *Astronomy* magazines claim you see more stars in binoculars (just like the real sky) so bring your binocs to find out if this is true. Don't bring giant binoculars though because the "stars" you will be seeing are only 60 feet away! Not many astronomy clubs have this kind of opportunity so please plan for this Saturday morning event.

Chief Observer Michael Terenzoni will run the projector and will be open to beginner's questions concerning the celestial sphere. In addition he promises to show everyone the southern sky if asked. So here's everyone's chance to do some "observing" from Australia!

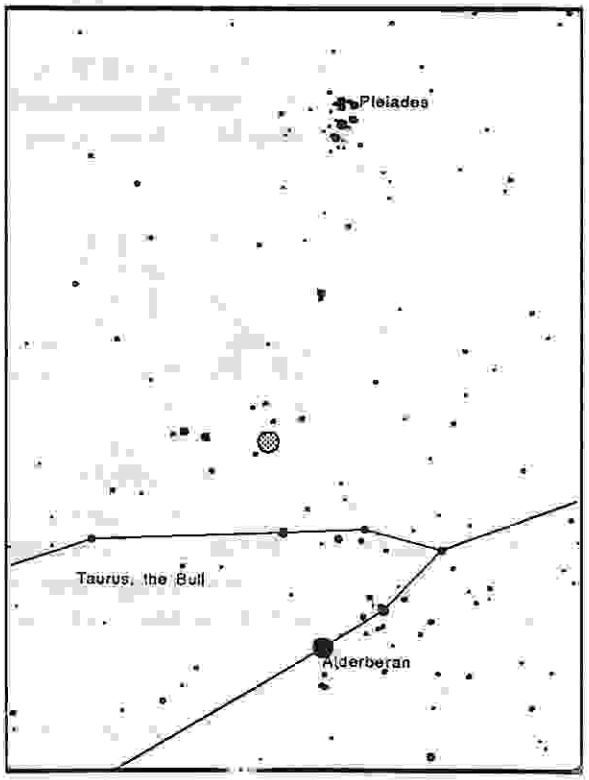
Families of TAAA members are welcome and the Friends of Flandrau will also be invited. The turn out we get will determine if we hold this event again. Flandrau Science Center is located on the University of Arizona campus on the corner of Cherry and University and is directly opposite from our monthly meeting site at Steward Observatory. Call 621-4515 for more detailed directions.

OBSERVER'S REPORT

October started out looking promising for deep-sky observing with mostly clear skies prevalent over the first third of the month. However a pesky low pressure system from the Pacific started spinning high cloudiness into the state by the 13th. This low then moved into the southwest by mid-month just in time to cover all of the state with showers for the All Arizona Star Party on the 16th. October was not a total loss though, TAAA's Kitt Peak Picnic was a success (finally), thanks to clear skies, a big turnout and pleasant temperatures. Seeing on "The Mountain", although not excellent, was good enough to glimpse nice detail on Saturn, especially with Bruce Walsh's 14.5" Dobsonian using a 7mm Nagler. Observer extrordinaire Dave Levine showed off a previously unseen 4" refractor which also revealed good views of the ringed wonder. Dean Ketelsen likewise revealed some "new" equipment: An old C-10 (yes that's a 10 inch Celestron SCT!). Acquired in a deal with *Stellar Vision* this unusual instrument had some unique features apart from today's modern versions.

Probably the highlight of the picnic for me (apart from the good food) was spotting the Gegenschein or "counterglow" for the first time. What I saw was an extended (approx. 15 degrees) roundish, patchy glow centered in eastern Pisces. This form of natural light pollution was very faint, significantly dimmer than the Zodiacal Light many of us are used to viewing. Similar to it, the Gegenschein was lacking in any distinct boundary, gradually merging with the normally dark sky. Although dim it still was bright enough to make Bruce Walsh complain about the low contrast views of 14th magnitude galaxies he was seeing in Pisces. The Gegenschein is due to countless micrometeoroids each acting like tiny Full Moons in reflecting the Sun's light back to Earth. The name "counterglow" is from the fact that you locate this phenomenon at the anti-solar point (180 degrees-directly opposite-from the sun). Since the Gegenschein is exceptionally faint, you can only see it in the darkest of skies late at night (when the anti-solar point is high in the sky) and then only in months when the Milky Way does not obscure the view (all months except December and June). In November look for it near (and probably enveloping) the Pleaides at least 4 hours after sundown.

November 1993 may well be known in Tucson as the month of a spectacular lunar eclipse (we hope). The event many of us have been waiting years for occurs the day after Thanksgiving; Sunday, November 28th. Regardless of what the weather throws at us, this will be the best seen lunar eclipse for *all* of North America in more than a decade. Mideclipse at the Zenith occurs in south central Mexico, with North America located near the central area of worldwide visibility. In the United States the Dakotas and the states of Texas, Oklahoma, Kansas, and Nebraska will see mideclipse occur with the moon close to the meridian. Here in Tucson the total phase of the eclipse starts at 11:02 p.m., with mideclipse occurring 24 minutes later at 11:26 p.m. Totality ends at 11:50. Totality during the eclipse of December 9, 1992 was especially dark due to the large amounts of volcanic dust in the stratosphere. If this eclipse shows a brighter brick red or even deep red moon we will know the upper atmosphere is becoming "clean" once again. Here's a chart showing where the moon will be among the stars at mid-eclipse. Good viewing!



Mid-Eclipse from Tucson
11/29/93, 11:26 p.m.

ETA CASSIOPEIAE - A SOLAR NEIGHBORHOOD BINARY STAR

During November Cassiopeia "The Queen" lies high overhead. To most observers Cassiopeia appears as a "W" or "M" shaped star pattern, depending on what season of the year you are viewing it.

In Cassiopeia about two degrees northeast of Alpha Cassiopeia, "Schedar" which is an orange star you will find a 3½ magnitude star, this is Eta Cassiopeiae a beautifully colored binary star. Eta was discovered by Sir William Herschel in 1779. The companion star, magnitude of 7.2 has a nearly circular orbit about the primary, magnitude 3.4. The companion completes an orbit in about 500 years and their separation varies from 5" to 16".The mean separation of the two stars is about 68 astronomical units. This binary star system is fairly close being about twice the distance of Sirius or 18 light years.

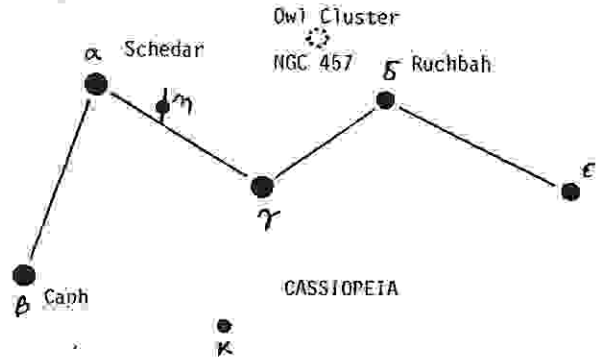
Eta Cassiopeiae A has a spectrum of G0, and is a sun-like star, its diameter is a little less than the Sun's, and its luminosity and mass are slightly higher.

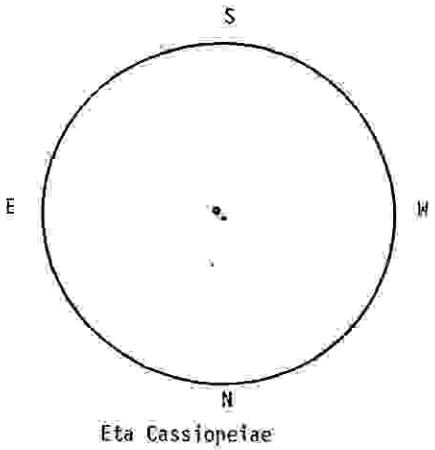
Eta Cassiopeiae B is a dwarf star with a spectrum of M0, its mass and diameter are half the Sun's, and its luminosity is very low.

This is a beautifully colored pair for small telescopes in the range of 2.4" to 6" aperture. Use a medium powered eyepiece, one giving about 50x or 60x. This will separate the companion, lying at 14" from the primary, and show off the colors nicely. Most observers see the colors as golden for the primary and scarlet for the companion. What colors do you see with your telescope?

Eta Cassiopeiae is only one of the many fine colored double stars that dot the Fall skies. And as Fall progresses and the night air cools and becomes more crisp, the hues of these stars will stand out against the blackness of space.

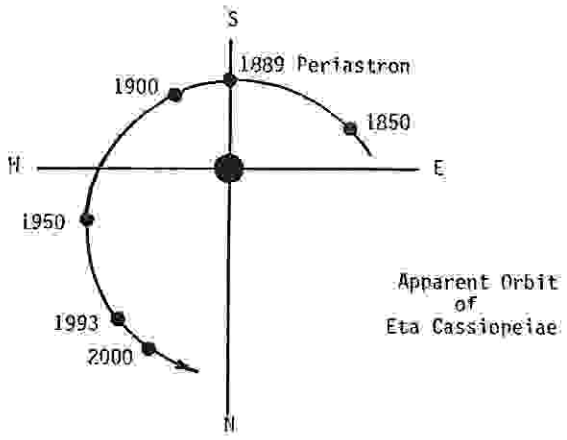
Jeff Brydges





Eta Cassiopeiae
2.4" refractor at 50x

L a fine triple star



Apparent Orbit
of
Eta Cassiopeiae

Observing in Nevada

Journeying home from Montana I stopped at Walker Lake, Nevada and set up my telescope. Fatigue drove me into my trailer at 2:30 am, but since the seeing and transparency was so good I wanted more time. Fortunately I saw the ad in Sky and Telescope about the Las Vegas Astronomical Society's Meet on September 17-18th. I decided to attend.

Leaving Tonopah we detoured on a lonely, not much traveled road arriving at Cathedral State Park on Tuesday, 14 September. Everyone should see this area of Nevada as the mountains and rock formations are very scenic.

Wednesday I met Val Picott, his wife Linda and son Kevin. Val is the Vice-President of the club. Thursday more members arrived including Roger Debeuc, who is the Club's President. Roger gave a lesson on polar alignment on my C-8 and it was much appreciated. The Club has a 24 inch reflector that they built themselves and the views from this scope were outstanding.

Steve Overholt was there with his 30" lightweight giant (exhibited in the Oct. 93 Astronomy issue page 24). He shared his keen ability to find faint objects, nebulae and clusters.

The clubmembers are a very diverse group. A public talk was given by Dave. Rick tracked the asteroid Vesta with excellent drawings. Chuck specialized in variable stars. One member is a planetary nebula expert and we saw Neptune and uranus in Jim's 13" Coulter.

Although the nights were chilly and clouds threatened a few times, the clear, crisp skies were enjoyed by all. Friday and Saturday 25 or more scopes of all sizes were scattered throughout the campsites. Red digital displays popped out in the darkness as red flashlights bobbed about while members exchanged sights. Forty adults plus their children enjoyed a picnic lunch Saturday afternoon.

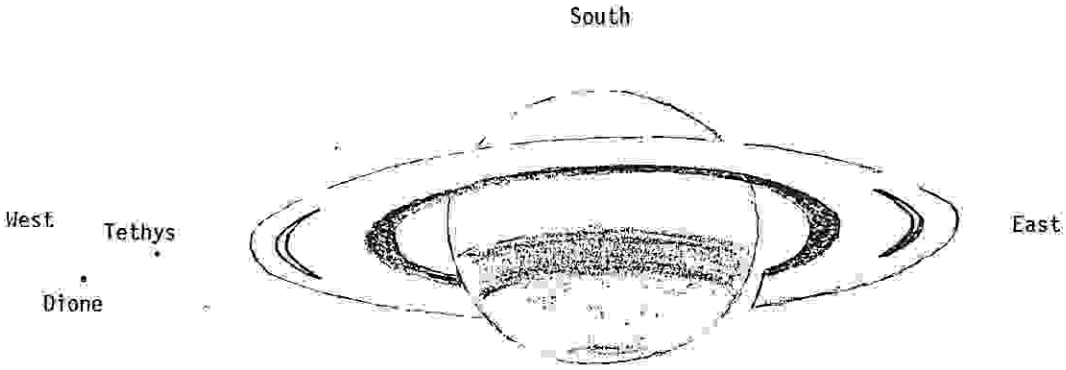
The sharing of knowledge and friendliness of this outgoing club made me feel very welcome and thus my four days observing with them became the highlight of my summer.

It was alluded that my RV trailer reminded them of an old Lucy movie. Well, Lucy may have had a trailer, but she never packed a telescope!.

Hazel Lawler

SATURN

Date: September 25, 1993 Time: 11:07 p.m. M.S.T. Seeing: fair Instrument: 6" f/8 Reflector
Magnification: 96x, 133x, 240x Features: North Polar Hood, North Equatorial Belt, Cassini's Div.



submitted by Jeff Brydges

How Far to Andromeda's Galaxy?

by

Richard Hill

As many of you know by now, in September we moved from our mid-town location to the east edge of Tucson near Houghton & Escalante. One big reason for the move was lighting. Ordinance or no, new lights along Swan from Speedway to the airbase destroyed the borderline skies about a year ago. True, the lights do conform to ordinances, but when a dozen are directly shining on your telescope, you lose!

The new location is nice and dark. Not as dark as Empire Ranch, but still quite usable. The first weekend in the new house I dragged out the C5 and sized up the situation in detail. With a 5-inch aperture I could get to 13th magnitude in selected variable star fields. Not bad. A week later the 14-inch Elysium was up and running on wheels. Saturn was first light, followed by a selection of deep sky objects. I was heartily impressed by what was seen. Even the Veil Nebula could be seen without a filter. This is what I wanted. A few nights later, after doing some micrometer tests I decided to look at globular clusters, my favorites since they contain so many variable stars. First M22 (one of the best!) then M15, and M72, further away. All were fully resolved. This was great.

Pausing, I looked up at the star studded sky to the smudge of the Andromeda Galaxy, M31. Why not!? Several years ago I tried locating globular clusters in M31 using Hodge's ATLAS OF THE ANDROMEDA GALAXY. (This should be on the shelf of every dedicated deep sky observer. A copy is available in the U/A library.) As you might guess from the comments above, I saw nothing from the mid-town location. The star patterns are fairly well defined around M31 and within 5 minutes I had located my first globular, G148. No, it was not resolved, but was distinctly non-stellar. After half an hour I had bagged four more. This was great fun. However, I'm not one to just enjoy the view, I always want to DO something with an observation. Seeing these brighter globulars in M31 was easier than trying to see M13 or M15 with the naked eye at my site. In 7x35 binoculars the latter two clusters were easier than those in M31 and larger. So I used an old 5x30 finder from the RV-6 I bought in 1965. That view of M13 and M15 was pretty close to what I saw in M31. Given the ratio between the two telescopes, the similarity in views of the different clusters in each, and knowing the distance to a globular in our galaxy, could I get a reasonable distance to M31? These tools were available to astronomers at the turn of the century and earlier, though they were not sure of the nature of the "spiral nebulae" and therefore did not know of their globulars.

The ASTRONOMICAL ALMANAC lists the distance to M13 as: 7.2 parsecs (or "pc's" not "politically correct"). This is 23.47 kilolight years (I never did like pc's and find the light year easier to envision, if one can really envision 6 trillion miles!) The ratio between my 30 mm finder and the 14.25" telescope aperture areas is: 145.56. But this ratio assumes perfect mirrors, perfectly transmissive optics, and no obstructions in the tube. A more reasonable figure would be 80% of the ratio, which is to say that only 80% of the light entering the tube makes it through the eyepiece. Even this may be too generous. so our ratio is now 116.45. This times the distance to M13 should give us the distance to M31, right? Well, 116.45X23.47Kly=2.7 million light years! Not bad at all!! Presently accepted values range from 1.5 mly to just under 3 mly. the former is way too close or M31 would be nearly twice the size of the Milky Way. It's bigger but not that big. This derived figure is on the high side, but then that may be more the fault of optimistically choosing 80% as a throughput estimate for the system. Still it is closer than anything before the mid-20th century.

This was an easy and fun experiment. I encourage you to try such things when you are hopping around the Messier objects. Challenge your mind, ask questions, and perform little experiments. It's both fun and educational.

CALL #	QB857.H62
AUTHOR	Hodge, Paul W.
TITLE	Atlas of the Andromeda Galaxy
PUBLISHER	Seattle : University of Washington Press, c1981
SUBJECTS	Galaxies --Pictorial works
OTHER TITLE	Andromeda Galaxy
NOTE	Bibliography: p. 79.
DESCRIPTION	79p. : chiefly ill. ; 23cm.
ISBN	0295957956 : $50.00.

Fundraising News

If you read the latest in the land situation, you know that the TAAA needs your support now more than any other time in the past. If you feel strongly about the Club obtaining a dark sky site for our use, we need to hear from you now. Without a strong base of support in the very near future, we will likely withdraw our offer.

We have several things going for us. First, we do not need to come up with the money until the end of the year, so we have a couple months to save. Also, two of our members have collectively agreed to lend us $20,000, but expect to be repaid over a period of a few years. To repay a loan like that, we need a steady income, and one way to do that is to get involved with what we call our automatic donation program. These days you can make many payments electronically - mortgage, YMCA, insurance, etc. You give permission for them to withdraw payments from your account electronically, saving checks, postage and convenience. As I am fond of saying, if every member gave the TAAA $5 per month, total income would approach $10,000 per year. The minimum payment we permit is $5 per month, but feel free to give more. Personally, I look at it this way - the enjoyment I get from astronomy every month easily exceeds the fun I get from my electronic gadgets (and is certainly better for you than watching TV), so I match my approximate electric bill of $50 a month. Put a value on observing and see what a dark site is worth for you.

Greg Johnson is a relatively new member, and is also one of the "starving students" among us who subsist on their own with student pay. He recommends that everyone throw in an hour's wage towards the goal. He was one of the first 10 people to go on the program, where he contributes $5 per month.

Louisa Worstman is a certified massage therapist, working on her own and also at the Jewish Community Center. She can't afford a cash donation, but has donated 5 massages towards the cause. She suggests $50 for the 1 hour session. To take advantage of her offer, call Dean at 293-2855 for the certificate. Particularly if you receive a regular massage, then this donation towards the goal costs you nothing you would not normally pay. Thanks for your contribution Louisa!

If you can afford a cash donation to us at the end of the year, great, we can use it directly on the purchase price and minimize the amount we have to borrow from our benefactors. If you have trouble saving but can pay us $10 or $20 per month or more, we can use that to pay off any loans we take. In either case, however, we need to know how much support we have and how far we can depend on our donations. Send in the enclosed pledge form or call your favorite Executive member and pledge your support now. We need to know these answers in the next couple weeks, so act now! As always, don't forget that all donations to TAAA are tax deductible.

Tucson Amateur Astronomy Association
Pledge

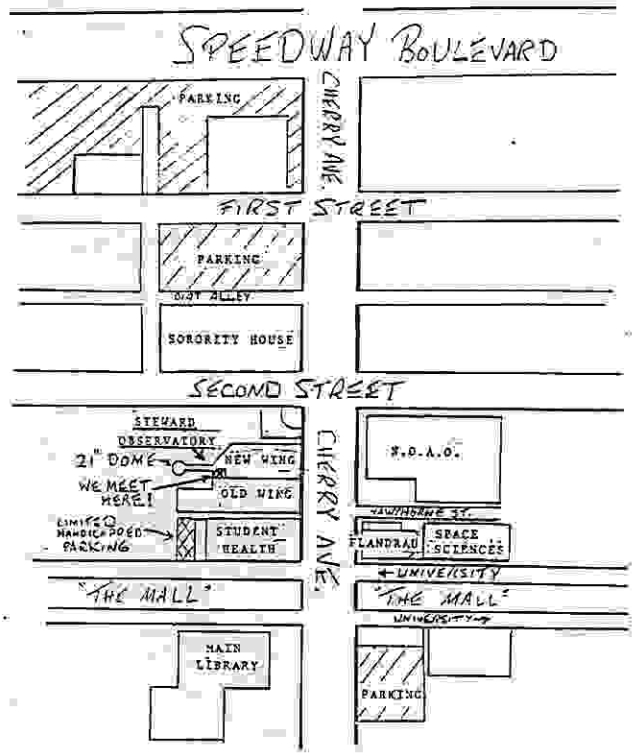
For the TAAA's land purchase and observing site development fund, I make the following pledge:

Cash Donation..... ____No
____Yes. Amount: $_____

Monthly Electronic Bank Withdrawal ____No
____Yes. Amount: $_____ per month
years:___ Other:___

Name:_____ Signature:_____
Address:_____ Date:_____
_____
_____ Phone:_____

TAAA Meeting Location



DARK SKIES for Tucson (in MST)

1993 NOVEMBER — no twilight, no moonlight

Mo/Tu	1/ 2	6:56pm - 7:08pm
Tu/We	2/ 3	6:56pm - 7:58pm
We/Th	3/ 4	6:55pm - 8:53pm
Th/Fr	4/ 5	6:54pm - 9:51pm
Fr/Sa	5/ 6	6:54pm - 10:51pm
Sa/Su	6/ 7	6:53pm - 11:53pm
Su/Mo	7/ 8	6:52pm - 12:57am
Mo/Tu	8/ 9	6:52pm - 2:02am
Tu/We	9/10	6:51pm - 3:08am
We/Th	10/11	6:51pm - 4:17am
Th/Fr	11/12	6:50pm - 5:26am
Fr/Sa	12/13	6:50pm - 5:27am
Sa/Su	13/14	6:49pm - 5:28am
Su/Mo	14/15	6:49pm - 5:28am
Mo/Tu	15/16	7:17pm - 5:29am
Tu/We	16/17	8:19pm - 5:30am
We/Th	17/18	9:20pm - 5:31am
Th/Fr	18/19	10:20pm - 5:32am
Fr/Sa	19/20	11:18pm - 5:32am
Sa/Su	20/21	12:13am - 5:33am
Su/Mo	21/22	1:07am - 5:34am
Mo/Tu	22/23	2:00am - 5:35am
Tu/We	23/24	2:53am - 5:35am
We/Th	24/25	3:47am - 5:36am
Th/Fr	25/26	4:41am - 5:37am
Fr/Sa	26/27	5:36am - 5:38am
Sa/Su	27/28	- - -
Su/Mo	28/29	- - -
Mo/Tu	29/30	- - -
Tu/We	30/ 1	6:46pm - 6:48pm

Erich Karkoschka

Desert Skies Classified

For Sale: 3" Unitron Refractor, excellent optics, altazimuth tripod mount with slow motion controls, star diagonal and eyepieces - $500. Call Jeff Brydges 888-0591.(12-93)

Services Offered: I have a multimeter (volt/ohm/amp meter) and a dual trace oscilloscope and will assist and advise you in debugging your electrical systems at no charge. Ray Wallace - 294-1197.(12-93)

For Sale: Meade LX-200 Schmidt-Cass, 10" F/10. Like new, used only about 5 times. Tripod, case, barlow, filters,all accessories included. $2250, I will ship. Brent Daughtry (904)282-5414 (Florida).(1-94)

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.(1-94)

For Sale: 8" Celestron SCT - complete with tripod, wedge, eyepieces, case. About 8 years old, rarely used, great condition, $1300. Call Patrice Confer at 544-0862, evenings.(1-94)

For Sale: Christmas art work? all are framed and matted by Nova Graphics. "Green Piece" 138/950, by Kim Poor $75.00, "David and Goliath" 117/950, by Bob Eggleton $80.00, "Barnards Planet" 45/950, by Joe Tuccarone $65.00. Call Mike evenings 797-1693.

For Sale: Sanyo Model VDC 3800 CCD TV camera, NTSC baseband out, connectors for Iris out, external video sync (BNC), 12 VDC 0.3 A power, video out(BNC, 75 ohm). Standard C-mount. Dimensions 3.73"H x 2.70"W x 2.28"D, weighs 13 oz. With AC adapter and manual. 572 x 485 pixels, 420 lines H x >400 lines V, 2 lux. Used about a dozen times to record lunar and asteroid occultations. $125 Mark Trueblood, day 322-8519, eve: (602) 455-9263.

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.

Tucson Amateur Astronomy Association
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