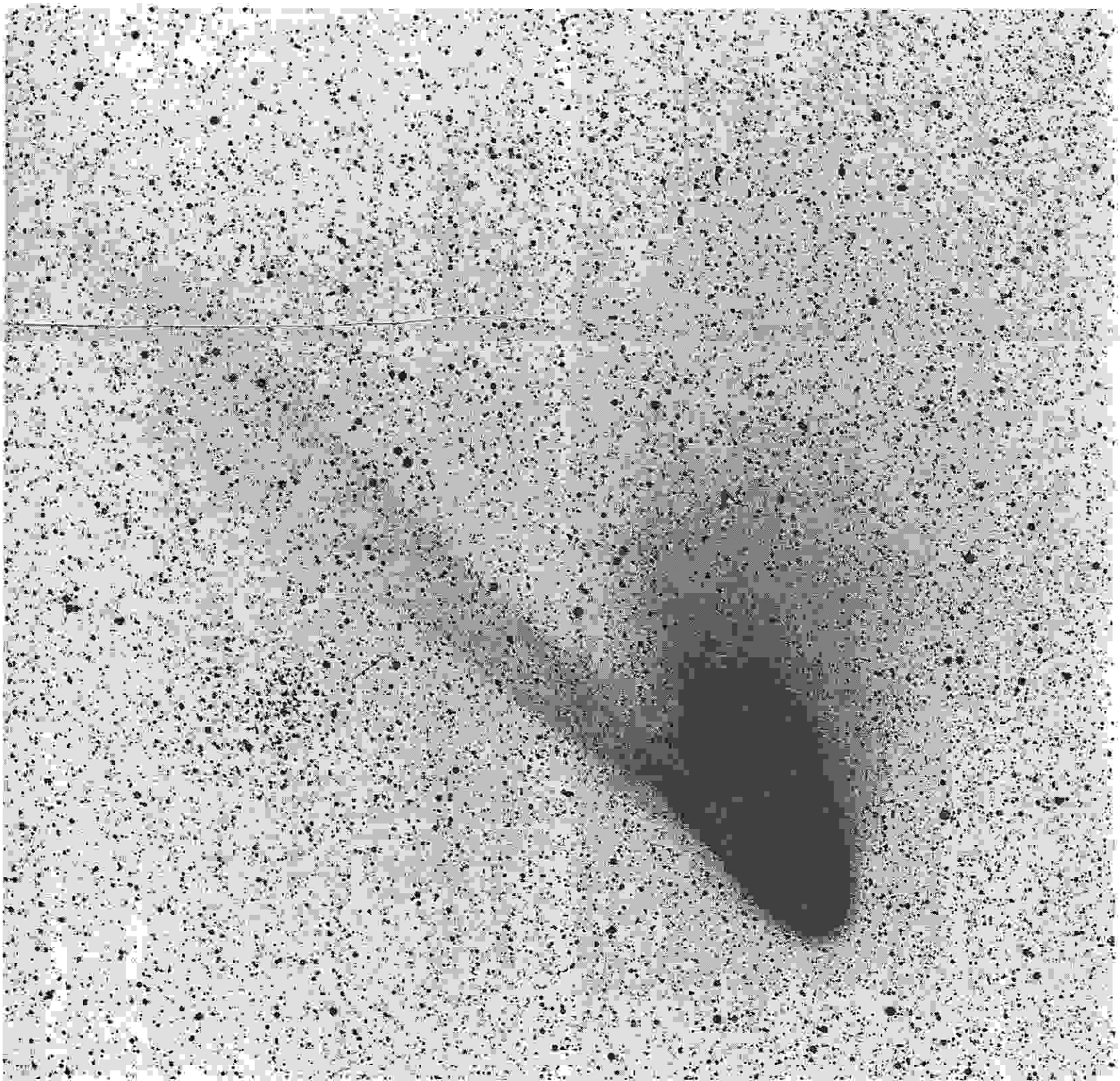
Desert Skies

Tucson Amateur Astronomy Association

Volume XLIII, Number 3 March, 1997

Hale - Bopp



Calendar of Events

BEGINNERS LECTURE-. March 7, 6:30 pm at the Steward Observatory Auditorium - room N210. This month's topic is Messier Observing by Bob Gent.

GENERAL MEETING -March 7, 7:30 pm at the Steward Observatory Auditorium -room N210. Topic is Clyde Tombaugh by David Levy.

BOARD OF DIRECTORS MEETING -March 13, 7:00 pm at the Conference Room at Flandrau Science Center.

STAR PARTIES & EVENTS:

March 8 Messier Marathon
March 10 Carl Sagan Memorial
March 11 Collier Elementary
March 14 Project ASTRO-Desert Museum
March 15 Immanuel Presbyterian
March 18 Reynolds Elementary
March 23 Eclipse/Comet, UofA
March 26 Jewish Community Center
March 28 Westin La Paloma
March 28-29 IDA Meeting
March 29 Spring Star Party at Old Tucson
April 2 Marana High School
April 5 Desert Museum

Newsletter Schedule: Deadline for articles: Monday,March 17. Printing: Monday,March 24,. Folding Party: Tuesday, March 25. Mailing: March 26. The newsletter is scheduled to be in the mail at least one week prior to the following month's General Meeting.

Cover: Comet Hale-Bopp passes NGC 6940 (star cluster to the left) on the morning of February 19th. This negative image (to facilitateXeroxing) actually approximates the view through a good pair of binoculars from a dark sky. The blue ion tail goes off to the upper left, and we are looking down the curved dust tail to the upper right. Taken from a pullout on the Florence highway by Dean Ketelsen with an 8" F/1.5 Schmidt telescope on Elite 100 film (4 minute exposure). Slide was scanned and the image manipulated by Lee and Michelle Dettmann

TAAA Home Page: http://www.primenet.com/~lwilson/taaa/taaa.html

Office	Name	Phone	Email
President	Terri Lappin	579-0185	tlappin@as.arizona.edu
Vice-President	Larry Wilson	299-6608	lwilson@primenet.com
Secretary	Dave Harvey	797-2512	dave@astro.as.arizona.edu
Treasurer	Gary Rosenbaum	579-0185	garyr@astro.as.arizona.edu
Member-at-Large	John Kalas	620-6502	
Member-at-Large	Steve Kristman	795-9332	
Member-at-Large	John Polacheck	544-8152	jpolacheck@mem.po.com
Past President	Dean Ketelsen	293-2855	ketelsen@astro.as.arizona.edu
Chief Observer	Gil Esquerdo	290-0168	esquerdo@psi.edu
ALCorrespondent	Bob Gent	721-5060	rlgent@aol.com
Newsletter Editors	Nancy Wagner & Nina Lehman	579-1382 579-1382	nlwagner@aol.com ninalehman@aol.com
Star Parties	Karen Allen	749-5744	

TAAA Mission Statement

We are a source 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 sun, moon, and stars. 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
Add for Family membership	$ 5
Add for Astronomical League	$ 2
Add for Sky & Telescope	$ 27
Add for Astronomy Magazine	$ 20

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 both membership and magazine subscription(s) to:

Tucson Amateur Astronomy Association
Attn: Renewals
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), add the appropriate amounts to your membership rate. If this is a renewal, include the 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:
TAAA
Attention: "ADDRESS CHANGE"
P.O.Box 41254
Tucson, AZ 85717

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 compatible 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 91316
Tucson, AZ 85752-1316

OR email: ninalehman@aol.com or nlwagner@aol.com

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President's Message

Another great Member's Night was held last month. We had a full program, even though I was concerned up to a few days before the meeting that we wouldn't fill even an hour. Andy Keefer told us about stationary meteors he has seen. These are meteors that don't move across the sky but instead just keep coming straight at the observer. Andy also talked about some telescopes that kids at Booth-Fickett School are making. Tim Hunter showed some slides of a visit with Clyde Tombaugh he and David Levy made a year ago. He also showed some great CCD color images taken with his 24" telescope. Dean Ketelsen had some pictures of Comet Hale-Bopp and an update on the Steward Mirror Lab activities of late. Dave Crawford caught us up on the International Dark-Sky Association and their efforts to start a local chapter of light pollution educators. Bob Andress described how to attach Meade encoders to a 6"Dynascope that he observes with. I saw a few people listening closely, so I suspect some to try this. Demo Galanos talked about a computer program that he used to find out more information about Dean's photo of Comet Hale-Bopp which appeared in the morning paper. I finished up the evening with a talk about a new CCD that we are working on in the Steward CCD Lab. Thanks to all who made this a great meeting-even if it went a little late! The next Member's Night will be on June 6th.

We have lots of star parties this month. PLEASE sign up for what you can attend. We have a lot because Comet Hale-Bopp is in the sky in the evenings and because we have a lot of teachers interested in having star parties at their schools. Please remember that you don't need to be an expert observer to show kids things in your telescope. Believe me, even if you were an expert, kids have a way of stumping even experts putting you in good company. Its fun to let kids look through your telescope. We're counting on our members to put in a special effort to get all the star parties covered this month.

We have also scheduled our first public star party in the Tucson area for a long time! This will be held at Old Tucson on the evening of March 29th. This coincides with the IDA meeting, but it is the best date for public observing of the comet. Hope it's clear for this event. We also have a star party for the Project ASTRO participants, but any TAAA member can attend. This will be held on a Friday night at the Desert Museum. Your participation will not mean you will be targeted for next year's Project ASTRO program. If you can attend please do. Dean Ketelsen will be giving a comet talk before the observing starts. Look for articles about both of these events.

This is a busy month. Clear skies! Terri *

Meeting News

Beginner's Lecture: Messier Objects

By Bob Gent

This month's Beginner's Lecture will be presented by Bob Gent. He will discuss observing Messier Objects. This is just in time for the Messier Marathon which will be held this month. (See article elsewhere in this Issue) *

Clyde Tombaugh: A Remembrance

This month we will have a special lecture. David Levy will talk about Clyde Tombaugh in a lecture titled "Clyde Tombaugh: A Remembrance". David became friends with Clyde Tombaugh, the discoverer of Pluto, while interviewing him for his biography. Clyde spent his early years on a farm and as a young man observed with his homemade telescopes. Like his uncle, Clyde was an amateur astronomer. His life changed when he accepted a job at Lowell Observatory and later found our ninth planet. David Levy spent a few years interviewing Clyde and doing research in preparation for writing Clyde's biography and will share some remembrances with us.

David Levy is best known as the co-discoverer of Comet Shoemaker-Levy 9 which impacted Jupiter in 1994 producing the most dramatic events ever seen on another world. David's first comet discovery came after searching for 917 hours spread out over 19 years. On November 14, 1984 Comet Levy-Rudenko, 1984t was discovered from David's observatory near Tucson. He has since made 21 comet discoveries (counting all-visual, photographic, indendent, team). This ties him in third place for the largest number of comet finds in history.

With Henry Holt, David also co-discovered Asteroid 5261 Eureka, the first Martian Trojan asteroid in June 1990. David's education melds English literature and astronomy. His thesis title was "The Starlight Night: Hopkins and Astronomy". He received his M.A. in 1979 from Queen's University and an honorary doctorate in 1994. David has received numerous awards including the Leslie C. Peltier Award from the Astronomical League in 1988, the Walter H. Haas Award from the Association of Lunar and Planetary Observers in 1990 and the Amateur Achievement Award from the Astronomical Society of the Pacific in 1993.

David currently is senior instructional specialist at the University of Arizona, Adjunct Scientist at the Flandrau Planetarium and an observer with the Palomar Asteroid and Comet Survey. He currently writes "Star Trails" in Sky & Telescope and "Nightfall" in Astronomy Canada. He has written documentary scripts and a planetarium show. He has authored several books including "Clyde Tombaugh: Disoverer of Planet Pluto" published by the University of Arizona Press. Future publications are "The Sky: A Teacher's Guide", with Larry and Nancy Lebofsky, and "More Things in Heaven and Earth: Exploring the Sky in English Poetry". And...David was TAAA president from 1980 to 1983! *

Club News

The TAAA Land and Telescope Fund

By Terri Lappin

This article is an explanation of the TAAA Land and Telescope Fund. At the insistence of some members, the TAAA board of directors wanted an article written about the fund. As an executive/board member for the entire life of this fund and as the treasurer for the first four years of its existence, I am writing this article to tell of its history and current status. If there are questions regarding this fund, please discuss your concerns with any board member. I have done my best to get the facts straight and I apologize for any opinions I express in this article.

The TAAA Land and Telescope Fund is money that has been acquired by the TAAA for our eventual observing site and 30" telescope. This fund began in June 1986. With proceeds from the Halley Celestial Safari we started the fund with $312.50. At the time it was the TAAA Land Fund. The TAAA had just obtained the 30" telescope blank from Steward Observatory and we began our search for land for this 30" telescope. No clear fund raising plan was ever developed making it difficult to raise the kind of money needed for the purchase of land. We researched other land acquisition options, such as leasing, but land purchase remained the main goal. In the years since 1986 we have bid on at least two pieces of land. Had we won either bid we would have been in debt for years. There are some who think we should lease land, other say we should buy land. This discussion never ends.....

In 1988 some activity was occurring with the land effort, but there was much more progress being made with the 30" telescope blank. There came a time to spend money on the mirror. It was decided that the Land Fund would become the Land and Telescope Fund and $180 was spent on the telescope. A diagonal mirror and other materials for the telescope were purchased. The mirror was polished and nearly finished. All activity on the mirror stopped when it came time to build the mirror cell. It was decided by the executive committee at the time that we needed to save money for a land deal that was in the works. This land, like others since, fell through and no progress has been made on land or telescope since. To my knowledge the only money spent from the Land and Telescope Fund was the $180 back in 1988.

The Land and Telescope Fund now has $ 31,331.51 (as of 1/31/97). Where did all this money come from? Well, one thing you can say about no progress is that little gets spent! A good portion of the funds came from straight out donations from members and others in support of our land and telescope project. We had two separate efforts to purchase particular pieces of land. Both these efforts raised about $4000 each. Other sources of income are the convention group star parties we hold. For a number of years a portion of dues went towards the Land and Telescope Fund. This ended around 1988/89 and instead all interest earned by our savings account started going towards the Land and Telescope Fund. This is still a standing rule of the TAAA and we continue it today. We also have a monthly automatic donation program in which about 10 members participate. Each month an amount is automatically transferred from the member's bank account into one of our bank accounts. This adds $140 each month to the Land and Telescope Fund. Earned interest adds another $50 or so each month.

Where is the money? The TAAA originally had a checking account at a local bank. (Actually when I first joined the TAAA our checking account was in the treasurer's name!) A year after the Land Fund was started we opened a savings account which earned us some interest. This savings account had money from both the Land and Telescope Fund and the General Fund in it. With good records it was known how much money was General Fund and how much was Land and Telescope Fund. Not all treasurers are good record keepers. At some point the clarity between General Funds and Land and Telescope Funds became a little hazy. To add confusion to this, when we began our automatic donation program we were required to open a different (I call it the "automatic") checking account. Recently we have been able to verify what the Land and Telescope Fund balance is and this has cleared the haziness. The balance above is the balance as of last month's Treasurer's Report. The Land and Telescope Fund still remains spread out among two accounts, with one account containing some general funds.

Where to now? Most land we have looked at is in the $30,000 price range. At our current level we just barely have enough to purchase a piece of land. There would be nothing left for making improvements, much less building a telescope or observatory. Comments regarding our lack of progress really bother me. It is only recently that we have had enough money to buy land. We could have been making progress on the telescope all along, but the telescope was always given second priority. Since we haven't found land that satisfies us (notice I didn't say the perfect piece of land) I don't think we will be buying land in the next year. For that reason I think it is safe to spend a small portion on the telescope.

The future? It has been mentioned that we create a trust account with a board of trustees who would be in charge of the Land and Telescope Fund. I don't know if this is a good idea or not. I don't know if there are unknown legal issues. I suppose it would remove control of the Land and Telescope Fund from the board of directors, which changes from year to year. I have always thought that the Land and Telescope Project was too dependent on the current thinking of the board members. It would also create another level of bureaucracy in an organization that's already overburdened by rules. The Land and Telescope Fund is a lot of money and money has a way of causing tension among friends.

I hope this article has been beneficial to all members. The Land and Telescope Fund is an ongoing effort to raise money for a very large project. If you want to help out, think about signing up for the Automatic Donation Program. It's a simple, painless way to make a donation to the project.*

New Empire Ranch Observing Site !

As some of you may have noticed recently, our traditional observing location at Empire Ranch has been roped off with signs indicating that it is closed to vehicles. It is all part of Empire's new "tread lightly" policy. As a result of overuse of that particular area, we have been asked to move elsewhere.

Larry Wilson and I scouted the situation on Sunday 16 February. We met "Doc" the volunteer caretaker at the ranch headquarters about 3 miles in from route 83. He escorted us to an old landing strip that they are encouraging us to use. The good part is that if anything, it is certainly more isolated from lights from route 83 and the Sonoita valley (we finally lose the '83 headlights!). The bad part is that it is nearly 4 miles from the highway - an additional 5 miles or so to the round trip. It is a good road, though and there are other benefits as well. The airstrip is about a mile past the headquarters and in case of emergency we are very close to help or a telephone. Doc (a very friendly vet formerly from Wyoming) supplied his phone number which we will supply along with the new maps to the site.

I know how we all resist change, but in this case we have been guests of Empire for many years and we have little choice but to go along with their requests. The minor inconvenience of a few miles of driving may be more than offset by fewer lights visible and some assistance should a long night's observing end in a dead car battery. Note the new map in this newsletter and check it out next time you go out to observe. Report back to us and let us know what you think! -Dean 293-2855 *

TAAA's Bob Goff Needs You !

Help! Help! I'm behind on all my contracts and urgently need to hire someone who can work 30 to 40 hours per week, preferably 9:00 to 6:00 M-F, but slight variations to that are negotiable (for example, some Saturday or Sunday work might be acceptable). The work is fabricating optics in my lab.

You need to have the following:

* You must have successfully fabricated a 6" or larger telescope optic in the past
* An excellent work ethic

Among other things the job requires doing the following:

* Mastering the basic principles of grinding, maintaining sphericity, and controlling the curvature of the workpiece
* Mastering how to maintain grinding and polishing tools
* Mastering how to channel a polishing lap
* Understanding the following test procedures and mastering the proper use of the following test equipment: Foucault Device, Spherometer, Fizeau Interferometer, Newton's Interferometer, and others as they are incorporated into the work environment. My long-term goal is to have you become a well-trained optician capable of turning out optical systems of excellent quality without my supervision.

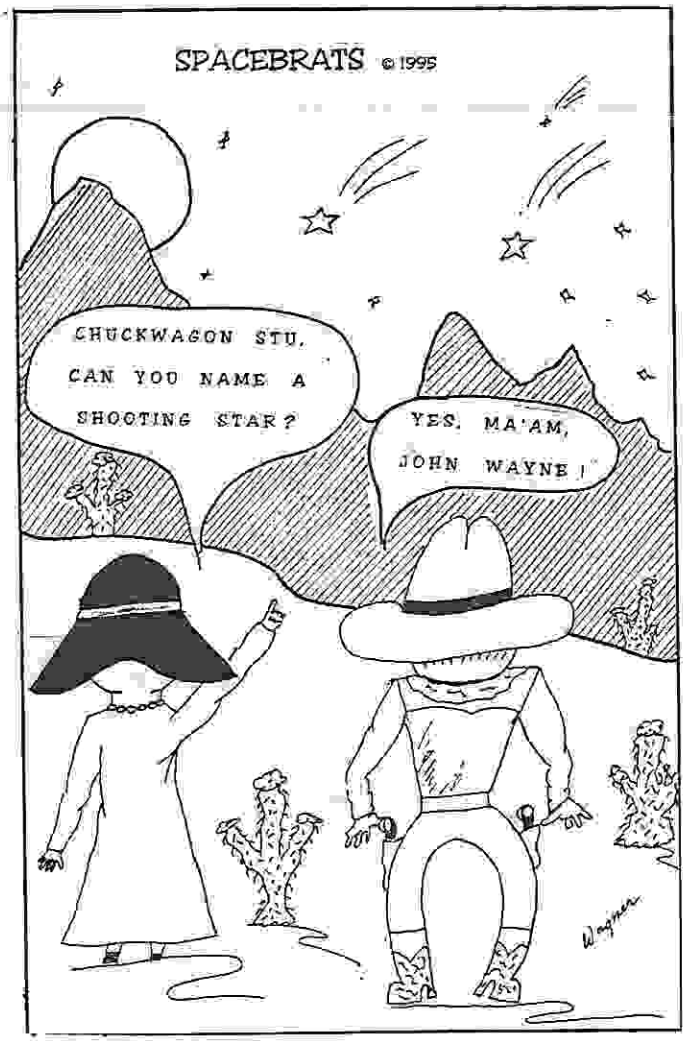
If you know anyone who might be interested, please have them call or e-mail me asap: Bob Goff 882-8972 goffaxe@azstarnet.com *

Project ASTRO Update

BY GINNY BEAL, COORDINATOR, PROJECT ASTRO

Applications for the 1997-1998 Project ASTRO workshop are ready for distribution. The workshop will be held Friday and Saturday, September 19th and 20th. Please spread the word about this great program to teachers you know and consider sharing your knowledge of astronomy with teachers and students as a Project ASTRO Partner. We encourage amateur astronomers to apply and we hope to attract community educators as well as classroom teachers. A degree in Astronomy is not required. Please contact me with questions or requests for applications: 520-318-8535 or email: gbeal@noao.edu.

Project ASTRO partners and their families will head out to the Arizona Sonora Desert Museum for a star party Friday, March 14. Sonya Norman of the Education Department of the Museum has graciously offered classroom space for a pot luck and slide presentation before sky-viewing begins. Sonya extended a special invitation to all TAAA members because they have been so helpful to her over the years. I second the invitation and hope we will see lots of TAAA members out on the museum grounds with their telescopes. We will meet at the Education Building at 6 PM for a pot luck dinner. There will be plenty of food so if you can't bring a dish, come anyway. Dean Ketelsen will give a talk and slide show on comets before we more out into the parking lot for viewing. Please plan to be there for all of part of the evening. Additional information about the Star Party will be available at the March TAAA meeting. *



Star Parties & Events

Messier Marathon
March 8

The 1997 Messier Marathon is upon us again. The Saguaro Astronomy Club of Phoenix is sponsoring it and a good time is anticipated. For details, see article under "Special Event Details" on page 10. *

Empire Ranch
March 8

!!! NEW LOCATION !!!

TAAA has had to change our Empire Ranch dark sky observing site. The BLM closed the old site because it was getting too trampled. The new site is 3.9 miles from highway 83, had a nice ramada and plenty of parking space. See you at this new site!

See map in this issue. *

Public Memorial Service for Carl Sagan
March 10

There will be a public memorial service for Carl Sagan at the West Campus of Pima Community College. For details, see article under "Special Event Details" on page 10.

Collier Elementary School
March 11

We need 7 or 8 scopes for this school star party. The school is located at 3900 North Bear Canyon Rd. Call Karen Allen for details at 749-5744. *

Project ASTRO/Desert Museum Star Party
March 14

This star party is open to any TAAA member. Both teachers and astronomers who have participated in Project ASTRO will be there, but all TAAA members have been invited. Dean Ketelsen will be giving a slide show before the observing begins. A potluck dinner will also take place. (If you work late and can't bring a potluck item, its okay-there will be plenty of food.) Details and a map will be at the meeting or you can call Terri Lappin at 579-0185. There's also a rumor that the Desert Museum will open let us in free one hour before closing for a quick look-see of the place. Be sure to get on the sign up sheet for this star party! *

Reynolds Elementary School
March 18

This star party is for the entire school, so lots of telescopes will be needed. If you are free on this night, please sign up to bring a telescope. The school is located at 7450 E. Stella Road. *

Eclipse/Comet Star Party
March 23

A star party for the undergraduate astronomy students at the U of A will be held on March 23rd. There will be a lunar eclipse this night and the comet will be visible. Location is TBA. Time will be near sunset. There will be a sign up sheet at the meeting. Call Karen Allen for location and other details. *

Jewish Community Center
March 26

A star party for 1st graders will be held at the Jewish Community Center on March 26. Set up time is 6:30pm with observing starting at 7pm. This star party was arranged by Ed Olszewski and Jill Bechtold, both astronomers at Steward Observatory and both recent TAAA speakers. The students invited are from Sunrise Elementary and the Jewish Community Center after school care center. The JCC is located at Dodge and River Roads. Three or four telescopes will be needed. *

La Paloma Star Party
March 28

Two years ago we held a star party for a group of tandem bicycle riders at Colossal Cave that they enjoyed so much that they want to do it again. This year will be a smaller crowd, up to 80 people, and it will be at La Paloma on Skyline east of Campbell. The exact location at the hotel has not been decided and will likely be a last minute decision. I will call those who sign up the night before to let you know where to set up. We will collect a contribution to our land and telescope fund, so you can help out the club while meeting some nice folks. Dean Ketelsen 293-2855. *

9th International IDA Meeting
March 28-29

All IDA members and any interested persons are invited to attend. Informal sessions are planned for the 28th at Hotel Park, Tucson, followed by a no host dinner at the China Rose Restaurant, 5101 E Speedway. For additional information and registration details for the 29, contact Dr. David L. Crawford email: crawford@darksky.org. For details, see article under "Special Events Details" on page 11. *

Old Tucson Public Star Party
March 29

The TAAA will hold a public star party at Old Tucson on March 29th. We hope to have this star party advertised in the media and expect a crowd of Tucsonans to show up. We need as many telescopes as possible. This is the first local public star party we have done in a very long time. Comet Hale-Bopp will be nicely placed in the northwest sky, not too far from the Andromeda Galaxy. Many other objects will be in the sky for public viewing including Mars. This star party will start at 7pm. Please arrive with telescopes by 6:30pm so that telescopes are ready in time. The event will end by 9pm. We will be setting up in the most southern end of the parking lot. Bob Gent has agreed to serve as the media contact person for this event. Dean Ketelsen will have a recording with information at 621-8764. If you can help with crowd control or parking, please contact Terri at 579-0185. *

Star Party for Immanuel Presbyterian Church
March 15

This star Party will be held at 11341 Calle Vaqueros at 7pm. Two or three telescopes are needed. This is the home of a former TAAA member and is located near Catalina Highway and Prince Road. Call Terri at 579-0185 for directions.

Marana High School
April 2

This is part of Project ASTRO partnership. We expect about 200 visitors and need 8 or 9 scopes. For more information call Karen Allen at 749-5744. *

Desert Museum Star Party
April 5

7pm - 9 pm. The Desert Museum contacted me about doing a star party for an overnight group they were having at one of their remote sites a few months ago. I made plans for 5 April, forgetting I had promised to be out of town that weekend! They will have about 25 people so need at least a couple telescopes to show them some sky objects. The site is a few miles to the west of the Desert Museum. - I have maps for those who sign up. Since you are to the west of town, you will get some excellent views of Hale-Bopp which will be at its height of visibility in the west after sunset. Mars will also highlight the show, being very near opposition. Let me know if you can help out on the far west side.
-Dean 293-2855 *

Grand Canyon Star Party
June 7 - 14

The requests for info to this event continue to trickle in as people make there summer plans. Hopefully those of you who are thinking of attending have blocked off part of the week and made some plans. As I mentioned in last month's note, time is growing extremely short should you require a motel room there. By March you typically have to search around to find a place.

The camping supply, however, has yet to be dented. The National Park Service has offered us 20 campsites to distribute to attendees, and I will start taking names for them starting on March 1st. Please note that because of the difficulty of controlling access to these sites to people staying only a couple days, that for the first 6 weeks I am taking reservations from folks attending the entire week of 7-14 June. I will open the rest to those attending parts of the week starting 15 April. Call me on the first if you are in it for the long haul!

I am hoping to take a day or two off during the week to drive over and check out the North Rim version this year. As a result, I am looking for assistance in running the South Rim. Mostly I see this as mostly setting up AV equipment, answering questions from public and astronomers, controlling the keys to the observing field, easy stuff like that. If you are available to help out, let me know. Likewise, if you have ever thought about giving a twilight talk there, get organized and let me know. You might think about rehearsing it by giving a beginner's lecture at one of our next meetings. Think about it! Give me a call if you have any questions. -Dean 293-2855 *

Dark Skies for March

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

Fr/Sa	28/ 1	19:43 - 0:12	Mo/Tu	10/11	20:39 - 5:18	Fr/Sa	21/22	- - -
Sa/Su	1/ 2	19:43 - 1:09	Tu/We	11/12	21:44 - 5:17	Sa/Su	22/23	- - -
			We/Th	12/13	22:47 - 5:16			
Su/Mo	2/ 3	19:44 - 2:07	Th/Fr	13/14	23:46 - 5:14	Su/Mo	23/24	LUNAR ECLIPSE
Mo/Tu	3/ 4	19:45 - 3:03	Fr/Sa	14/15	0:43 - 5:13	Mo/Tu	24/25	- - -
Tu/We	4/ 5	19:46 - 3:57	Sa/Su	15/16	1:35 - 5:12	Tu/We	25/26	20:02 - 20:15
We/Th	5/ 6	19:46 - 4:48				We/Th	26/27	20:02 - 21:11
Th/Fr	6/ 7	19:47 - 5:23	Su/Mo	16/17	2:23 - 5:10	Th/Fr	27/28	20:03 - 22:07
Fr/Sa	7/ 8	19:48 - 5:22	Mo/Tu	17/18	3:07 - 5:09	Fr/Sa	28/29	20:04 - 23:04
Sa/Su	8/ 9	19:49 - 5:21	Tu/We	18/19	3:47 - 5:08	Sa/Su	29/30	20:05 - 0:01
			We/Th	19/20	4:25 - 5:06			
Su/Mo	9/10	19:49 - 5:19	Th/Fr	20/21	5:00 - 5:05	Su/Mo	30/31	20:06 - 0:56

Weekend Sa/Su	Sun Set	Sun Rise	Mercury Rise	Vi	Mars Rise	Vi	Jupiter Rise	Vi	Saturn Set	Vi	COMET HALE-BOPP Rise	Vi
1/ 2	18:20	6:48	6:36	-	19:47	-1	5:13	1	20:15	3	3:28	0
8/ 9	18:25	6:40	Set	-	19:09	-1	4:50	0	19:51	4	3:23	0
15/16	18:30	6:31	18:48	-	18:29	-1	4:28	-1	19:27	7	Set	0
22/23	18:35	6:22	19:27	6	Set	-1	4:05	-1	19:04	-	21:21	0
29/30	18:40	6:13	20:00	3	5:44	-1	3:41	-1	18:41	-	22:07	0

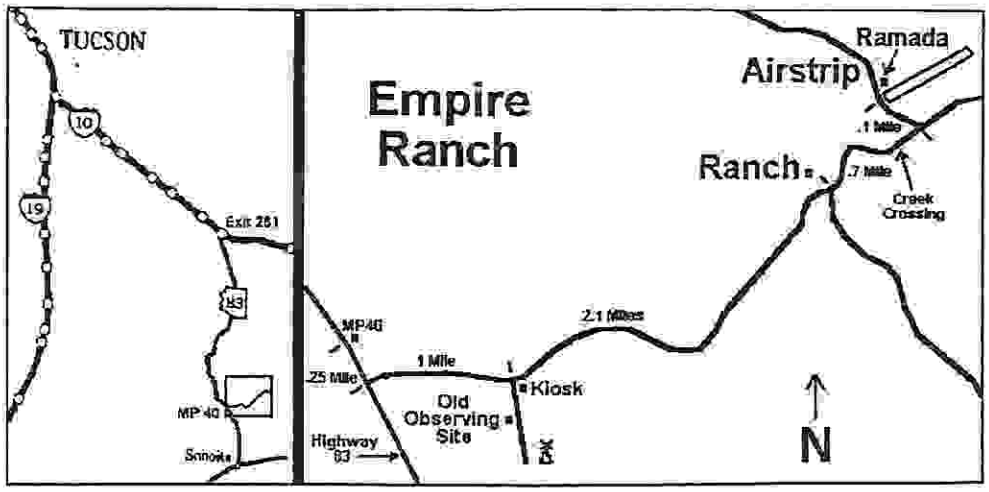
Vi=Visibility
-3 brilliant
0 conspicuous
3 moderate
6 naked eye limit
9 binoculars limit

By Erich Karkoschka

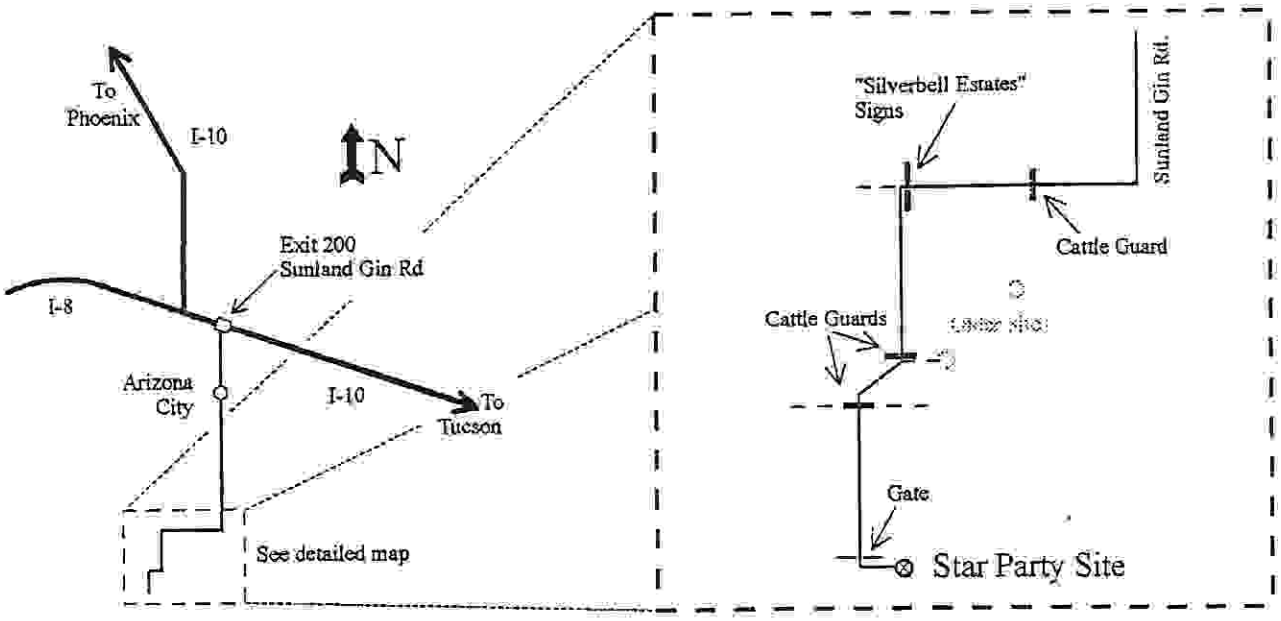
On 15/16, Hale-Bopp sets at 20:34 and rises at 3:31

Maps

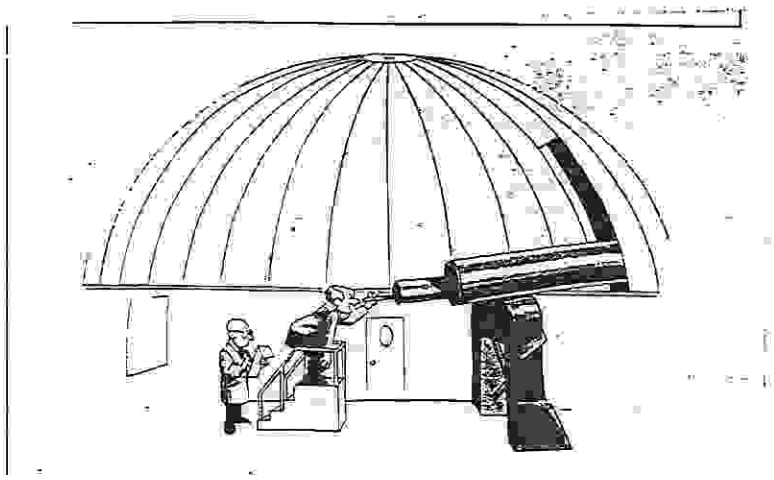
Empire Ranch - New Location



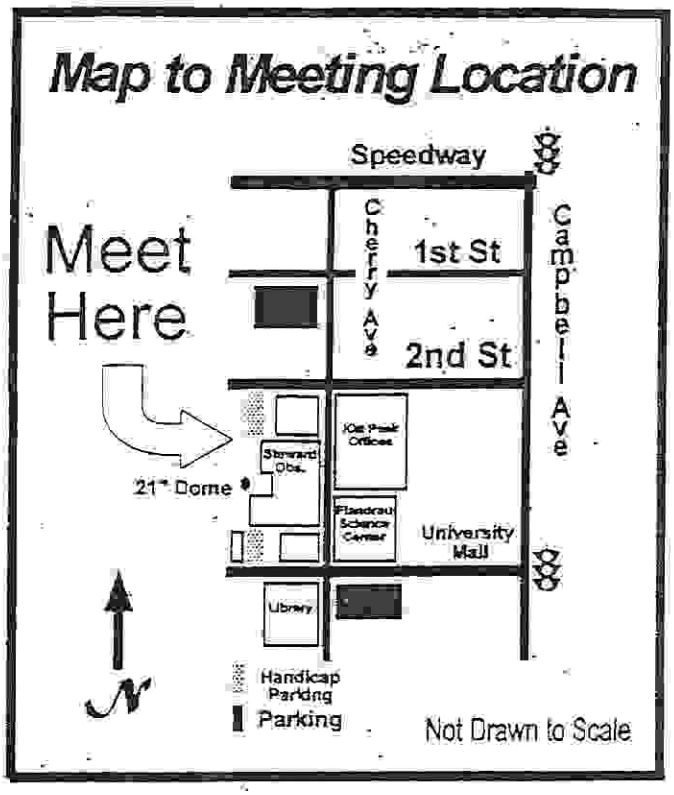
Messier Marathon Site

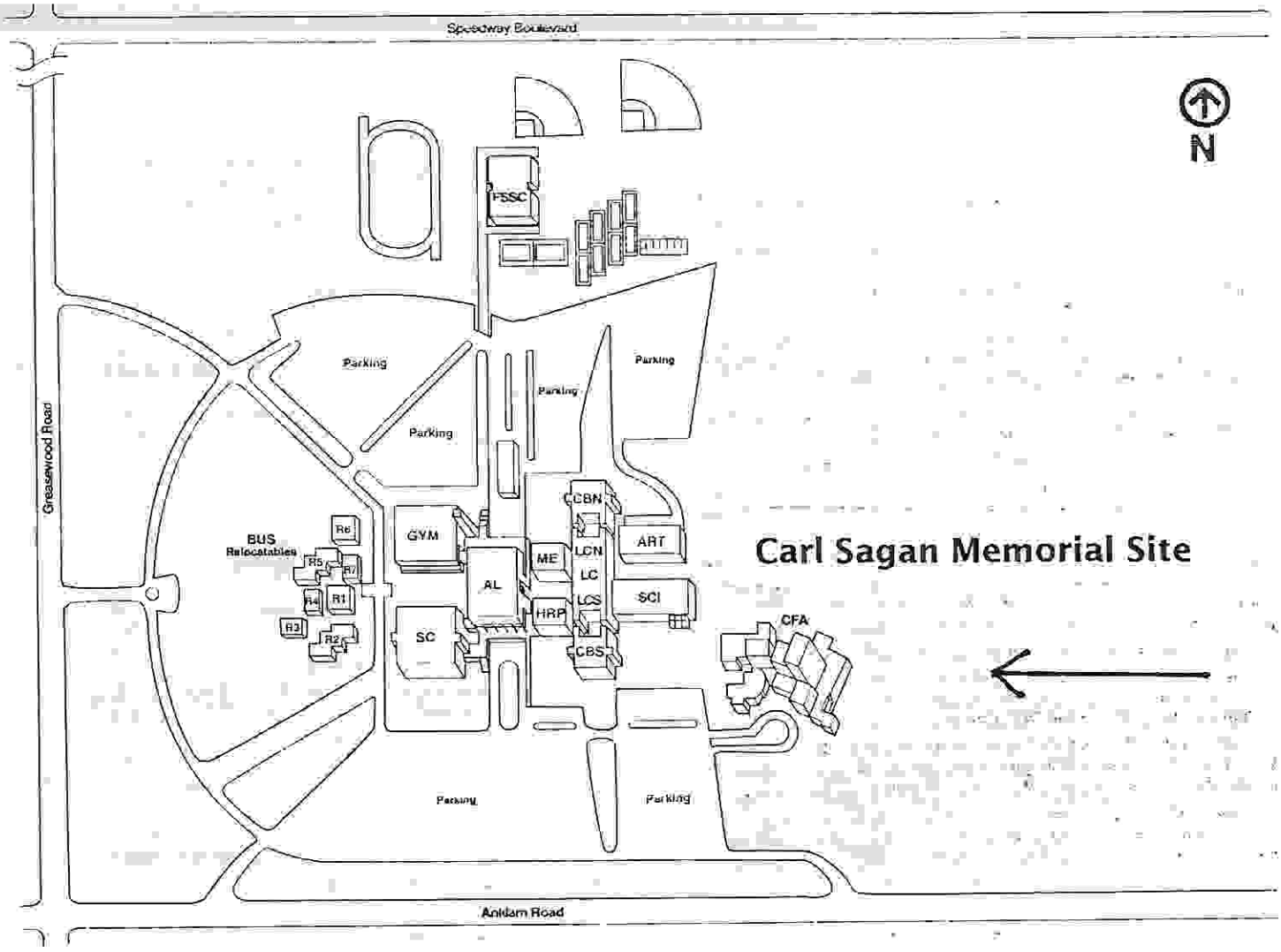


Take I-10 to exit 200 (Sunland Gin Road.) Turn south after exiting the freeway. After about 15 miles, the pavement ends and about one mile further, the road turns sharply to the west. After another four miles, the main road will turn south just after the "Silverbell Estates" signs. Three miles past the signs, the road will veer off to the west, and five miles further, the road will pass through a gate. Turn left immediately after the gate and continue for a 1/4 mile to the site.



The Wildcats just kicked a field goal!





Special Event Details

1997 Arizona Messier Marathon
March 8, 1997
BY A. J. CRAYON

Webster defines a marathon as a long distance race. Well the Messier Marathon is long all right; not in distance but in time. It is a one night observing session intended to view as much of the Messier Catalog as permitted by the evening, your observing skills and stamina!

The Saguaro Astronomy Club, of Phoenix Arizona, is pleased to sponsor the Fifth Annual Messier Marathon, coordinated by AJ Crayon, SAC Deep Sky Chairman and David Fredericksen. This is the largest observing session, as far as people and telescope counts, in Arizona and may well be the largest Messier Marathon!

The date is Saturday, March 8, 1997 at a dark sky site south of Arizona city, AZ. The road from Arizona City to the site is dusty; but at the site it is pretty well packed. As far as weather is concerned there have been times when it was cloudy in Phoenix but clear at the site. You must guide yourself accordingly. See map for details.

If you are going to attend I suggest arriving at the sight at the latest. Observing times for the marathon are from sunset to sunrise. Solar times for the event are as follows:

Saturday, March 8
- 6:29pm - moon set, new moon
- 6:30pm - sunset
- 7:52pm - evening twilight

Sunday, March 9
- 5:25am - morning twilight
- 6:45am - sunrise
- 7:11am - moonrise

Evening objects that are hard to find will be M74 and M77. Amongst morning objects that will be difficult to get are M2, M72, and M73. Impossible will be M30 for it will not rise until well after morning twilight.

Awards - plaques suitable for mounting on a telescope - will be given for first, second and third highest totals. Certificates will be awarded to all bagging 50 or more! In order to qualify you need to get a check off list from one of the coordinators and fill it out. Since the price of the plaques can be significant for an otherwise free event we will depend on your club to pay for the awards won by its members.

For comfort there will be a port-a-potty for those who prefer its comfort rather than the open desert.

Finally, for those who aren't interested in the marathon; come anyway! From counts of past years about half of the attendees do the marathon, the others observe, photograph or just relax and enjoy the night sky! *

Public Memorial Service for Carl Sagan
March 10
By Gary Mechler

A public memorial service for Dr. Carl Sagan will be held at 7:00 p.m. Monday, March 10 at the Proscenium Theater of the Center for the Arts at the West Campus of Pima Community College.

America has lost one of its leading public intellectuals. The death of Astronomer Carl Sagan in December at age 62 has been mourned by millions who did not know him personally, but have greatly appreciated his efforts to educate the public in science.

The memorial service will feature several astronomers who knew Sagan personally, including, hopefully, Louis Friedman, with whom Sagan founded The Planetary Society, the largest public space exploration advocacy organization. Friedman is the society's executive director. The program will be enriched by Sagan's favorite music and the music of COSMOS, readings of selections of his writing, and space art by nationally known artists. The program is intended to be participative; following the eulogies, the program will be opened to the audience for any who wish to say briefly what ideas from Sagan they most valued learning or how they believe his passing to be a loss to the nation. They may also ask questions of the speakers about Sagan, his work, how his death may impact the future of planetary exploration and the development of space and so on. The program, including the audience remarks, will be recorded for possible airing on television in whole or in part. Also, a video copy will be sent to his family.

The three confirmed speakers are Drs. Carolyn Porco and Christopher Chyba of the University of Arizona, Planetary Sciences, and Dr. William Hartmann of the Planetary Sciences Institute. Hartmann, also an artist, will contribute some artwork to grace the area.

A reception will be held following the program outside or at the neighboring Recital Hall.

The Proscenium Theater is attractive and intimate, distinctive for its unique "Starscape" stage curtain, black with small lights embedded giving an appealing night-sky effect. Its maker based it on a map of the sky in the direction of the galactic center. The Proscenium is a most appropriate location to honor the man who did so much to share the cosmos with the public.

DIRECTIONS: The West Campus of Pima College is west of I-10 and east of Greasewood Road on Anklam Road. Coming from the east on 5th Street, which turns into St. Mary's Road, you will find it changes to Anklam Road just past St. Mary's hospital. The West Campus is on the North side of Anklam. The Center for the Arts is the first group of buildings you see. They are clearly marked with a large sign saying "Center for the Arts." Parking is free, abundant and located adjacent to the Center for the Arts.

MORE: Perhaps the best known scientist of our day, propelled to fame by his COSMOS PBS television series in 1979 and best-selling book of the same name, Carl Sagan has since the 1960s given the public a welcomed introduction

to the universe as revealed by physicists and astronomers. Articulate, even eloquent, he was the author of many popular books, including THE DRAGONS OF EDEN (1977), a book questioning what makes us human by focusing on the evolution of the human brain. That book won him the Pulitzer Prize, one of many awards and honors bestowed upon him.

Beyond his research and educational efforts in astronomy, he always put his subject in the perspective of science what science is and how vitally important science and science understanding are to both the individual and society generally. He wrote and spoke of frequently on pseudo science and the ill effects of such beliefs and habits of mind. His last book, THE DEMON-HAUNTED WORLD (1996), focused on this.

Returning to research after the huge effort of producing the COSMOS series and writing the book, he nevertheless continued in his public education efforts with many public talks to large audiences across the country. (He has spoken on several occasions in Tucson.) He wrote several more books, some in collaboration with his wife Ann Druyen. He has also been a regular contributor of articles on astronomy and science understanding to PARADE Magazine.

Instructions for Donations

We need help in defraying expenses. Member-at-large Dr. John Polacheck has graciously offered to collect funds from members who may wish to donate a few dollars to the cause. Pima College is not charging for rental of the theater, but we will still need money to cover direct employee costs and other expenses incurred with putting on the program and promoting it.

There are three ways you may donate.
1) at the TAAA March general meeting,
2) mail check or cash to John Polacheck, P.O. Box 85699, Tucson, AZ 85754 (make out check to John Polacheck-Sagan memorial service) or,
3) at the service itself, where a donation box will be placed near the entrance. If you plan to donate at the service, would you please let John know how much, so the total amount contributed by our membership may be known? He may also be reached by phone at 743-1362 or by e-mail at jpolacheck@mem.po.com if you have any questions. *

Public Evening Series Lectures

Steward Observatory has been hosting public evening lectures in astronomy for more than 35 years. The remaining lectures for this semester will be held on Monday nights at 7:30 pm in room N210 of Steward Observatory.

Following talks, there will be opportunities for viewing the night sky (weather permitting) with the ;use of the 21-inch telescope at the Campus Station of the Observatory operated by undergraduate majors in astronomy and related sciences.

All of the lectures and the use of the telescopes are free of charge and open to the general public.

Date	Speaker	Topic
March 10	Dr. Richard Poss	Astronomy and Spirituality: European and Anaxazi Visions of the Sacred
March 24	Dr. Matthias Steinmetz	The Formation of Galaxies
April 14	Dr. Rainer Mauersberer	Submillimeter Astronomy with the Neinrich Hertz Telescope
April 28	Dr. Peter Stittmatter	Astronomy in Arizona

*

9th International Dark Sky Association (IDA) Meeting March 28 - 29, 1997

Interested in saving energy? Wish to preserve the beauty of the night sky? Like quality outdoor lighting? Concerned about protecting observatory environments?

Then plan to attend the 9th Annual International Dark Sky Association Meeting Saturday, March 28 - 29, 1997. All IDA members and any interested persons are invited to attend.

Meet amateur and professional astronomers, lighting engineers and designers, city authorities, and others concerned with saving energy, promoting quality lighting, protecting observatory environments and the beauty of the night sky. Explore IDA information materials, posters, pamphlets, photos, slides, and other resources. Tour some of the best and worst outdoor lighting Tucson has to offer. Presentations will include a round table workshop on fund-raising for non-profit organizations as a follow on the IDA's first funding-raising effort started in late November 1996.

We may still accept a few short papers on appropriate topics, so contact us if interested. Anyone wishing to demonstrate good lighting fixtures, displays of light pollution materials, etc., please let us know. Informal sessions are planned for the 28th, followed by a no host dinner at the China Rose Restaurant, 5101 E. Speedway, at 7 p.m. Tours of Tucson lighting will follow for those interested.

International Dark Sky Association 9th Annual Meeting
March 29, 1997
Registration at 8:30 a.m.
Meeting begins at 9 a.m.
Hotel Park, Tucson
5151 E. Grant Road, (between Swan and Craycroft)
Tucson, Arizona

If you are from out of the Tucson area, you can book rooms at the Park Tucson, 520-323-6262. Ask for an on-site-meeting or for an astronomy rate.

Fine print: Registration fee, $25, for all attendees, to help cover the meeting expenses. If you or your organization would like to sponsor a coffee break, contact us for details.

Please contact us for any additional information. Check Website for updates.

Dr. David L. Crawford - email: crawford@darksky.org
IDA
3545 N. Stewart Ave
Tucson, AZ 85716
IDA Web address: http://www.darksky.org *

What's New at Flandrau?

About Faces Opens at Flandrau Science Center

About Faces, a traveling science exhibition created by the Reuben H. Fleet Science Center in San Diego will open at Flandrau Science Center on Friday, February, 7. The exhibition consists of 15 components, most of which use the visitor's face to demonstrate the broad range of information communicated by the human face.

About Faces stresses the power of communication of our faces by showing how our facial features communicate identity and how our expressions convey emotion. This exhibition draws its content from findings in the fields of anthropology and psychology, and presents them with a good mix of ingenuity, modern technology and artistry.

The interactive exhibits including computers and participatory devices help visitors use their own faces to answer such questions as: "When does a visual pattern become a recognized as a face?" "Just how symmetrical is your face?" "What would you look like with Jane Fonda's lips and Frankenstein's eyes?" "Is it easier to mask an expression of anger or one of surprise?"

Pamphlets which help visitors understand and use the exhibit will be available in Spanish and English at no additional charge.

About Faces was funded in part by the National Science Foundation (NSF) and is part of the ongoing NSF National Science and Technology Week.

What: About Faces
When: February, 7 through April
Where: Flandrau Science Center, NE corner of University Blvd. and Cherry Ave.
Cost: Adults $3, children 13 and under $2, or free admission with a planetarium or laser light show ticket purchase.

Flandrau Web Links:
Flandrau Science Center has been on the Web for over a year. You can reach us at: http://www.seds.org/flandrau/

Flandrau has two links of interest to amateur astronomers. For basic regional (good for Phoenix and Tucson) sky information go to the Astronomy News and Skywatcher's Guide site at: http://www.seds.org/flandrau/cosmic.html

For Comet Hale-Bopp information (and links) go to: http://www.seds.org/flandrau/HB_view.html
Flandrau Astronomy News Line

Want to find out what's going on in the sky but don't want to call Sky and Telescope's astro line long distance? Try Flandrau's Astronomy News line at: 520/621-4310. *

Astronomical League's 50th Anniversary - July 1-5

BY BOB GENT, WRAL REPRESENTATIVE

The Astronomical League's 50th Anniversary Convention (ALCON '97) will be held July 1-5, 1997, at Copper Mountain Resort in the magnificent Colorado Rocky Mountains. Everyone is invited to attend the gala festivities.

This will be a new moon weekend, and for your viewing pleasure, we'll have a 40-inch scope set up for your viewing at a nearby dark skies site. Several star parties are planned throughout the convention. In addition, the University of Denver Astronomy Department has invited us to view through the new telescopes at the highest operational observatory in the world. This facility is located on top of Mount Evans, Colorado at 14,260 feet elevation.

There is a fantastic line-up of guest speakers including Don Parker, the noted CCD specialist. Leif Robinson, Editor of Sky and Telescope, will be our banquet speaker. As usual, we'll exchange news with many other astronomical organizations. There is already a long list of great speakers and workshops on our schedule.

The Astronomical Society of the Pacific will give a complimentary presentation of "Project ASTRO" to anyone who would like to attend. This program is designed to help us better promote astronomy education at schools. I recently attended Project ASTRO for Tucson, and I can certify that this is an absolutely fantastic program.

Dozens of astronomical vendors will be there, usually selling their goodies at bargain prices. For those who would like other activities, the Resort also runs optional field trips into the Rocky Mountains for serious hiking, nature walks, jeep tours, horseback riding, and many other activities.

If you'd like more info, please contact me at RLGent@aol.com. This is going to be an exciting convention. I hope to see many of you there. *

Starry Nights Festival - October 24-25

BY BOB GENT

The first Annual Western Region of the Astronomical League (WRAL) star party and convention will be held in Yucca Valley, California on October 24-25, 1997. The Town of Yucca Valley is very enthusiastic and is providing outstanding support for this event, named the Starry Nights Festival. Please mark your calendars!

The festival will be held at Yucca Valley's spacious community services center, and there will be astronomical workshops, noted speakers, and a variety of astronomical vendors. David Levy, noted astronomical author and discoverer of many comets, will be one of our key guest speakers. In addition, Richard Berry, former Editor in Chief of Astronomy magazine, has agreed to speak. We anticipate a fantastic line-up of workshops and programs.

For dark-sky observing, we'll have exclusive access to a campground in Joshua Tree National Park which is only five miles from the community center.

Within the next few weeks, we plan to release additional information on motels, agenda, and registration instructions.

The registration fee will be $25.00 per person plus $10.00 for additional family members. For additional information please contact me at RLGent@aol.com.

Although this will be a Western Region AL event, everyone is invited. Thanks to all the volunteer Western Region Astronomical League officers and the communities services staff in Yucca Valley for making this event possible. Hope to see you there! *

Observing Reports

Check out Comet Hale-Bopp Now!

BY DEAN KETELSEN

I am hoping all of you have made the effort to get up in the morning and check out this year's "comet of the century". It is truly a spectacular sight from a dark sky and an impressive one even from your back yard in Tucson. What really astounded me about the Hyakutake show a year ago was that few people made the effort to observe it from a dark sky. True, they had an ok view of a spectacular comet from town, but to see the 80 degree tail they needed a dark sky - it makes all the difference.

It was eleven years ago this month that Comet Halley moved out of the morning twilight and it looked impressive with a reasonable tail. But I was definitely not a morning person and only looked at it a couple times from town - after all, it was supposed to be much better NEXT month. Why go to the effort of looking when it will be better later? Well, you may remember the story - the tail very nearly disappeared, and it was a mere shadow of its former self when it was supposed to be brightest. Don't let this happen to you - get out and look now while it is still performing well! Unfortunately you will have a moon to contend with for a little while, but it is displaying significant structure near the nucleus that you can check out, even if you can't see what is currently a 10 degree tail without the moon. Current magnitude estimates put it at magnitude 1.1 - you no longer need a map to find it - find NE Cygnus and there you are. Good observing and be sure to show your photos at the meeting or make your reports to the newsletter editors. See you at Geology Vista! *

March Observations

By Gil Esquerdo

For those of you who haven't gone out to take a look at Hale-Bopp yet... DO IT! The comet is rapidly improving, and as of this writing (mid-February), is about magnitude 1.5. A recent increase in activity has been noted, resulting in the comet being brighter than the best fit on the past data. Regardless, it is still 1 to 1.5 magnitudes fainter than predictions. Current estimates from around the world place the comet at about 0 to -1 magnitude at perihelion.

Perihelion, of course , is at the end of the month, and as this date gets closer, the comet will begin moving faster in the sky. H-B will travel from the morning sky, across the northern portion of the sky, making its way to be an evening object. With a comet this bright, it is rather pointless to provide a viewing chart as it is essentially brighter than anything else in the sky (the moon and Sun being notable exceptions!).

However, Hale-Bopp is not the only activity going on in March. Mars reaches opposition on the 17th. While only attaining a diameter of 14.2" at maximum, this is still a good opposition to get out an look. The relatively high altitude of the planet provides a clear, steady atmosphere for observations. Additionally in four months, Mars Pathfinder will arrive for a landing on the surface, and in six months, Mars Global Surveyor will begin global mapping and imaging of the red planet. Ground based observations are encouraged by both of these teams for reference to observed conditions at the planet.

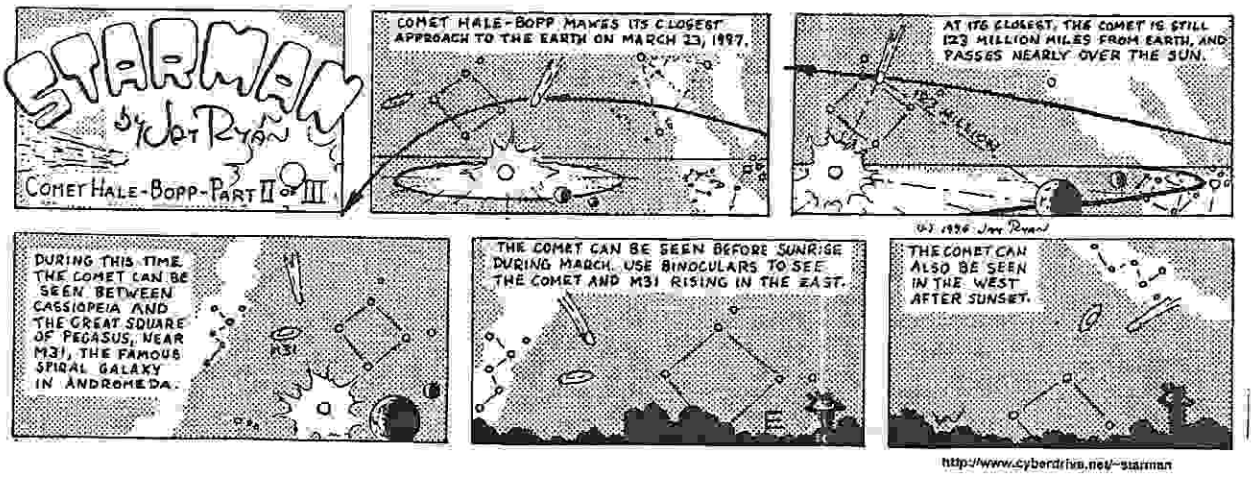
On the 9th, the moon will eclipse the Sun, but unfortunately, this will only be observable from the cold of Siberia and Mongolia. On the 14th, the moon will occult Aldebaran in the Hyades, and on the 23rd, a lunar eclipse will grace our skies. Get out an enjoy because the next lunar eclipse visible from these parts won't take place until January 2000.

Finally, something new for some observers is the potential occultation of an 8.9 magnitude star by the asteroid 377 Campania. While the currently predicated path does not directly cross over Tucson, if any satellites of this asteroid exist (similar to the companion of Ida, Dactyl), it could be seen from here. Campania is predicted to cover the star SAO 138801 within a few minutes of 8:19 U.T. on the 21st. Late updates can be had from the IOTA info line at 301-474-4945. Even if you don't see an event, here is a chance to easily spot an asteroid (which will be 13th magnitude) which few have done.

Anyone who is planning on observing this event should attempt to time the immersion and emersion of the asteroid using a tape recorder and WWV time signals. By indicating when the star is occulted and when it re-emerges, an accurate profile of the shape of the asteroid can be made.

Clear Skies to all, Gil Esquerdo *

Starman



STAR BABIES

March is a splendid time to observe "galactic" or "open" star clusters along the Milky Way. As we peer into the night sky at this time of year, the Milky Way spans diagonally across the heavens. What we are seeing is the spiral arms of our galaxy. These spiral arms contain many youthful stars, some exceedingly luminous as compared to our Sun. Some of the nearer galactic star clusters, those within 2000 light years of us belong to the "Orion Arm" or "Local Arm". This is the arm of the galaxy that we live within. Other star clusters are more remote or out on the next spiral band of our galaxy the "Perseus Arm" at distances of 5000 to 9000 light years.

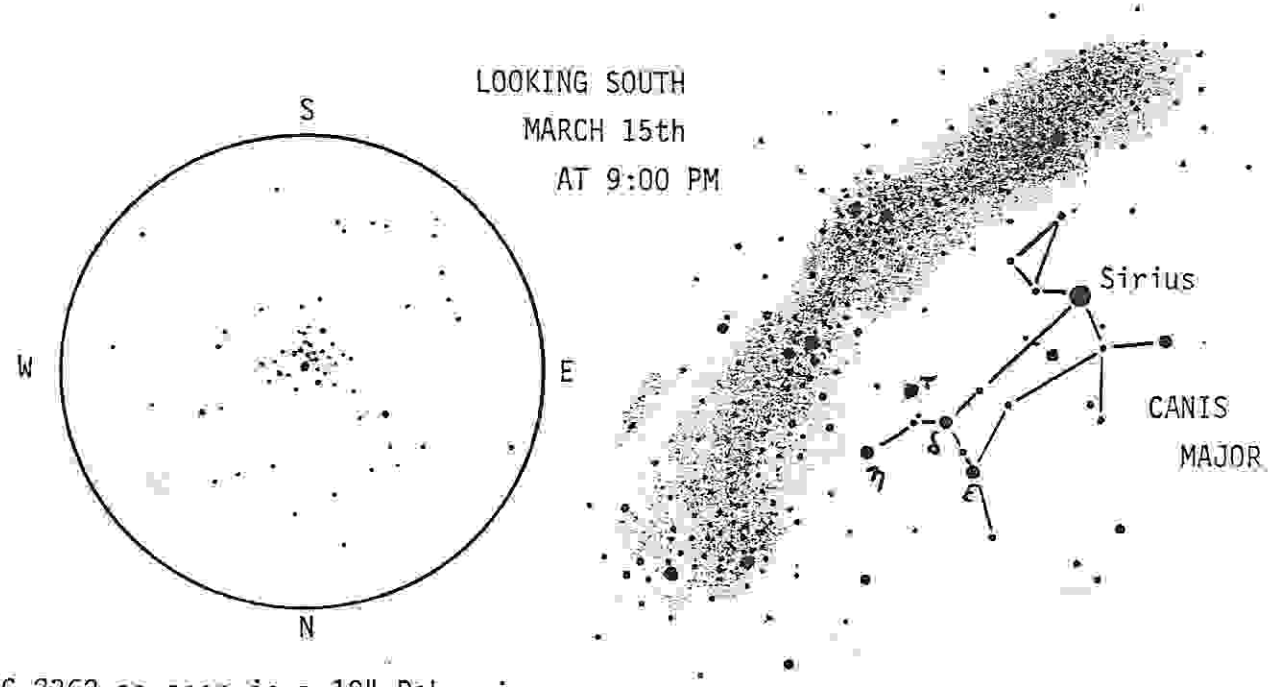
NGC 2362 is a galactic star cluster above the tail of Canis Major the Greater Dog. It is a fine example of a very young star formation. It's estimated to be only about 1 million years old. Mere infants on the galactic time scale. In fact some of these stars are still forming. NGC 2362 surrounds the 4th magnitude supergiant Tau (τ) Canis Majoris the brightest cluster member. τ Canis Majoris is a very energetic star having a luminosity of about 50,000 suns which is almost equal to Rigel in Orion. τ Canis Majoris has a spectrum of 09 Ib and it's searingly hot with a temperature of about 50,000°F. It is also a very massive spectroscopic binary system with a mass of 40 to 50 suns.

The star cluster contains about 50 stars, most of these are giant stars. In a 10" telescope these stars shine like pure white diamonds against the inky black background of deep space. The cluster is quite small in apparent diameter being only 7', so you can use higher powers to bring out the dimmer members. Distance estimates vary greatly but it appears that NGC 2362 is about 5000 light years from Earth. That being the case then the true diameter of this cluster would be about 10 light years across, making this cluster small and compact. It's interesting to note that no natal nebulosity is seen around these young stars like some of the other star forming regions of the galaxy. Take for example the Orion and Rosette Nebulae, these young clusters of stars are still wrapped within their gaseous nurse sites. But the very energetic and powerful stars of NGC 2362 have pushed or "blown away" their nebulous birth gases due to their intense ultraviolet stellar winds.

To find NGC 2362 locate Sirius in the southern skies, this is the brightest appearing star in the heavens. Now move 9° southward along the back of Canis Major until you get to the triangle of the three 2nd magnitude stars of Wesen, Delta (δ), Adhara, Epsilon (ε), and Aludra, Eta (η) Canis Majoris. Then extend a line from Adhara through Wesen and go beyond the same distance to τ Canis Majoris.

On a late Winter's night these luminous stellar infants offer a wonderful view in medium to larger telescopes. Just imagine the power these stars have to be seen so brightly across the vast distance of our galaxy's spiral arms.

JEFF BRYDGES



NGC 2362 as seen in a 10" Dobsonian telescope at 70x.

TAAA Board of Directors Meeting - February 13, 1997

TAAA Board Meeting Minutes for 13 February 1997
Members in attendance: Terri Lappin, Gary Rosenbaum, Bob Gent, Dean Ketelsen, Ingrid Saber, Bob Goff, John Kalas, Larry Wilson, John Polacheck.
Call to Order at 7pm
Agenda:
Events/Meetings:

Sagan Memorial March 10 7pm Pima College

Star Parties March 8 Empire Ranch / TIMPA?
March 11 Collier Elementary
March 14 Project ASTRO-Desert Museum
March 15 Church Group
March 18 Reynolds Elementary
March 23 Saguaro Park
March 26 Jewish Community Center
March 28 Westin La Paloma
March 29 Spring Star Party at Old Tucson

March Beginner's Lecture	Bob Gent - Messier Observing
March Main Lecture	Dave Levy - Clyde Tombaugh
April Main Lecture	Lyle Broadfoot

Nominating Committee: The committee members are Bob Goff, Bob Gent, and Jim Kessel. Several names were discussed as possible candidates for the upcoming elections. More candidates are needed and the committee will be contacting members individually during the next month.

Spring Star Party: Discussion of the logistics behind holding a successful star party at Old Tucson, including parking, advertising, having lights turned off, etc. Date is set for March 29.

Treasurer's Report: December January

Cash Assets	41,543.90	42,211.46
Fixed Assets	35,734.00	35,734.00
Total Assets	77,277.90	77,945.46
Income	1,409.79	1,359.32
Expenses	1,069.74	691.76
Net Income	340.05	667.56

Due to problems with prior records, the amount in the Land & Telescope fund is not exactly known; however, pending further investigation, it is estimated to be $31,127. Of this amount, it is estimated that approximately $5,000 is devoted solely to land. It is hoped that further sifting of the existing records will yield more precise numbers. We may need to contact major contributors to determine if any special conditions were imposed on donated monies.

MTCVB Membership: We are presently listed in the Metropolitan Tucson Convention and Visitors Bureau directory. This listing costs the club $150 a year, but results in our being contacted to put on star parties for other organizations. The fees we collect more than pay for the cost of the listing. Terri moved to renew our listing, seconded by L. Wilson, motion was approved.

Carl Sagan Memorial: Gary Mechler is planning a memorial service at Pima College at 7pm on March 10 and has asked the TAAA to share sponsorship. Pima is charging a fee for services associated with using the auditorium, with our share being around $50. It was decided to raise this amount through donations and $25 was pledged at the meeting. Since Dr. Sagan was once a student at the Lunar and Planetary Lab, we will be checking to see if LPL is doing a service and if they might be interested in co-sponsoring.

30" Telescope: The club's proposal to loan our 30" optics to Steward observatory for use in the 40" telescope tube on Mt Lemmon in return for observing time is progressing. Representatives from the TAAA and Steward will be meeting with the Observatory Director sometime in March (schedules permitting).

TIMPA Report: We have been negotiating with an organization that maintains a small park for model airplanes in Avra Valley for space to put the club 16" telescope. This would provide us with a relatively dark site while still being near town. TIMPA's board is asking $100/month in rent plus splitting the cost of running electricity. Negotiation will continue and other options remain to be explored.

Empire Ranch: It has been reported that our usual spot at Empire has been cordoned off due to overuse by the public. A ranger suggested we move to an abandoned airstrip about 1.5 miles further down the main dirt road. An expedition is planned to check out alternative spots in the area.

Old Business: Discussion on the proposed Teacher's Telescope Workshop was tabled due to the upcoming Hale-Bopp events making it difficult for members to provide the required time. The Workshop is now planned to happen near the end of the school year or even into the summer when everyone will presumably have more open schedules.

Meeting Adjourned at 9pm.

Desert Skies Classified

FOR SALE: Eyepiece; Celestron 12mm focal length, excellent condition; $35.

Solar prominance viewer suitable for Celestron C5, C8, etc.; has set of occulting discs for different sizes of solar image and hydrogen-alpha filter. Uses Herschel sedge to reduce excess light and heat; $275.

Maksutov telescope, 3 inch aperture, star diagonal and eyepiece. Good optics. Can be mounted on your camera tripod. Suitable for spotting scope, photoguide scope, finder, astronomical telescope, or telephoto lens (f/10). Light weight aluminum construction; takes standard 1 1/4 inch eyepieces. Approximately 800mm E.F.L., $195. 9 inches overall length with star diagonal in place.

Celestron 4" refractor; fluorite objective lens, star diagonal included. Heavy duty mounting. Excellent condition, $1,500. For more information or to see contact Duane Niehaus, at 797-4189. (03-97)

TRADE: Pro Optic 32mm Plossl eyepiece (1.25" dia) for any similar Plossl eyepiece in the 15mm to 22mm range. Call Frank at (520) 825-5540 or E-mail at fcathell@aol.com for details or questions. (04-97)

FOR SALE: Professional electronic flash, Honeywell 770, very powerful, a guide number for film speed of 25, F80, and flash duration down to 1/50,000 at 18 inches, automatic flash. $200. Call Gil Friedman at 571-1662. (05-97)

RIDE NEEDED: Gil Friedman is still in need of a ride to Empire Ranch and is willing to pay $10 toward gas and mileage. His car was totaled some time ago and he is missing out on some good and unique observing. Will someone out there call him and pick him up. He lives on the East side of Tucson, near 22nd and Wilmot (Behind Jim Click). Call him at 571-1662. (06-97)

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 Nancy or Nina at 579-1382 or email to ninalehman@aol.com or nlwagner@aol.com.