Starscan

Johnson Space Center Astronomical Society

JSCAS is an association of amateur astronomers dedicated to the study and enjoyment of astronomy. Membership is open to anyone wishing to learn about astronomy.

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THE TOTAL SOLAR ECLIPSE OVER ANTARCTICA NOVEMBER 23, 2003

Paul Maley

There was no way this time to organize our own expedition for this eclipse due to logistical limitations and costs; however, our first choice was to fly a chartered aircraft over Antarctica originating from Australia in order to see this eclipse. Before we could book more than seats for just me and Lynn Palmer, the rest of the eclipse window seats had been sold and so we could not advertise a group tour. We made the decision to fly over Antarctica for the November 23, 2003 total solar eclipse about one year earlier. It was one of two ways to see it—either fly through the path from Australia or from Chile, or take an icebreaker on a 4-week journey. From the cost standpoint, the ship was priced between US$18,000 and 35,000; by air the cost ranged from $2,500 to $11,000. We elected to fly business class given the potential length of the trip from Houston; this was a good decision from the standpoint of the noneclipse travel but not so good during the eclipse as we explain later.

The moon's shadow edge, clearly defined on the earth. Photo by Paul Maley

We flew from Houston to Los Angeles to Sydney, Australia arriving the day of the World Cup rugby final where hotels were packed to capacity.

Our windows are on the upper deck, 4th and 5th windows to the right of the exit door.

We had about 24 hours of recovery time before joining the Boeing 747-400 charter aircraft at Sydney airport for the longest ever domestic flight on record: 14.3 hours from Sydney to Antarctica and back to Sydney (no Antarctica landing was allowed). We met friends who had been with us on previous expeditions: John Duran, John Beattie, Friedhelm Dorst, Deryl Barr, and Michael Gill to name a few. Onboard were a total of 110 eclipse chasers plus 186 Antarctic sightseers and crew.

After a 4.5 hour layover in Melbourne the flight really began. Immediately a potentially unpleasant controversy erupted. In our upper deck row, we were informed that the organizers (Croydon Travel) sent out a note telling those passengers in the last 4 rows that all seats must be reclined during the eclipse. This was driven by the first row (#16) whose view was restricted; in order to improve the view for essentially one person, the organizers figured they should inconvenience those in seats behind; to do so would have been horrible since one would have to be a contortionist to fit body and gear up against the window and would have negated use of any tripods. I protested vigorously and after some time Croydon amicably solved the problem. There was only about an hour of real darkness and we had hoped to view an aurora or even noctilucent clouds; alas, this was not to be. My expectations in successfully photographing the eclipse with clarity were not high but we aimed to enjoy the experience no matter what the result. After all, we were going to see the one continent we had never seen before ----- Antarctica.

Sunrise from the Antarctic and the clouds we saw for hours and hours.

Location of my tripod up against the window and inside the storage compartment.

In each business class row, there were two windows, one window for each passenger. We performed a real-time simulation and realized that utilizing the windows would be a tight fit. They were not very wide and in fact, the economy class windows were actually better! How I wished I had not reversed my original reservation (a row of 3 economy class sets)! From the economy rows in the back of the aircraft the views toward the ground, where we hoped to view the approach and recession of the moon's shadow, were perfect. But from the upper deck, they were restricted not in the physical sense but in the actual width of the windows themselves. On the lower deck the business class windows were about the same but in first class the windows were a bit more accessible. We worked with what we had and still another problem was noted. A small side compartment was located between the window and each business class eat so that extra storage could be provided for each passenger in addition to overhead space. While this was an amenity for the average traveler it made placing a tripod up against the window ever so difficult. I abandoned the tripod idea and decided to place cameras on top of this compartment and use it as a shelf.

The plan was to fly over Antarctica and let all the passengers take photos; a snowstorm raged below and we only saw brief views (mostly just cloud) until about 10 minutes before time to set up for the eclipse intercept. The passengers who came to see Antarctica were a bit disappointed, but the aircraft rose back up to altitude of 35,000 feet and changed course. Tension built and directions were issued again for those on the non-eclipse side of the aircraft to stay away from the eclipse side. The regular

I am in position trying to get enough room to shoot out the narrow window.

Antarctic sightseeing prices were only a fraction of what the eclipse prices were on this flight. This directive seemed to work fine though many of us thought there would be interference from the other non-eclipse passengers jockeying for any type of view. One fear I had was that somebody would begin using a flash camera during totality.

Second contact approached as we neared the time of 7 hours and 40 minutes after takeoff from Melbourne. We had seen lots of cloud but at our elevation, we were above it all. The partial phase of the eclipse could be seen sporadically as the aircraft had to maneuver off and on. Second contact was predicted to be at 9:44am Australia time near latitude 70S and 93E.

I brought a Nikon D100, which I had only sporadically used before. It had auto and manual modes but in order to change exposure time and f/stop I needed a bit of light. I forgot to bring a red flashlight for use during the eclipse. I figured I could manually remember what to do and adjust things in real time. Big mistake. I also used two camcorders and set them in manual mode. One recorded Lynn and the sounds and commentary; the other was used to record the moon's shadow and to a small extent the sun and Venus and Mercury, the two planets visible to the right of the sun. Just before totality a flash went off behind me and I complained to Croydon personnel who immediately fixed the problem (I had hoped they would eject the offending passenger from the plane, but this was not fulfilled).

Looking toward the aft end of the Qantas Boeing 747 you can see the limb of the earth and the high altitude cloud silhouetted as totality is approaching. By Lynn Palmer.

There were voice announcements with the countdown to second contact. Oops, no contact! Then another countdown—again, no second contact. Finally about 16 seconds after the first warning the diamond ring was seen and totality really began. With the aircraft speeding along, totality extended from 1m55s to about 2m37s by my count between diamond rings. But wait, the view prior to 2nd contact is worth talking about. From the rear of the aircraft we could look down and see nothing but solid cloud. On the horizon a separate high level arc of cloud could be seen in silhouette faintly illuminated by the sun. As totality approached, the surface of the clouds directly between us and the sun developed pastel and tan overtones. This unique coloration was verified from our still photos. In the minute before second contact the shadow of the moon began to make itself seen. It literally walked across the landscape from left to right. As it moved, a gold glow was seen separating the distant horizon upper layer of cloud from the general horizon clouds in a manner similar to that seen by Shuttle astronauts in orbit.

Pastel and tan color, the clouds below the aircraft began to take on these beautiful hues just before 2nd contact. Notice the small crystals (white dots) that have formed on the aircraft window. Photos by Lynn Palmer as are most of the remainder in this report.

The moon's shadow on cloud was very distinct such that a real demarcation line existed. This is a sight we could never see before from the ground. About 10 minutes before second contact Venus could be sighted; then as the shadow passed under the sun, 2nd contact occurred in perfect symmetry with the demarcation line. The shadow during totality appeared as a fat "V" shape with the sun only 13 degrees or so above the horizon. Inside the airplane I could not see camera dials.

No way to adjust anything except by looking inside the viewfinder to see the lit up display and hoping the thumb wheel dials would make the appropriate adjustments. Focus was not easily accomplished and I am sad to say it was truly difficult to get a definitive focus with the D100.

How we looked after the successful eclipse.

The moon's shadow during mid totality. However, you can see the area on the clouds still sunlit off to the right. By Lynn Palmer, as of 11/30/03 on Sky and Telescope's web page

Outside, the sky was the darkest of any previous eclipse I had seen due to our altitude above most of the atmosphere. Mercury and Venus were both apparent and later Freddy told me he could spot Delta Scorpii as the dimmest star (I do not recall if this was in binoculars or in a camcorder). I could see the corona out to 3.5 solar radii but another observer who wore dark glasses in the half hour preceding totality spotted the corona out to 6 radii. The solar atmosphere was asymmetric to an extent that is reminiscent of both solar maximum and solar minimum conditions. It was generally circular with one spike in the 7:00 position and 3 others to the upper right. I did not see Bailey's Beads but really was focusing more on the shadow than anything else. I realized that through 2 panes of Plexiglas it was unlikely that I could get good photos. One prominence could also be seen in approximately the 7:00 position toward 3rd contact. If there was a comet near the sun, it could not be easily made out.

As usual the eclipse was over before it should have been. The second diamond ring jumped into view and the moon's shadow began to move ahead of the aircraft. I continued to watch it as long as I could—about 120 additional seconds had elapsed before I lost sight of it on the horizon. I did not spot shadow bands on the aircraft skin either before or after totality even though I looked hard for them. Small crystals formed on the outside of one of the window panes and they were apparently in some of our photos.

Friedhelm Dorst explaining how normal it is to carry a brick on an aircraft to stabilize a camera. It gets my vote.

Newspaper headlines extolled the results of the World Cup final but also expressed how we felt about the eclipse!

Unique iceberg.

Most all the people on the eclipse side were very experienced eclipse chasers, thus there was not the usual euphoria publicly exhibited by first-timers. Interviewing a few of them after the eclipse it seemed that everyone was quite satisfied by the overall experience. The person in front of me had a GPS receiver with an antenna attached to the window. He commented that his batteries failed just before totality. The person behind me had an equipment failure also during the eclipse. I failed to achieve a good time exposure since I had to remove the tripod to make enough room to access the window. I hand-held the camera for as long as 2 seconds and it was sloppy—never again to make such a real time decision. Always consider a plan and stick to it. I do not think there has ever been an eclipse that I did not learn something. Freddy brought his eclipse brick which he used in Tinian to support his camera and found it useful on the plane also.

After the eclipse the flight continued to view Antarctica and this time we were not disappointed. Icebergs were seen along and inside the coast and the aircraft made a number of circular runs so we all could get good views. It was quite beautiful and distinct from our experience over Greenland before the May 31 eclipse.

A successful eclipse is always worth it and this was no exception. Despite some minor shortcomings and even not getting the best photos, I had very realistic expectations that to achieve success you had to go with the best plan and this was it. It had worked and we saw it!

Although I organize all of RING OF FIRE EXPEDITIONS trips, it was not possible to coordinate this aircraft intercept. A great vote of thanks to Glenn Schneider who organized the intercept for us and the staff of Croydon Travel of Australia for pulling it all together.

This was not the end of the trip. Immediately thereafter we spent a couple of relaxing days in Sydney and watched as the world's largest cruise ship, the STAR PRINCESS left the harbor under a dazzling fireworks display.

The STAR PRINCESS, Venus and the crescent moon as seen over Sydney, Australia.

Fireworks illuminate the Sydney Opera House as the STAR PRINCESS makes it way into the bay.

Earlier in the day, Lynn scaled the 134 meter tall Sydney Harbor Bridge as part of a Bridge Climb program that offers the most spectacular adventure in Sydney.

View from the top of the Harbor Bridge.

Getting close to kangaroos at Bonarong Wildlife Park near Richmond, Tasmania

We jogged almost daily in the park between the Marriott Hotel and the Opera House, featuring bevies of flying foxes that hung from the trees during the day wrapped in their bat capes.

My Nikon D100 captured a flying fox zooming overhead.

We flew on to Tasmania to see what life was like on this island. We then flew to New Zealand and traveled to the active volcano known as White Island. Situated 1.5 hours by boat north of the north coast of North Island, this volcano is under private ownership but tours go when the weather is good. What a neat experience!

Getting close to the edge of the crater one has to be careful not to be overcome by fumes

Visiting the geothermal areas on North Island was also a priority; this one was near Rotorua. I tried jogging near Rotorua but the sulfur fumes from the surrounding area were so strong I could only run for a maximum of two minutes.

After 12 days we finished our travels and returned safely to Houston.

A geyser

The toxic lake inside the crater whose mouth is actually below sea level.

Deep Sky/Challenge Objects-December 2003

Chris Randall

★ **SSO**: Summary for the 15 December 03

Object	Constellation	Mag	% Ill	Rise Time	Transient	Set Time	Note
Sun	Ophiucus	-26.7	100	07:08	12:15	17:22	
Moon	Leo	Bright	56	23:44	05:29	12:09	
Mercury	Sagittarius	0.1	36	08:34	13:38	18:46	
Venus	Sagittarius	-4.0	87	09:21	14:27	19:37	
Mars	Pisces	-0.1	87	12:42	18:47	00:48	
Jupiter	Leo	-2.1	99	23:50	06:04	12:19	3 deg from the Moon
Saturn	Gemini	.4	100	18:38	01:34	08:29	
Uranus	Aquarius	5.9	100	11:18	16:51	22:28	
Neptune	Capricornus	8.0	100	10:18	15:38	21:03	
Pluto	Serpens	13.9	99	06:35	12:03	17:31	
Pallas	Cetus	9.0	96	15:01	20:11	01:17	Asteroid 2
Ceres	Gemini	7.3	99	19:22	02:33	09:43	Asteroid 1 passing 15' south of Pollux Dec 19
Amphotrote	Taurus	9.1	99	15:18	22:42	06:01	Asteroid 29
Irene	Tarus	9.7	99	16:59	23:56	06:49	Asteroid 14
Hebe	Canis Minor	9.0	98	20:21	02:39	08:57	Asteroid 6
Linear C/2002 T7	Triangulum	8.7	97	13:20	20:50	04:16	Comet

★ **BSO**:

Mel 20 – Open cluster on Perseus, magnitude 1.2, size 185

Kemble 1 – Open Cluster in Camelopardalis, magnitude 4, size 3°.
This is a 3 degree chain of stars centered on RA 03h 58m Dec +63° 06'.

Trumpler 2 – Open Cluster in Perseus, magnitude 5.9, size 20'.

Stock 23 – Open cluster in Camelopardalis, magnitude 6.2, size 15'.

★ **DSO**:

Sh2-155 (C-9) – Bright Nebula in Cepheus, magnitude ~7.7, size 14' x 11'.

NGC 1261 (C-87) – Globular Cluster in Horologium, magnitude 8.4, size 6.9'.

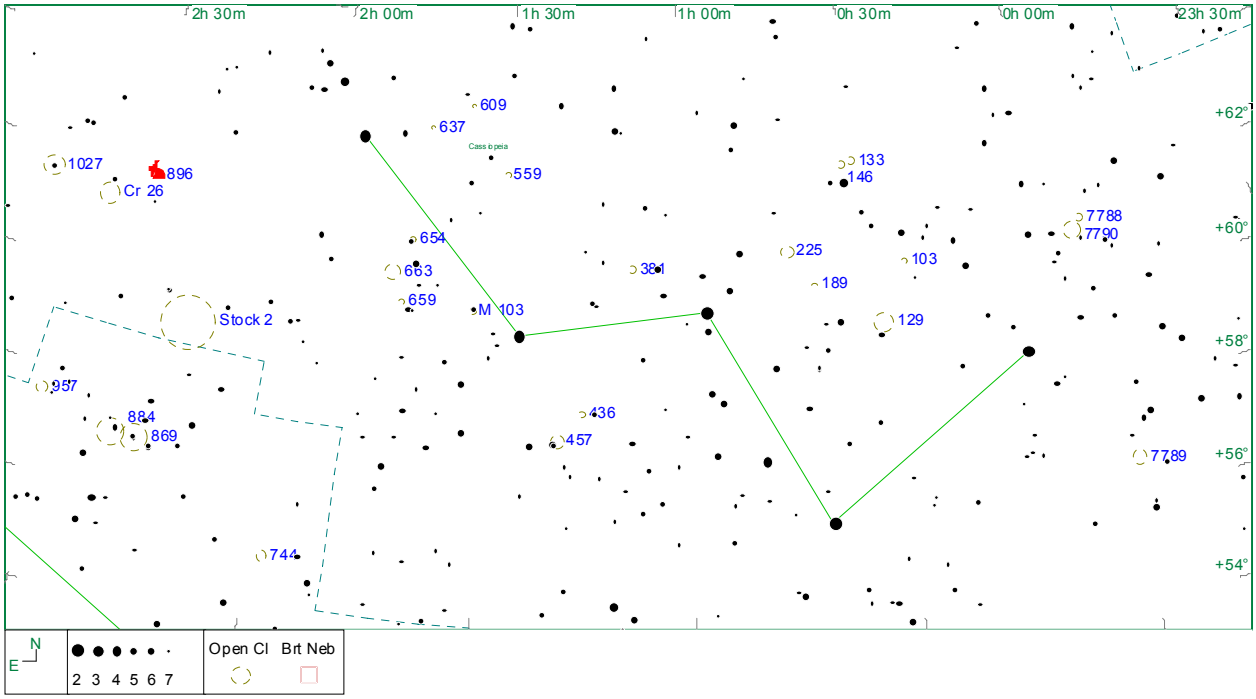
NGC 1097 (C-67, Arp 77) – Galaxy in Fornax, magnitude 9.2, size 12' x 9'.
Look for NGC 1097A in front.

Abel 426 – Globular Cluster in Perseus, magnitude 12 to 15, size 50 x 70'.
Very difficult but it is centered at RA 03h 00m Dec –41° 31'.

CDMP:

Cruising Cassiopeia in binoculars. - Just sit back in an easy chair with some binoculars and enjoy all the wonders Cassiopeia has to offer. I have included a chart with many

objects to see. See how many you can find. See if you can find ones not on the chart. There is really a lot in this constellation for binoculars.



New JSCAS Shirts

Triple Nickel

Anyone who has been in our fine club for more than a few months knows it is a long process ordering and getting JSCAS shirts. The shirts we currently get are great, and we owe a huge thanks to Eleta for all the work she has put into outfitting us in these fine garments. We also have had some hats in our inventory from time to time. These hats were the high-front-panel type and they displayed a JSCAS patch, sewn on the front. The golf shirts have cost us in the neighborhood of $27, and the t-shirts were in the $10-15 range for short sleeve shirts. All logos were silk screened on the shirts.

I was recently on one of my many trips to El Paso and was shown an embroidered shirt from the Sahara Sportswear Company with the flight patch of our NASA Shuttle Training Aircraft on it. The shirt was a Sahara golf shirt of high quality, and the logo/patch was embroidered on the shirt. The cost for this shirt was $15. I was so impressed, I asked where and how to get these. Long story short: I got a tour of the factory, met the managers, told our JSCAS story, and they are already producing not only shirts, but also jackets and hats for me. The shirts I am having made and will have at the December meeting are the same navy color pique golf shirts with the JSCAS logo embroidered on the front, and will cost around $15. The hats are navy color, low

profile, cloth/Velcro adjustable back strap, and have the JSCAS logo, minus words, embroidered on the front, and curved over the opening on the back is Johnson Space Center, Astronomical Society. The cost of the hats will be less than $10. I also bought a jacket with our logo embroidered on it for $35. The jacket is made of micro-fiber and is rain resistant, cotton lined inside with nylon-lined sleeves for easy on and off. They have soft cloth cuffs and bottoms. They are really nice. I priced the same type jacket for $70 from other suppliers.

The neatest part of this whole process is that they are not charging me (JSCAS) any art charges or work up charges. Furthermore, they have a minimum order number of "1", yes, you read that right, no work up charge and no minimum order. We can get our "gear" as it is ordered. I will personally cover all the shipping and handling thus further cutting our costs. Okay, are you ready for the best of the best? They have fleece pullovers; long sleeve, short sleeve, and no sleeve wind shirts; they have shirts of any color and many styles; and they have bags that they can put our logo on. Okay, one last best of all, they will give us each of their items at their lowest price, usually reserved for orders over 94 at a time, even if we order one at a time. Want more? Go to www.saharasportswear.com and see what they have. However, they are only offering these prices and no-charge handling service if you order through me, Triple Nickel. Sorry about that. I will take all your orders and handle all the shipping and handling. So yes, you can get the JSCAS logo on any color shirt, on any of their styles, on any color jacket…oh you get the point.

What does Eleta say about this? She said to me she was happy to have me take over the task of outfitting the club. There will be a "fashion show" of sorts at the December meeting. So, go ahead and go online to check out their line of products, but don't miss the touching and seeing the real things at the December meeting. Oh, don't forget to bring some food to the December meeting (Solstice Party).

JSCAS Logo

Triple Nickel

It is near impossible for me to start this letter. Why? I am a huge believer in tradition and the preservation of the same. I spent 25 years in the USAF and took great offense when a former fighter squadron of mine changed their patch just to make it modern. I'm not talking about improving the thread, I mean changing the look entirely. For this reason, you can understand how difficult it is for me to be the one to propose a change to the JSCAS logo. How can I do this? Here's how and why. First off, I am NOT proposing to change the logo, just to make it right. It will remain the same to almost all who see it. The current logo is supposed to represent a space shuttle backed by the Texas flag. The current logo is supposed to represent an astronomical society. I feel the current logo is missing a "Star" for both representations. The current logo is missing the star in the blue field that truly represents the Texas flag with its lone star. We are an astronomical society and we should have at least one star on our logo, don't you think? But why change this now? I have been in several conversations with many long time members, and the addition of the star is not a new idea. It appears the omission of the star came from a past member who has since passed on. There was no good reason for the omission; it was just not put in. We have recently lost one of our members, Dr. Dave Brown, during the crash of the space shuttle Columbia. Now Dave wouldn't want us to change things just for him, but I feel we could think of the addition of the missing star as a small tribute to not only Dave, but to the whole crew of Columbia. I have gone to the trouble of having a few

sample logos made up to show at the December JSCAS meeting. I think the logo has served us well, but the star fits, and it fits well. Your comments will be gladly received.

TSP 2004

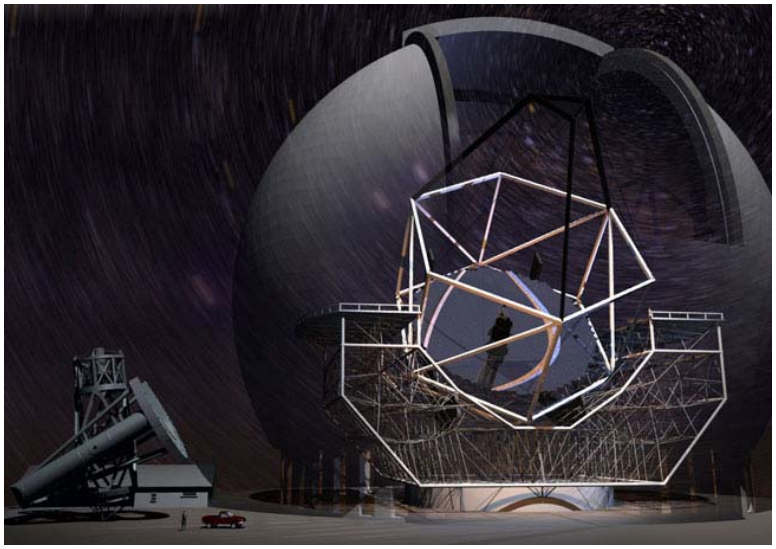
Len Casady

Waiting for that TSP registration flyer in the mail? Well, it won't be coming. What you should have gotten is an email. TSP 2004 Registration/Reservation will be handled online. Those that want to be in the JSCAS Bunkhouse need to email me at ice@houston.rr.com ***before*** you register online. If you're planning to go to TSP, but will not be staying in the luxurious accommodations of the bunkhouse, go to http://www.texasstarparty.org/draw.html to enter the drawing. Remember the deadline is January 19th!

For more info visit http://www.texasstarparty.org/

Size Matters for CalTech Telescope

For ground-based telescopes, bigger is always better and the Thirty-Meter Telescope (TMT) is no exception. Plans for the 30-meter (98-foot) telescope, which would three times bigger than the largest telescopes on Earth today, are moving forward thanks to $17.5 million from the Gordon and Betty Moore Foundation to fund a detailed design study for the project. The foundation awarded the funds to Pasadena, California's California Institute of Technology (CalTech), which is overseeing the project with the University of California.



Formerly known as the California Extremely Large Telescope, the TMT will be an optical and infrared instrument capable of observing some the earliest galaxies in the universe to determine how they formed and which processes resulted in planetary systems arose around stars.

In addition to its dominating size, the TMT's adaptive optics system will be 12 times more sensitive than the Hubble Space Telescope, a 2.4-meter (7.8-foot) instrument, and nine times the light-gathering ability of the twin 10-meter (32.8-foot) Keck telescopes, the largest in the world. The Keck instruments, which sit atop Hawaii's Mauna Kea, are also run by CalTech and the University of California.

Following the end of the TMT's design stage, project officials will seek funding for the instrument's construction, which could be completed by 2012. A final location for the telescope is still under study, with considered sites including areas of Chile, Hawaii or Mexico.

FOR SALE

The classic books on Amateur Telescope Making. These books are in Willmann-Bell's current catalog. All are as new so you can get great books and save a few bucks. The Texereau volume has my name on the flyleaf; the Mackintosh volumes are heavy paperback, others are hardback.

Amateur Telescope Making, Albert Ingalls, V.1
Amateur Telescope Making, Albert Ingalls, V.2
Amateur Telescope Making, Albert Ingalls, V.3
Advanced Telescope Making, Allan Mackintosh, V.1
Optics Advanced Telescope Making, Allan Mackintosh, V.2
Mechanical How to Make a Telescope, Jean Texereau, 2nd ed.
Star Testing Astronomical Telescopes, Harold Richard Suiter

Price includes postage in the US. First volume $18.50, second volume $17.50, third and subsequent volumes $16.50.
Don Carron
865 982 9814
toobwiz@bellsouth.net

Starscan Update

Effective with this issue, the Starscan will only be available in electronic format. Since JSC will no longer be printing our newsletter, and Randy Moore is retiring from the position of secretary, and the number of recipients receiving a mailed copy has steadily declined, the officers have decided that an electronic copy is the way to go. As you can tell by the size of this issue, the 7 page restriction we operated under in the past has been eliminated.

Beginning in January, I will once again become editor. I have some new and exciting ideas for the Starscan that I think you will like. The deadline for submitting articles will remain the 25th of the month. I hope you all will continue to support your club newsletter by submitting often. To submit an article, send it in text or Word format to lesteke@swbell.net with the word Starscan in the subject line (to get by my span filter).

Ken Lester

Johnson Space Center Astronomical Society

Agenda for November14, 2003

Center for Advanced Space Studies
Lunar and Planetary Institute

7:30 Meeting Start and Welcome

7:40 Presentation: Alexis Latner-Genesis and Stardust Mission Updates

8:30 Break

8:45 Calendar Review, Announcements, Awards and SIG Reports

- **Deep Sky, Challenge Object – Chris Randall**
- **Year's end social**

9:00 Door Prizes and Adjourn

Moody Gardens Star Party

Ken Lester

I want to thank those who came out to Moody this last Saturday for our star party. Despite the glare of a near full moon, we were able to see quite a lot. The crowd was very small this time. I clicked off 60 total people; most of those were multiple repeat customers. I'm not sure why the crowd count was so low. It may have been the festival of lights, the location, the cold or a combination of all three. Next year, we will not have a star party in December. We will have one in November instead. That way we shouldn't have to relocate for the Festival of Lights.

Despite the cold and low turnout it was nice to visit with good friends and have time to look for the dimmer objects.

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