

AD ASTRA

Vol. I, No. IX

The Newsletter of the Atlanta Astronomy Club

May 1987

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CLUB CALENDAR

Next Meeting: May 15

Program: Annual Show & Tell. Members are invited to bring results of their year-long astronomical pursuits for presentation and discussion.

AD ASTRA is published monthly during the academic year by the Atlanta Astronomy Club, Inc. The Atlanta Astronomy Club, an organization dedicated to the advancement of amateur astronomy, meets on the third Friday of each month (second Friday of December) at the Bradley Observatory on the Agnes Scott College campus at 8:00 PM. Membership dues are \$25 annually and include a subscription to *Sky & Telescope* magazine and use of club observatory facilities.

Editor in Chief:..... John Marsh
Contributing Editors:..... Dave Roberts, Don Barry
Rick Clark, Sharone Franklin
President:..... Dr. Joe Gibson
Vice Presidents:..... Dave Roberts, Rick Clark
Treasurer:..... Bud Rosser
Secretary:..... Sharone Franklin

CLUB MINUTES

The April 17 1987 meeting was held at the Bradley Observatory with Dr. Joe Gibson presiding.

Howard Landis, a long time member of the club, spoke about his work with variable stars. A former telescope maker and astrophotographer, Mr. Landis is an active member of the AAVSO and chairman of the photoelectric photometry committee. He described the equipment needed to observe variable stars (telescopes with motor drives and a photometer) and emphasized that amateurs can contribute much needed data to the professional astronomers who also work with variable stars.

'TIL WE MEET AGAIN

by Rick Clark

On April 3, 1987, there were rumors that comet 1982i had flared up in brightness and was "easily" visible. So being the gullible fools that we are, the observing crew consisting of John Marsh, Dave Roberts, Don Barry, and myself, waltzed down to the Fernbank Science Center.

While at Fernbank, Don computed the position of the comet and using a Palomar Sky Survey plate, its position in the heavens was plotted by myself.

The man who came up with the idea of a sky survey to record the sky for posterity was a genius. For those amateurs who are not familiar with the Palomar Sky Survey, it is a dual set of 6 x 6 degree photographic plates that have been exposed in red and blue light. The charts are negative, that is, black stars are shown with a white background, and objects are visible to 19th magnitude.

There are over 2000 charts, and each chart has an AAVSO clear overlay. The overlays have positions of prominent stars and a scale on the side to aid in plotting objects. Once the coordinates of an object are known, it is a simple matter of measuring with a rule to plot an object.

The charts are especially wonderful when one is lucky enough to be member of a club that owns a 20" telescope. It is so nice to look in an eyepiece and see everything visible on a chart. This makes tracking down dim objects a snap.

With information in hand, we scooted to Villa Rica. The weather could not have been better: a beautiful, clear, moonless night. Luckily for us, the comet was placed near some bright field stars in Hydra near the Sextans border.

Using the 24mm Wide Field eyepiece at 95x, the telescope was directed to the exact spot, and there it wasn't. It should have been there according to the good old IBM, and reports of an observer who saw it the night before, the comet was "bright". Maybe it had dimmed some. So the eyepiece was changed to the 13mm Nagler and at 175x, using every observing technique that I have learned in the last 16 years, there appeared a faint smudge.

When I say faint, I mean faint. We are talking deadly dim. Further study, however, revealed that the object had some condensation toward the center! But it did not look "sort of green". The estimated brightness was somewhere around 15.5.

Remembering back over this apparition of Halley, the high point was January 11, 1986, when a huge crowd of people came out to Villa Rica to observe The Comet. Among this crowd was an old man that had seen the comet in 1910. Now, 76 years later, the man's eyesight had faded to the point that he could not see it through a telescope of small aperture.

He could, however, see it through a 17.5 inch newtonian, which happens to be my instrument. The gentleman was overwhelmed to see it again after such a span of time, almost as overwhelmed as myself.

Thus endeth the Halley legacy of my lifetime, unless I can hang on until my 101st birthday.

A JOURNEY INTO HISTORY

by Leonard Abbey, FRAS

Anyone who has studied history in high school or college knows that a text book is a poor source of education. The images conjured up by even the most skillful of writers are at best fleeting. You are lucky to remember them until exam time. On the other hand, experience is a powerful teacher. An actual visit to the scene of a great event enables you to take home a memory which will live for years. The sites of many historical events have been preserved for our education and enjoyment. The scenes of other historical events, perhaps of less interest to the masses, have been forgotten and put to other uses. Finding these places, many of which may be of importance to you, even if not to the general population, can be a rewarding experience.

Your chronicler recently made a trip to Washington, D.C. A highlight of this trip was to be a visit to the original location of the Naval Observatory's 26" refractor, where Asaph Hall discovered the satellites of Mars in 1877. The 26" refractor was at the time the largest refractor in the world, and it was Alvan Clark's first really large instrument. It was this telescope that catapulted the Clarks to fame as builders of astronomical telescopes. Though the big refractor now enjoys a modern mounting on the outskirts of Washington, it was originally located in a building in town, "near the river and the Navy Yard", as one history book put it. That was our only clue.

Before departing for the nation's capital, a long-distance phone call was made to Bob Wright, President of the Astronomical League, and long a resident of the D.C. area. He said that he would be out of town while we were there, but would find out what he could about the old observatory. We arrived on a very rainy day. Bob Wright had left a message that the original Naval Observatory, now called "The Old Transit House", was part of the present Navy Bureau of Medicine and Surgery, near the Lincoln Memorial. Calling the Navy Bureau of Medicine and Surgery, we were told that no one there was really sure which telescope had actually been located on the grounds. Now a "Transit House" surely does not suggest a very large refractor, and besides, the Lincoln Memorial is nowhere near the Navy Yard. We decided to gamble on a visit to the Navy Yard. A quick call to the Pentagon -- if you have ever called the Pentagon, you know how funny that is -- resulted, after a number of transfers, in a conversation with the Navy's Public Information Office. He said that there were many old buildings in the Yard, but nobody was very familiar with their history. He recalled that there was an old employee there who had at one time made a study of the Yard's history, but he was now dead or retired; no one was sure which. At this point the explorer within us rebelled, and we decided to visit the Navy Yard in person to seek out the hallowed spot. After all, who was better qualified to recognize an ex-observatory? After a meandering, error-ridden journey through parts of Virginia, Maryland, and the District of Columbia, we finally located the Yard. A quick drive through revealed no observatory, but we did find the Navy Yard Museum. Picking our way through assorted cannon, anchors, and capstans, we found our way to the office of the Curator. Yes, he had heard of the old Naval Observatory. After rummaging through several old filing

cabinets, he announced that it was located at -- care to guess? -- the Bureau of Medicine and Surgery.

It was now 4:00 p.m., dangerously close to quitting time. The rain was heavier than ever, but a mad dash across town brought us to our goal in record time. Success was near! "Bu Med", as the Curator had called it, was located on the top of a modest hill. This was a good sign. When we had found the main building, we asked for the Public Information Office, and were ushered into the office of the Assistant Surgeon General, who doubled in this capacity. This, he told us, was indeed the site of the original Naval Observatory. The building next door had once housed the Great Refractor. Looking out his window, we saw our goal: a shining silver dome atop a rather large building.

The building is now used for office space. Even though the dome still sits regally above the roof, the observing room beneath it is now used as a reception room for several offices. No trace of the telescope's old pier remains. The wheels have been removed from the dome, and it is bolted in place. A number of large pictures about the room commemorate the telescope and that famous night ninety-five years ago.

But something was wrong. A twenty six inch, f-sixteen refractor would have a focal length of almost thirty five feet. This room was a scant twenty-five feet in diameter. As the twenty-six inch was not part of the observatory's original equipment, it was reasonable to assume that there had been another, smaller equatorial refractor which dated from its inception. (A later trip to the Smithsonian Institute revealed a 9.5-inch lens which had once belonged to the Naval Observatory. At f/16, this lens would have a focal length of 13 feet, fitting rather nicely into Bureau of Medicine's smallest dome.) Further investigation revealed a likely solution to the problem. Extending south from the small dome was a narrow room, about 100 feet long. This must have been the transit room -- hence the name "Old Transit House". The Washington Meridian, which was almost selected as the Prime Meridian, must have been defined by the instruments in this room. At the southern end of the transit room is a large circular room approximately 50 feet in diameter. This would in no way cramp the style of a 35-foot telescope tube. The room is at present topped by a conical roof, and it contains a large number of file cabinets; a necessarily inefficient use of a room specifically designed for another purpose. Conversation with the workers in this room revealed that they were totally unaware of its original use. There is no indication, by historical marker or photograph, that perhaps the most unusual objects in our solar system were discovered here.

Asaph Hall and Alvan Clark have been gone for many years, but to stand on this spot is to remember their achievement, and to somehow share in their great discovery. It is an experience to be recommended to everyone.

THE TIME I PINCH-HIT FOR ARCTURUS

by Bill Calder

On the shores of Lake Michigan in Chicago the Columbian Exposition was held in 1893. This was a world's fair on unprecedented scale. It came a little before my time, but my parents went on their honeymoon, and brought back a huge picture book which gave hours of delight to me as I lay on the parlor floor and poured over the wonders therein. Elaborate buildings were filled with displays of all sorts, and any native groups who came from all parts of the globe (including "Little Egypt" doing her famous, in those days, belly-dances). But what impressed me most was the world's largest telescope set up in the Hall of Science. This was later transferred to the new Yerkes Observatory of the University of Chicago. Still the largest refractor, for me it has greater charm than any of the huge reflectors.

In 1933, Chicago hosted another world's fair, "Century of Progress", featuring new technological development since the preceding exposition. It occurred to Dr. E.B. Frost, the blind director of Yerkes Observatory, that it would be a striking opening if the lights and power could be turned on by an impulse that had originated at the time of the preceding fair. Arcturus, that golden K beauty, was made to order, being 40 light years away. Catch a beam that started on its journey in 1893, make it trigger a relay in Chicago and create a spectacular opening of the whole shebang!

Because of the diabolical uncertainty of weather, four observatories were invited to participate: Yerkes, Harvard, Allegheny, and one other I can't remember. I was the photoelectric man at Harvard, having just finished a helluva year working day and night completing my Ph.D., and so got the assignment. The event took place on a Saturday night in June. Each observatory was given its cue to open the shutter by national radio hookup, the signals went to Chicago by Western Union, were displayed individually and then mixed to the final climax.

The next day was naturally, Sunday. As was our custom, my wife and I packed a picnic basket filled mostly with the *New York Times* and set out for an afternoon of biking along the Charles River. It was about 7 PM when we got back to our basement apartment, and lo, there was a telegram stuck in the door. The upshot was that the grand opening of the Century of Progress was an "overwhelming success" and needed to be repeated. There would be no radio broadcast, but would Harvard send its impulse at exactly 8:14 E.D.S.T.?

This was a predicament. The equipment was locked at the new observatory station at Harvard, Mass. some 26 miles away. There was no possibility of getting out there and opening the telescope in time. What should I do? I thought of asking Arcturus, but it would have taken 80 years to get an answer. I couldn't leave that effulgent orb in the lurch. I simply went down to the Western Union office at Harvard Square and explained the situation to the operator who informed the technicians in the Windy City. At exactly 8:14 (by Western Union clock naturally) I pressed the key. If I seem a bit odd, it is because after all these years it is not clear whether or not a crime was committed. It's driving me nuts!

NOTES TO MEMBERS AND OTHER AD ASTRA READERS

THE SUMMER HIATUS

This is the final issue for the 86-87 meeting year. Publication will resume in September, so please continue sending in articles. Because of the excellence of submitted material, we have graciously been given acclaim by many other clubs and organizations, but the density of our newsletter exhausts submitted material quickly. If you enjoy reading *Ad Astra*, think of the effort by the many contributing authors, and then consider becoming one. It will benefit all of us.

SERIAL CONVENTION

Lee Wilson writes, "Interesting things and good memories only happen to people who go out and take part in something. My first participation in a SERIAL convention was in the 1960's, and I would have never suspected that I would have a leading role in making one happen in 1987. I have tried to make the preparation as interesting as possible because I think that offers the best chance for the convention to be interesting.

"The regular registration fee will be accepted for applications postdated by June 1st. Beyond that date there will be an additional late registration fee. We will be accepting money at the May club meeting if you wish to pay then."

LIGHTS AT THE OBSERVATORY

If increased light pollution from Atlanta were not enough, a growing problem at the Walter Barber Memorial Observatory has been excess light from our own club members. We can do little in the short term to quench a bright skyline, but our personal lighting is much easier to control. A long exposure or tortuously acquired light adaptation can be ruined in a twinkling by the sweep of a bright beam. To reiterate past policy, unfiltered flashlights are unacceptable during group observing. Only those fitted with deep red (not pink, not green, nor yellow nor turquoise) are acceptable, and preferably should be fitted with a paper diffuser to eliminate the specular source. An arlight is not needed to find the way about the observatory. Dark adapted eyes are perfectly sufficient.

Flashlights aren't the only problem. Often, a car trunk lid or door is left open during instrument setup. Several people in the club have replaced their interior and trunk illumination with red-filtered bulbs or have disconnected them entirely. If this is impractical, then it is essential that the duration of light be kept to a minimum, and that a warning be issued beforehand.

And, of course, headlights are entirely verboten within the observatory grounds. All visitors must switch to parking lights or no lights before driving through the entrance gate. The design of the observatory ensures that everyone is swept with a spotlight beam when a car enters with beams on, and thus this behavior is inexcusable. A minimum of cooperation is needed to make group observation at our fine facility a pleasure for all.

CLASSIFIED

For Sale- Criterion 8" Reflector with German Equatorial mount, drive corrector, declination slow motion, 6x50 finder, 5 eyepieces (4mm-30mm), 2.5" guidescope, camera mount and adapter. Mark Young, 634-7046. Price negotiable.

SORE NECKS AND FLIPPED FIELDS

by Ken Guyton

Your neck and back are killing you! The humidity is too high and your glasses are beginning to fog. You are hanging onto the telescope tube, grasping it as if you were about to go limbo under it. It is all you can do to keep from falling and pulling the scope over on top of you. You strain your neck to get your eye under the eyepiece of the finder so you can look up through it and see the cross hairs and the star field. There they are! Then, as the blood flow to your brain slows, you try to recognize the pattern of stars that you had picked out on Tirion just a few moments ago. The people standing around you are getting impatient and your muscles are getting tired and starting to quiver. There it is! There is one of the stars. You try to maneuver the telescope while, at the same time, it is supporting your weight. You ever so gently jerk it half a field to the east, then lose your balance. Stars streak through the field as the tube slews 20 degrees to the west, then fade as finally your glasses are completely fogged.

"Why do you do this?" someone in the waiting group asks.

"Because it is fun," you answer. "It's the greatest thrill of my life."

Does this sound familiar? It is the plight of any astronomer that has ever tried to use a straight-through finder on a telescope. Unless the finder is mounted about six feet above the ground, there is nothing more painful or demanding in observing. With the telescope pointed in the approximate direction of your target, the finder is usually not quite low enough for you to sit, but too low for you to stand. So you have to sort of crouch, bend your head back and look up. This is the kind of position that will soon lead you to suggest "Hey, why don't we look at the moon again?"

Another problem with the finder is this: The nearer the target object is to the zenith (the point directly overhead) the more difficult the job of finding it. So frequently observers may settle for viewing objects when they are 45 degrees, or more, away from the zenith. But the farther an object is from the zenith, the poorer the seeing. The amount of air mass that you are looking through increases dramatically as the viewing direction leaves the zenith and approaches the horizon. So the straight-through finder dooms the astronomer to observing objects under inferior seeing conditions.

THE DIAGONAL SOLUTION

Well, astronomical man is not to be beaten so easily. Thus, the right-angle finder was invented.

The right-angle finder is simply a small telescope with a mirror or prism on the end so the eyepiece ends up at right angles to the finder. With this arrangement you don't have to bend your head back and look up. Instead you can look horizontally, or even down, into the eyepiece. But there is a problem. You suddenly notice that the star patterns no longer match those in your atlas. Everything is backwards.

This is bad news, especially for the star hopper.

Star hopping is the process where objects are found by moving the telescope from star pattern to star pattern, as they are recognized through the finder, beginning at a known object and ending at the object that is sought. It requires the observer

to be able to identify small star patterns in the finder, which is like inventing tiny constellations. If the field in the finder is flipped (with respect to the star charts being used) then recognizing these patterns is almost hopeless. Imagine what it would be like if you had to learn the constellations for the first time with flipped star charts.

Usually, the solution is to turn the atlas page over and shine a flashlight through it. This works, but it is quite inconvenient and really slows down the process of locating and observing deep sky objects.

FLIPPED FIELDS VS. INVERTED FIELDS

It may be useful to digress for a moment and look at the difference between flipped fields and inverted fields. Lay this page on a table in front of you. Now, if you turn the paper around so that the writing is still visible on top of the paper, but upside down, you have inverted the page. In fact you can turn the page to any angle from the original position and still see the writing. But notice that at no time is the text backward. You can always turn your head, or at least walk around the table, so you can read it. In optics this is called rotating the field. If the field is rotated 180 degrees then it is inverted. All telescopes, microscopes, and even film and slide projectors invert the image.

Now, if you flip the page over so the text is on the other side and if you could see through the paper, the text would look backwards. You have flipped the image and no amount of rotating will fix it. In optics there is only one way to flip an image, and that is with a mirror. Every time an image is reflected off of a mirror it is flipped. Usually we say it is *reversed*.

Notice that if you flip the page over, and then flip it again, it is back where you started from. In general, an even number of flips leaves the image as if it were not flipped (although it may be rotated). An odd number of flips leaves a reversed image.

In optics, an even number of reflections does not reverse an image. An odd number of reflections does. Almost all reflecting telescopes have two mirrors, a primary and secondary. The two reflections result in an image that is not reversed. When right-angle adapters are added to telescopes (including finders) they usually add a reflection that flips the field.

So to summarize, lenses only invert the image, they never flip it. This is why when you are loading slides in a slide projector you NEVER FLIP the slides over, you just turn them upside down. A reflection off of a mirror always flips the image. Reflecting the image off of several mirrors can also result in rotating the image.

THE SOLUTION

The problem, then, is our new diagonal mirror on the finder. The one reflection flips the field. There is only one way to correct this and that is to add another reflection somewhere.

There are many places where the second mirror could be added. For example, it could somehow be placed inside the diagonal. But a more convenient place to add the mirror is in

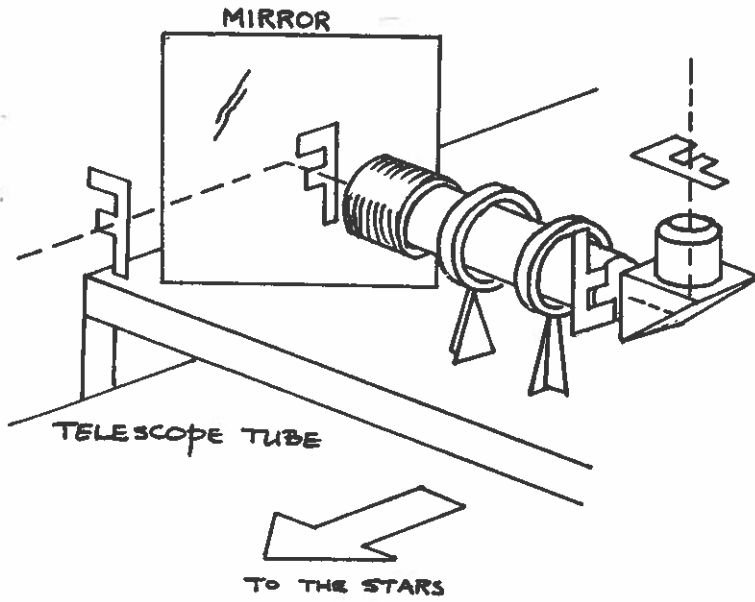


Diagram for Unflipping Finder

front of the finder, which does not require modifying the finder but only remounting it. The finder can be remounted so that it is pointed at a right angle to the telescope optical axis (see the figure). You can also take advantage of this design by mounting the finder solidly in this position and making the mirror adjustable for aiming the finder. The main things to keep in mind are to make sure the mirror is large enough so that it does not cut off (*vignette*) the finder image and that the mirror is a front surface, optical quality mirror (these can be obtained from Edmund Scientific).

A mounting alternative is to have the mirror fixed and to allow the finder to be adjustable as it normally is. This is the approach that I took, since the finder that I bought was already mounted in adjustment rings. It was easy to glue the mirror to a piece of wood and attach the whole assembly to the tube box of my 10 inch Dobsonian telescope. This does place the finder fairly close to the ground so now finding requires kneeling and looking down, but that is a *much* more comfortable position than crouching and looking up.

The only other thing you might want to add is some kind of dew cap for the new mirror, since it is sitting exposed on top of the telescope. A simple cardboard cover that does not obstruct the optical path should solve this problem.

Over the Christmas holidays, after finally gluing the mirror to the block and attaching it to the telescope (for the second time), I was anxious to try it out. We were going down to visit our parents for New Years so the telescope was loaded into the car. Then on Friday evening, 2/3 January, with the temperature below freezing and at 1:00 AM, I lugged the rocker box and telescope out into the yard. The finder and mirror assembly worked great! The only problem was that dew and frost were forming everywhere. After about two hours and only three Herschel objects, ice appeared on the eyepiece lenses for the third time while I was consulting an atlas, so I had to retire for the evening. But it was fun, the greatest thrill of my life!

A GUIDE TO EFFECTIVE SCIENTIFIC COMMUNICATION

from USENET, posted by Tom Reingold

Phrase	Translation
It has long been known	I haven't bothered to look up the reference
It is believed	I think
It is generally believed	A couple of guys think so too
It is not unreasonable to assume	If you believe this, you'll believe anything
Of great theoretical importance	I find it kind of interesting
Of great practical importance	I can get some mileage out of it
Typical results are shown	The best results are shown
3 samples were chosen for further study	The others didn't make sense, so we ignored them
The 4 hour sample was not studied	I dropped it on the floor
The 4 hour determination may not be significant	I dropped it on the floor, but scooped most of it up
The significance of these results is unclear	Look at the pretty artifact
It has not been possible to provide definitive answers	The experiment was negative, but at least I can publish the data somewhere
Correct within an order of magnitude	Wrong
It might be argued that	I have such a good answer for this objection that I shall now raise it
Much additional work will be required	This paper is not very good, but neither is that of anyone else
These investigations proved highly rewarding	My grant is going to be renewed

OBSERVER'S ALMANAC

Moon Rise, Set, and Phase(All in EDT)

Date	Rise	Set	Phase	Date	Rise	Set	Phase
05/15	23:31	08:03	96%	06/05	14:21	02:24	53%
05/16	---	09:07	90%	06/06	15:14	02:49	63%
05/17	00:33	10:18	82%	06/07	16:24	03:16	73%
05/18	01:24	11:32	72%	06/08	17:31	03:44	82%
05/19	02:06	12:43	61%	06/09	18:42	04:18	89%
05/20	02:41	13:52	50%	06/10	19:56	04:58	95%
05/21	03:11	14:57	38%	06/11	21:10	05:48	99%
05/22	03:38	15:59	28%	06/12	22:18	06:49	99%
05/23	04:05	17:01	19%	06/13	23:15	07:59	97%
05/24	04:31	18:02	11%	06/14	---	09:15	92%
05/25	05:00	19:05	6%	06/15	00:02	10:30	84%
05/26	05:32	20:07	2%	06/16	00:41	11:42	74%
05/27	06:08	21:08	0%	06/17	01:13	12:49	64%
05/28	06:51	22:07	0%	06/18	01:42	13:54	53%
05/29	07:39	23:00	2%	06/19	02:09	14:56	42%
05/30	08:32	23:47	6%	06/20	02:35	15:57	32%
05/31	09:29	---	11%	06/21	03:03	16:59	22%
06/01	10:28	00:27	18%	06/22	03:34	18:00	15%
06/02	11:26	01:02	25%	06/23	04:08	19:01	8%
06/03	12:25	01:32	34%	06/24	04:48	20:00	4%
06/04	13:22	01:59	43%	06/25	05:34	20:55	1%

(----) indicates phenomena will occur the next day

LUNAR PHASES

Month	New Moon	First Qtr	Full Moon	Last Qtr
May	27 11:13	05 22:26	13 08:50	20 00:02
June	26 01:37	04 14:53	11 16:49	18 07:02

SKY NOTES

Please let us know of any suggestions for information that you would like to be placed in this area.

SELECTED SATELLITE PASSES FOR MAY(ATLANTA):

- 15 May, Salyut 7, L-R, 10:31:01pm EDT, 34.3 El, 35.7 Az
- 16 May, Salyut 7, L-R, 10:00:31pm EDT, 29.6 El, 34.4 Az
- 17 May, Salyut 7, L-R, 09:30:00pm EDT, 25.9 El, 33.2 Az
- 19 May, Salyut 7, R-L, 10:07:12pm EDT, 45.6 El, 225.2 Az
- 20 May, Salyut 7, R-L, 09:36:45pm EDT, 56.0 El, 224.1 Az
- 26 May, Mir, R-L, 04:52:10am EDT, 27.9 El, 133.6 Az
- 27 May, Mir, L-R, 05:17:58am EDT, 55.2 El, 320.1 Az
- 28 May, Mir, L-R, 05:43:58am EDT, 16.3 El, 328.1 Az
- 11 June, Salyut 7, L-R, 05:26:37am EDT, 72.3 El, 319.2 Az

**COORDINATES FOR CURRENTLY VISIBLE COMETS
(GIVEN FOR COMET-RISE)**

Date	Comet	RA-2000	Dec-2000	Rise	Mag
May 15	Wilson	08:07.7	-36°46	10:00	6
May 15	Nishi	20:36.4	-37°14	03:00	7
May 20	Wilson	08:20.2	-28°34	10:00	6
May 20	Nishi	19:21.3	-43°25	02:00	7
May 25	Wilson	08:28.0	-22°29	10:00	7
May 30	Wilson	08:35.8	-17°54	10:00	7

POSTMASTER:

If undeliverable, please return to:

AD ASTRA
c/o Rick Clark
584 South Mt. Carmel Rd.
McDonough, Georgia 30253



W. Tom Buchanan
3518 Roswell Rd. Apt. C-6
Atlanta, GA 30305

8801

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Please contact the Treasurer promptly to insure continuous membership.