

AD ASTRA

Vol. I, No. 11

The Newsletter of the Atlanta Astronomy Club

October 1986

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CLUB CALENDAR

Next Meeting: October 17

Program: A slide show on amateur and professional observatories will be presented; contact David Roberts if you wish to participate.

Observing Sessions: November 1, 2.

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, Pat Frank
President:..... Dr. Joe Gibson
Vice Presidents:..... Dave Roberts, Mark Wilkinson
Treasurer:..... Bud Rosser
Secretary:..... Sharone Franklin

CLUB MINUTES

The September 19, 1986 meeting was held at the Bradley Observatory with Dr. Joe Gibson presiding.

I. Anna Belle Close discussed an Associated Press release concerning Bill Calder, Jr.. Ten years ago he banded a one year old humming bird and it has recently been found! This means the bird has completed eleven annual migrations between the U.S. and Mexico!

II. Don Barry informed the audience of a newly discovered comet named "Comet Wilson".

III. Lee Wilson has submitted an article to *Sky & Telescope* about the construction and performance of the AAC's 20 inch telescope.

IV. Dr. David Finkelstein, professor of physics at Georgia Tech, was scheduled to talk about Grand Unification theories. Unfortunately he did not show up. Program chairman, David Roberts, is considering asking Dr. Finkelstein to try again at a future date.

LIGHT POLLUTION AND THE AAC

by David Roberts

We are rapidly losing our skies at Villa Rica. Anyone who goes to the AAC observatory on a regular basis should have noticed that the skies are dramatically brighter than a few years ago. A few years from now Villa Rica will probably be all but unusable. Night will no longer come to the observatory.

It used to be that we could get away from the city lights. That time is gone forever because the lights are pursuing astronomers no matter where they go. If we ignore the problem as we have in the past we will definitely lose our observing sites. From now on amateurs (and professionals) will have to work for their dark skies. There have been a considerable number of successes by amateurs and professionals in reducing the light pollution problem. The AAC has these precedents on its side. It is time for us to get off our butts and begin protecting our skies. We stand a good chance of saving Villa Rica and any other site we should choose.

Light pollution arises because our society runs around the clock and people demand to be able to see what they are doing. They also want security and the ability to see what (and who) is around them helps them feel secure. Often when lighting is installed no attempt is made to fully understand the particular lighting situation. Lights are simply put up without considering glare from the fixtures, shadows, and how much light goes down versus how much goes up. The lighting designers also don't consider our superb night vision, developed over millions of years, and don't take advantage of it by preserving it.

Anyone who has driven into Atlanta from the west on I-20 at night knows how badly the road lighting has been designed. The luminaires (the bulb and glass lens) are directly visible and very bright. These dazzle the dark adapted eyes of drivers. The highway itself is overlighted, presenting a problem when you leave this area and go into a darker one: your eyes are dazzled from the bright roadway surface and you can't see very well on entering a darkened area. If you've driven in on a rainy night you know it can be quite harrowing. The glare from the unshielded luminaires on the wet asphalt wipes out the lane lines and the glare on the wet windshield makes it incredibly difficult to see anything at all. This is an example where lighting hurts more than it helps. It is but one small example of the problem in the Atlanta area and across the country.

Another major offender is the billboard industry. Atlanta has been called the billboard capital of the world and all of them seem to be lighted (to put it mildly). Commonly billboards have three or four high wattage lamps flooding the surface of the board from below, spewing light straight up into the sky from the lights themselves and after reflecting from the sign surface. Light also spills around the edges of the signs and into the sky where it does no one any good. Roadway signs fall into this same category and often surpass billboards in their lighting inefficiency.

All lighting problems have a safe and efficient solution. Use the right amount of light for the task, not overkill ("the

more the better" is *bad* design). Control the emitted light by shielding, placement, etc. Minimize glare, wasted light, and light trespass. Take advantage of light controls such as timers and energy efficient dimmers. The second half of the night can be dimmer than the first half and not compromise efficient living. These are only a very few of the ways to achieve safer lighting, save money, and protect our night skies.

Astronomers should not advocate total elimination of nighttime lighting. Besides being unrealistic it is foolish. Dr. David Crawford of Kitt Peak Observatory in Arizona has been working on the light pollution problem and has written an excellent booklet on the subject. He writes,

Astronomers have the same lighting needs as everyone else. They are not opposed to night lighting that serves a useful purpose. Instead they advocate the best possible lighting design for the task, including a concern for astronomical research and for the environment. An important added advantage of light pollution control is that everything done to minimize light pollution also saves energy by improving the efficiency and utility of nighttime lighting.

This large booklet is a goldmine of information. Included are suggestions on how to work with the local authorities and the Tucson and San Diego light pollution ordinances. If you want to help the AAC please send for Dr. Crawford's booklet. He can be reached at Kitt Peak National Observatory, 950 N. Cherry Avenue, P.O. Box 26732, Tucson, AZ 85726. You can get the booklet for donations of \$4.00 or more with checks made out to Light Pollution Account. Contribute as much as you can. Your money will make a future Central Bureau of light pollution much more effective. Study the booklet carefully. In order to our coordinate our efforts efficiently as many club members as possible should be knowledgeable on the subject.

Future articles on light pollution are planned with more details. Watch *Ad Astra* for updates on what the newly formed Light Pollution Committee is doing and what club members can do to help. In the meantime if you have any questions, suggestions, or information (such as local government contacts) please let us know. Pat Frank is the *Ad Astra*/AAC post office so send any letters to him or call me at 996-0345.

CIRCUMSTANCES FOR COMET WILSON

by Don Barry

A new comet which threatens to repeat in many aspects the features of the recent Halley apparition has been discovered by a young woman in California. Comet Wilson, or 1986 I, with the I signifying the twelfth comet discovered in 1986, is now near magnitude 10 in *Aquila*, but toward the middle of November it will have advanced southward into *Sagittarius*, moving at a heading of about 30 degrees west of south through the sky at about one-third of a degree per day. David Lynch, using the Villa Rica 20" reflector, reports the first of many sightings made by club members of the comet, which is currently sporting an enviable viewing slot, setting quite late in the morning.

A 10th magnitude comet would not normally be a *cause celebre*, but calculations on the orbit of Wilson indicate that in May it may brighten to nearly third magnitude. Unfortunately, like Halley, the comet will be a very southerly object at the time, even reaching a declination of -76 degrees as it passes through *Mensa* and *Dorado* and skirts the Large Magellanic Cloud at its closest approach to earth at a distance of 0.62 AU near May 1. By late May, however, the comet should reenter this hemisphere's skies, and at magnitude 5 the rapidly fading object will skim northward through *Puppis* in early evening for its best viewing opportunity.

Orbital Elements, for those who wish to try out *Sky & Telescope* cometary prediction programs (see David Lynch for details), are:

Perihelion..... 1987 April 20.8587 ET
 Longitude of Ascending Node 110.9259
 Argument of Perihelion..... 238.2680
 Inclination..... 147.1395
 Perihelion distance 1.200093 AU
 Orbit is Parabolic - Coordinates are Epoch 1950.

Ephemeris for October and November 1986
 (at midnight on evening of date given - Epoch 2000)

| Date | RA | Dec |
|--------------|----------|---------|
| Oct 15 (EDT) | 20h12.7m | +05d06m |
| Oct 20 (EDT) | 20h07.7m | +03d24m |
| Oct 25 (EDT) | 20h03.5m | +01d47m |
| Oct 30 (EST) | 20h00.1m | +00d14m |
| Nov 05 (EST) | 19h56.9m | -01d29m |
| Nov 10 (EST) | 19h55.0m | -02d49m |
| Nov 15 (EST) | 19h53.7m | -04d04m |

EARTH COMPASS

by Sharone Franklin

To some it seems absurd; even abnormal. The waiting for a clear sky, winter chills, summer mosquito wounds and weariness from lack of sleep. Is it worth all this just to look at dim objects draped in the blackness of space? Yes indeed! To stare into the eyepiece of a telescope at the night sky is to witness magic. It's an opportunity to look thousands, even millions of years into the past and wonder about the future. It is a reminder that submerged in this macrocosm is an undersized world where consciousness thrives. A spirit resonates from within the cosmos and gives this consciousness moods of a different color: a thesis written nowhere else in the solar system and perhaps nowhere else in the universe.

The sun bathes our solar system with radiant energy by converting 4.5 million tons of mass to energy each second. The earth reflects some of this radiation while absorbing the rest. The net result is an interchange of heat and light energy into diversified chemical elements. The atoms of these elements unify, fracture, move swiftly and sometimes appear motionless. They are the stuff we and the earth are made of and give the earth its unique cargo as it whirls around the sun. After about 4.5 billion years of a tumultuous evolution, this planet is the most picturesque in the solar system.

At first glance, the astonishing thing about our planet seems to be the presence of humans. Perhaps this is because we humans enjoy comparing ourselves with earth's other life

forms and we feel we are the crown of intelligence. But if we take a more analytical approach to our world, it becomes obvious the earth's ecological system offers the most amazement. *All* living things help each other to survive. It is a natural balance. It is an equilibrium that we constantly unhinge, whether by miscalculation or by design. We have admonished ourselves about the perils of tampering for so long that it has become a platitude. It's as though the warning lies ignored in catacombs in our brains, etched on the surfaces of inert neurons.

The earth has gone through many adjustments during its history and its resilience to modification makes it appear invincible. Its changing crust has provided us with beautiful mountain ranges, plateaus, plains and deserts that possess as much grandeur as the night sky. Its massive movements of air create a weather system that is reassuring yet intimidating. And while its volcanoes and earthquakes frighten us, its rivers and forests offer tranquility.

Why is it so important for us to preserve our natural surroundings? Is it just because we depend on nature for our survival or is there a reason that is more abstruse? When we observe nature we study the art of science. We are an eyewitness to its principles, tribulations and good fortune. We see our own life experiences moving parallel with this. We feel a bond because we are nature too. We can't separate ourselves from it or dictate to it because living things are different aspects of the same mass-energy equivalent. To inflict harm upon our environment is to inflict harm upon ourselves.

The people of the earth, now numbering over 5 billion, will group according to creed with each group emphasizing different methods of religion, politics, and philosophy. These differences teach patience and appreciation for one another while also creating misunderstandings that sometimes lead to war. Life, while always heterogeneous, is not always idealistic.

We can boast about our free will, intellect, and technology. After all, we've accomplished many things since the beginning of our time. But no matter how cerebral we are, the fact remains that there are universal laws of nature that must be adhered to, or one simply self destructs. The consequences of polluting our planet evolve slowly and are almost invisible. It will take more generations for the results to become fully revealed.

Perhaps someday we will colonize Mars (though not precipitously) and mine the asteroids for minerals. But in the interim we are earthbound. We reside on a blue ball that carries us through space and links us with the heavens. It is our only compass. It would behoove us to take note of its direction.

*Oh conscious earth, spin your life about my face
Oh wind and moon, wrap my heart with cosmic lace
Come near me, come hear me
Come be my song*

*I feel like a leafless bud, awaiting my bloom
Now has come the time to leave my cocoon
Come near me, come hear me
Come be my song*

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HALLEY ON THE HIGHWAY Impressions Under A Desert Sky

by John Marsh

One of the primary objectives of the Tucson trip taken by some of the *Ad Astra* staff was to observe Comet Halley. Knowing that Halley would reach culmination at about 2-3 AM local Tucson time, we began the trip to the observing site at 12:30 AM, April 9. We traveled south by southeast on Arizona Hwy 83 for about 30 miles, gaining altitude as we went. I estimate our chosen site to have been around 3500 to 4000 feet altitude, compared with Tucson's 2500 ft. elevation.

The general area of where to observe was suggested by the local club. Unlike the AAC, they have no fixed observing site; they apparently strike out along SR 83 until reaching the general area of the Empire Mountains, find a good spot, and set up. Adhering to the dictum "When in Arizona...", we did the same. We pulled onto an area of level dirt, just off the highway, in a transitional area from the low desert to the southeastern Arizona grasslands. I stepped out of the car (the *Starship Buick Park Avenue*) and, as always, looked up.

Immediately, I was transported 10 years into my past, to my long-lost days as a student at the University of Arizona, entertaining dreams of a career in professional astronomy. The friends I was with in 1986 could easily have been those I observed with in the Arizona desert in 1976. Just being in Tucson was enough to evoke many a fond memory of the past; seeing the summer Milky Way once again in a desert sky brought the past vividly to life. The sense of *deja vu* was beyond description, as uncanny a feeling as any I've ever had. Since leaving the University, I have often had dreams recalling Arizona; now I was having another "Arizona Dream"- only this time I was wide awake. I was in my true element- the desert at night.

The modern science of astrophysics has revealed to us an universe of incredible violence; we ourselves exist essentially because heavy stars in the young universe blew up to produce the elements of which we are made. The creation of the universe itself appears to have been the ultimate act of violence. The very term "Big Bang" has entered general use as meaning an extreme event ("The Biggest Bang since the Big One"). The real universe is an extreme place. The scale of violence and agitation is, as they say, astronomical (sorry!). We have found the universe to be as violent as our own "advanced" civilization.

Under the Starry Heavens of an Arizona desert night, all this becomes trivial. The troubles of your own life, the tribulations of the world, and the violence of the real universe melt away. Serenity and the sheer sense of being awestruck are all that remain. The atmosphere is so transparent you feel that you're standing among the stars, not "under them." The sight of the desert Milky Way cannot be properly described in words. Suffice it to say the star clouds had the clarity of etched crystal, seeming just out of arm's reach. The scene took place in near total silence, with only a faint desert breeze belying the existence of an atmosphere. While the sheer impact is quite beyond language, I will describe some specific observations.

I had with me a pair of 11x80 Meade giant binoculars (so to better observe that 30-degree tail some had predicted for a certain "hairy star") and a photo tripod for mounting them. One glance at the Cosmos made the tripod superfluous. After

recovering from the initial shock (and memory flash-backs), I spent most of the time scanning the Milky Way region. M-20, M-17, M-8 all stood out as bright patches upon a profound depth sprinkled with innumerable stars. A general scan from Cygnus to Sagittarius was rather like observing successive ranges of mountain ridges, increasing in height with distance. Only under a pristine sky does one get such a true visual sense of the Galaxy-- from the distant bulged hub at Sagittarius to the nearby star clouds of the Cygnus arm.

Superb though the star clouds were, most remarkable for me were the delicate dark rifts laced through them. These truly appeared as they do in classic Schmidt camera photographs. The larger rifts were clearly visible to the naked eye (even from Georgia under good conditions these can be seen). Using the giant binoculars, a veritable network was visible, sinuous interruptions in the flow of stars. This was visual observing of literally the highest order!

The stars appear in the desert as they do nowhere else. Their sharpness, their configurations, their sheer numbers- the "real world" is truly the vista over our heads, not the confused chaos of the world about us. The desert sky conveys a great, irrevocable sense of inner peace.

Oh!- We also saw Halley's Comet- remember Halley's Comet? It appeared as a faint, roundish blob near Omega Centauri. It had a faint, fan shaped tail maybe 2-3 degrees in length. It was sort of green.

2:00 AM IN THE SWAMP

by Liz Petersen

Frequent goers to the Villa Rica observing site will admit that they prefer not to be out there alone. The fatigue of long observing sessions can create a strange perception of the sounds of the swamp; shadows become suspicious, and a feeling of unease beings to grow. Suddenly the welcome darkness becomes threatening.

On my last solo visit to our hallowed grounds I took a radio to keep me company. Before dark I picnicked on sliced turkey, crackers, and pickles from a large brown paper bag. Diet Coke and insect repellent were also in the bag, which I left outside the observatory while I worked.

Hours of obsessive observing brought the universe into view: clusters, galaxies, and planetary nebulae filled me with wonder, while WABE soothed the frantic sounds of the swamp's insects and tree frogs. I turned the 10" to Delphinus to search for Comet Wilson. Suddenly my communion with the stars was interrupted by a sound which froze my blood: ow-ow-ow-oooh! A long wailing howl broke out and floated towards me across the swamp. I climbed the observing ladder and looked east to see the yellow waning gibbous moon hanging over the treetops, a thick white mist enshrouding the land. Ow-ow-ow-oooh!, it came again. WABE had no power over this sound. I scanned the mist between the trees expecting to see some great dark shadow moving towards me. Nothing. I pulled myself together, closed the observatory door, turned up the radio, and went back to work.

No sign of Comet Wilson. The stars gave way to images of the bats I had seen flying at twilight, and a big black cat which lingered a moment to observe me before continuing its nightly

hunt. Ow-ow-ow-oooh! One more sweep revealed nothing but stars; the light of the waning moon was too much for the 10th magnitude comet. Time to go home. I quickly gathered my charts, performed the rituals of closing, and went down for my bag.

It was gone! I searched the area with white light. Five cans of Diet Coke, a can of Deep Woods Off, a box of crackers, and assorted trash in a wet brown paper bag should not disappear silently without a trace. I thought of the possibilities. A dog or raccoon could have snatched the bag, but the wet paper could not have supported the weight. There must be a trail of the contents close by. Boldly I searched, tear gas in one hand and flashlight in the other. I wanted to find a trace of my goods to dispel my growing belief in swamp monsters, but I found nothing. The mist came ever closer and the relentless howling aroused a terror in me that I could not quell. I abandoned my search and drove home.

So ended my vigil on the night of the autumnal equinox. I won't say I believe in swamp monsters. Maybe a swarm of mosquitoes carried away my bag. Maybe -- maybe I'll never know. But I do know that this is one astronomer you'll never find alone by the swamp at 2:00 AM.

DOWN PAT

an editorial by Pat Frank

After the September meeting (it ran a little short) the officers and board members held the first board meeting (it ran a little long!). As you have read in the secretary's report we covered all kinds of things never before discussed in the AAC, such as the formation of a light pollution committee and the idea of installing a telephone at the observatory. Please tell us what you think about these things as your opinions will help us determine which way to go.

Congratulations to Atlanta's own Jim Brown, who just this summer at ALCON was elected Astronomical League President! Jim has served for Vice President for two years now and succeeds his friend and associate George Ellis in the new post, once held by former AAC member Bob Fried. Jim caught the astronomy bug from Comet Kohoutek in 1974, and soon thereafter joined the AAC. He has also served as Chairman of SERAL and Region Representative, as well as Club President. According to Jim, the AL's budget has grown from \$8,000 to \$25,000 in just five years (calm down Bud!), and that now every major telescope manufacturer includes info on how to find your local club with every scope sold. Good luck, Jim! And let us know if you need any...uh...hmm...Good luck, Jim!

The September meeting was attended by Jack Allen, President of the local branch of the L5 Society, which promotes America's space interests. The August/September issue of "The Explorer" had a fascinating article on the space transportation business. The L5 info line is 266-7977.

The following announcement for Fernbank has appeared in the "Weekend" section of the Saturday Journal/Constitution for at least three years (that we can remember): "36 inch Cassegrain Reflecting Observatory with Celestial Objects." What I want to know is, does Amtrak offer this service? And

can we mail order "Celestial Objects" from Celestron? We understand this announcement has now been corrected...
Fair Skies!

SPOTLIGHT ON *Sky & Tel's* BILL SHAWCROSS

by Don Barry

Bill Shawcross, the managing editor of *Sky & Telescope*, recently visited club members Eugenia and Leonard Abbey while in town to attend the Worldcon convention. Over dinner, I had the opportunity to talk with him about his many-faceted career in astronomy and publishing. Even though Bill's formal training began with botany and anthropology, he has spent the majority of his professional life in activities relating to astronomy, and has come to know many of the important amateurs and professionals over that period. Among that group was Dr. Allen Hynek, manager of project Blue Book and other UFO studies, who worked in an adjacent office when he was in New Mexico in the early 60's.

As managing editor of *Sky & Tel*, Bill has presided over one of the most stable and respected amateur journals. He reported that the Halley mania, coupled with the magazine's own campaigns to boost newsstand sales, resulted in considerable one-time sales increases, and a sizeable increase in subscriptions as well. He quotes outstanding reader loyalty and trustworthy advertisers as being the main factors to the magazine's success, and even claims little competition from rival *Astronomy*. About 40% of *Sky & Tel* readers also get *Astronomy*, whereas 30% of *Astronomy* readers subscribe to *Sky & Tel*. The two magazines fill slightly different niches, with *Astronomy* having a wider following, but perhaps *Sky & Tel* having a more devoted readership.

Bill noted that nearly half of the articles published were submissions, with the other half commissioned works. Budding authors should note, he said, that the easiest route to publication is to write a letter of inquiry describing your pet topic - this enables collaboration with *Sky & Tel's* editorial staff to tailor the work to the needs of the magazine.

Among the most popular of the regular features is the Observer's Page, although the computer column has been increasing in interest - some people love it, others couldn't care less. Programmers take note! This column is particularly in need of submissions.

In his prognostications for the future, Bill noted plans for more color in the magazine, and also announced that 8 more pages of pure editorial content were just added, and that the November issue will be yet another 8 pages longer (for the Christmas sideshow). He sees the future of amateur astronomy as particularly sound, especially with the recent advances in optical technology now available to the backyard observer. Telescope prices have been keeping approximate par with constant dollars, but quality and variety has been the theme in recent years. Anyone who has used the 13 mm Nagler eyepiece at our club observatory can testify to what computers have done to eyepiece optics.

The phenomenal rise of the Schmidt-Cassegrain, too, has increased awareness of astronomy manifold - not because of any particular advantage to the design, but merely because the

portability and reasonable light grasp of these scopes has made viewing more convenient.

In short, we are no longer an elite group - and as the numbers proved during Halley-mania, the goal of amateurs to bring astronomy to a wider public has been achieved. With continued support by magazines such as *Sky & Telescope* under the helm of Bill Shawcross, our field should continue to prosper.

BOARD MINUTES

by Sharone Franklin

The Board meeting of the Atlanta Astronomy Club was held September 19, 1986. The following attended: Dr. Joe Gibson, Lee Wilson, Tom Buchanan, Sharone Franklin, Bud Rosser, David Roberts, John Marsh, Pat Frank and Rick Clark. Rick Clark was elected as Chairman of the Board.

Motions recommended and approved were:

- I. Bill Calder has been granted an honorary life time membership to the AAC.
- II. Non member guest speakers are granted a one year associate membership which does not include *Sky & Tel*.
- III. Bob Hyde is no longer a complimentary member and Dr. Alberto Sadun has been so named.
- IV. Dr. Alberto Sadun will be taking his astronomy class to the Villa Rica observatory on occasions.
- V. An updated membership list will be mailed to members in November.
- VI. The AAC will make a bid to host the SERAL convention in 1987. Lee Wilson will form a committee.
- VII. Pat Frank will be the new ALCOR corresponding secretary.
- VIII. The problem of light pollution needs to be addressed to the public. Tom Buchanan will form a committee.
- IX. Our President will ask someone to welcome guest and new members at each meeting.
- X. Club dues are: single member-\$25.00; Family-\$30.00; Full time student-\$20.00; Teacher-\$18.00.

Motions discussed and are pending:

- I. More storage space is needed for equipment at Villa Rica. Perhaps a metal shed?
- II. An amendment to the by-laws for electing the Board of Directors is needed in order to alternate their terms.
- III. We need more active observing and someone should be in charge of this. Perhaps a telephone at the observatory would help to advertise clear skies and to solve telescope problems.
- IV. Pat Frank suggested that we dedicate the 20 inch telescope in memory of the seven astronauts killed aboard the Challenger last January.

CLASSIFIED

Celestron 50mm-2" Ploessl(new) for sale \$50

Contact Bob Locwenthal -- 934-1237

Unitron 3" refractor and accessories, 10" f/6 Meade mirror in tube assembly-all \$400. Bud Rosser - 972-3700 or 498-1240

OBSERVER'S ALMANAC
Times of Moonrise and Moonset
 All times are EDT/EST

| Date | Rise | Set | Date | Rise | Set | Date | Rise | Set |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 10-1 | 05:09 | 18:29 | 10-21 | 21:15 | 11:30 | 11-10 | 14:46 | 01:16 |
| 10-2 | 06:12 | 18:56 | 10-22 | 22:01 | 12:27 | 11-11 | 15:13 | 02:20 |
| 10-3 | 07:17 | 19:24 | 10-23 | 22:52 | 13:20 | 11-12 | 15:38 | 03:21 |
| 10-4 | 08:24 | 19:54 | 10-24 | 23:49 | 14:07 | 11-13 | 16:04 | 04:21 |
| 10-5 | 09:33 | 20:27 | 10-25 | ----- | 14:49 | 11-14 | 16:31 | 05:20 |
| 10-6 | 10:45 | 21:05 | 10-26 | 00:49 | 15:26 | 11-15 | 17:00 | 06:19 |
| 10-7 | 11:58 | 21:51 | 10-27 | 00:49 | 14:58 | 11-16 | 17:33 | 07:20 |
| 10-8 | 13:09 | 22:47 | 10-28 | 01:51 | 15:27 | 11-17 | 18:12 | 08:20 |
| 10-9 | 14:15 | 23:50 | 10-29 | 02:53 | 15:55 | 11-18 | 18:55 | 09:18 |
| 10-10 | 15:13 | ----- | 10-30 | 03:57 | 16:22 | 11-19 | 19:45 | 10:13 |
| 10-11 | 16:00 | 00:59 | 10-31 | 05:03 | 16:50 | 11-20 | 20:40 | 11:03 |
| 10-12 | 16:40 | 02:09 | 11-1 | 06:11 | 17:22 | 11-21 | 21:38 | 11:46 |
| 10-13 | 17:13 | 03:17 | 11-2 | 07:23 | 17:59 | 11-22 | 22:38 | 12:24 |
| 10-14 | 17:42 | 04:23 | 11-3 | 08:38 | 18:43 | 11-23 | 23:38 | 12:57 |
| 10-15 | 18:09 | 05:27 | 11-4 | 09:54 | 19:37 | 11-24 | ----- | 13:27 |
| 10-16 | 18:35 | 06:28 | 11-5 | 11:04 | 20:39 | 11-25 | 00:38 | 13:53 |
| 10-17 | 19:01 | 07:29 | 11-6 | 12:07 | 21:48 | 11-26 | 01:39 | 14:20 |
| 10-18 | 19:28 | 08:29 | 11-7 | 12:59 | 23:00 | 11-27 | 02:42 | 14:47 |
| 10-19 | 20:00 | 09:29 | 11-8 | 13:41 | ----- | 11-28 | 03:47 | 15:17 |
| 10-20 | 20:34 | 10:30 | 11-9 | 14:16 | 00:10 | 11-29 | 04:56 | 15:51 |
| | | | | | | 11-30 | 06:10 | 16:31 |

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

Lunar Phases

| Month | New Moon | First Qtr | Full Moon | Last Qtr |
|-------|----------|-----------|-----------|----------|
| Oct. | 03 14:55 | 10 09:28 | 17 15:22 | 25 18:26 |
| Nov. | 02 01:02 | 08 16:11 | 16 07:12 | 24 11:50 |

NOTE: Daylight savings time ends October 26 as reflected in the moon table above. Also please note that the times in the September issue are incorrect because the *Ad Astra* computing department temporarily forgot how to convert from UT to EDT. We are quite embarrassed.

FINAL NOTES TO MEMBERS

We are updating our address and phone list for distribution in November. If there is an error in your name, address, or phone number, please notify us through Bud Rosser or Dave Roberts.

The club needs volunteers to take care of refreshments. Please call a club officer to volunteer. Or be volunteered.

A Publication of the Atlanta Astronomy Club

POSTMASTER:

If undeliverable, please return to:

AD ASTRA
 c/o Mr. Pat Frank III
 465 Pine Forest Rd., N.E.
 Atlanta, GA 30342



W. Tom Buchanan
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