THE FOCAL POINT

The Atlanta Astronomy Club, Inc.

Vol. VIII No. 6 **November, 1995**

The November 1995 Meeting

by Rich Jakiel

The Atlanta Astronomy Club's next meeting will be Friday, November 17, at 8:00 P.M. at Emory University's White Hall. Guest speaker will be April Whitt, of Fernbank. She will be relating her experiences aboard the Kuiper Airborne Observatory. Please join us for this fascinating talk and, as always, food and fellowship afterwards.

Merger Update

by Alex Langoussis, President

On October 13, the merger committees of the Atlanta Astronomy Club and the Astronomical Society of the Atlantic had a cordial meeting over dinner. We exchanged ideas on the advantages of a merger and how to best go about it. The two organizations seem to be in general agreement on most issues. The only significant differences between us so far revolve around the name of a merged organization. The board of the Atlanta Astronomy Club would like to keep the current name of the club. The board of the ASA is not asking to keep their name, but would like a new name that would represent a new united astronomical community. The ASA is currently polling its membership on some merger issues. When the results are in, we will meet again.

Calendar Notes

17 November	**Club Meeting at White Hall, Emory University**
18 November	Dark Site Observing Session. Dauset Trails Nature Center; see directions elsewhere in the Focal Point.
25 November	Public Viewing at Villa Rica.
8 December	December Club Meeting
16 December	Dark Site Observing Session. Location to be determined.

October 1995 Meeting

By Ken Poshedly, recording secretary

The October 27 meeting of the Atlanta Astronomy Club was called to order shortly after 8 p.m. by club president Alex Langoussis in the Fernbank Science Center Planetarium. Between 75 and 100 members and guests were on hand for the evening.

Prior to the main program, Alex spoke briefly about the Atlanta Astronomy Club and the benefits of membership. Following these remarks, Alex darkened the room and used the planetarium projector to provided a short presentation of where to look for the Space Shuttle at 6:30 a.m. the following morning. Finally, AAC program chairman Jerry Armstrong introduced the featured speaker for the evening, NASA space shuttle astronaut and mission specialist Jan Davis.

With the help of color slides projected on the planetarium dome, Jan provided some insight about shuttle flights that don't usually make it on typical news programs. If you had a question about how astronauts as PEOPLE react during liftoff, the mission, re-entry and landing, that was your night to learn the answers. Whether it's running an experiment to find out how fish react in zero-gravity (they swim in circles) to what's interesting to look at down on Earth (EVERYTHING), to how and where they sleep (anywhere), those folks are people first and Jan brought that across beautifully. A short videotape of the NASA space program, also narrated live by Jan, reminded all of just how far we've gone in the last 35 years. A lively question-and-answer session followed, which finished with an extended autograph session.

Announcements and light snacks afterwards at a short AAC business meeting in the Fernbank classroom capped the formal part of the evening. Afterwards, nearly two dozen AAC'ers made the traditional pilgrimage to nearby Jaeggers restaurant.

The Atlanta Astronomy Club wishes to thank Dekalb Schools' Fernbank Science Center for graciously assisting the AAC in bringing Jan Davis to Atlanta and pre-empting the Friday night planetarium show for this very special program.

Thoughts on the Deep South Regional Star Gaze

by Ken Poshedly

Star parties, star gazes, call them what you will, but until you've gone to at least one, you just don't know how joyful and

rewarding your chosen hobby of astronomy can be. Yeah, meetings and tech-talks serve as the groundwork, but it's the star party where you find yourself putting all that new-found knowledge to good use. And of the dozens of star parties across the country over the course of the year, there are really only a few within a day's drive from Atlanta. The only two such events I know of in Georgia are our own AAC Peach State Star Gaze each spring and the ASA's Georgia Star Party held each autumn. If you don't mind the 15-hour drive, there's the Winter Star Party hosted by the Southern Cross Astronomy Club in southern Florida and which draws many hundreds of amateur astronomers each February. The Texas Star Party is two days' drive, so I won't count it.

But what of those middle-ground star parties—the ones not too far from home that attract maybe a hundred or so of the same folks each year who regard "their" event as much a reunion as a star gaze? My favorite is the Deep South Regional Star Gaze. Held each autumn, the DSRSG is hosted by Barry Simon of the Pontchartrain Astronomy Club (New Orleans) and completed its 13th event this October with a few short of 150 folks. While I've only been able to attend the 1993 and '95 events, I find this event offers something for about everybody.

The location is an open field well to the rear of Mississippi's Percy Quin State Park, near the small town of McComb. The weather this year was almost perfect (blue skies each day and night) and the night was as dark as any I've seen since visiting relatives in rural mid-Pennsylvania in the early '60s. And that's DARK. With bunkhouse lodging and camping on the observing field, you can rough it or slum it in comfort. A variety of meal and lodging plans allow you to just about pick-and-choose when and where you'll eat and sleep.

So much for logistics. But what about the people who make up the event? You couldn't ask for a better bunch. Leave your politics and your gripes at the front gate, for ignorance is truly bliss here. This crew wants only to find another dozen or so Herschel objects, help the new guy polar align AND buy enough raffle tickets to win a pair of Fujinon 7x50 binoculars ($400 street price), or the Nikon 7x50 binoculars or one of those really neat collapsible observing chairs.

The DSRSG is a mellow event; yep, there was a contest this year to find the most objects from a special list assembled by event coordinator Barry Simon. And yes, there were the usual low-key competitions for best astrophoto, best homemade scope (and/or mount) and best observing aid or new gadget. But all in all, it's a field of dreams for you who want only to spend a leisurely weekend sleeping in, lollygagging the daytime hours away on a chaise lounge with a cool drink amongst friends, and deciding whether it'll be Herschel objects, Messier objects or NGC objects tonight. I found singles, couples and entire families on hand—babies included. At night, the babies sleep while the adults talk shop—or sky, as the case may be.

The scopes range from the "lowly" Edmund Astroscan (resembles a red bowling ball with a pipe shoved in) to some of the largest and most expensive optical instruments you'd hope to find anywhere. Every star gaze/star party has its own identity. And the DSRSG is no exception. After years of no formal talks, this year, two talks were scheduled as a test. The result was maybe less than satisfying. No disrespect meant towards the two presenters, but these folks are just here to look.

Will I go back? Definitely—nine-hour drive included.

Minor Planets and the Amateur Astronomer

HISTORICAL BACKGROUND

On January 1, 1801, the first night of the new century, Gisueppe Piazzi was busy cataloging the positions of stars with his telescope. As was his custom, the following night double checking his previous night's work he noticed a discrepancy with one of the stars. Thus he checked it on a third night and found it had moved indeed. At first he thought it was some sort of strange comet as it showed no coma but was completely stellar in appearance. After a few short weeks Piazzi fell ill and was unable to observe the tiny planet. Unable to relocate the object, word was sent out (albeit slowly) and astronomers all over the world searched in vain for the object. Carl Fredrich Gauss had been studying Newton's laws of motion and had devised several new powerful formulae for the calculation of orbits. Using these new methods, Gauss was able to predict where the object was to be found and did so on December 31, 1801, just one year to the date of its discovery, it was located less than a moon diameter away from its predicted position. Christened Ceres, it was what turned out to be the largest of the asteroids, but not the brightest, as this honor would fall to another asteroid discovered in 1807 and named Vesta, although it is quite possible for an Earth Approach Asteroid to briefly become brighter. All of these objects were soon to be found to be traveling in orbits roughly between the orbits of Mars and Jupiter, but in the decades to come all this would change as asteroids were found to have orbits not especially confined between the two planets.

Other than the Main Belt asteroids, there are as many different types, such as the Atens, Apollos and the Amors. These three groups comprise what is generally known as the Earth Approach Asteroids, and are potentially the deadliest objects in the solar system, and may in fact be responsible for some of the mass extinctions during the remote past (e.g., dinosaurs and the Yucatan Peninsula Crater). Typical diameters range from a few hundred yards to greater than 15 miles as in the case of (433) Eros, an Amor type asteroid. They also happen to be the only objects you can see movement almost right before your eyes. Recently, a new interest has emerged concerning the so-called EAA's. The flyby of the Main Belt asteroids (951) Gaspra and (243) Ida by the Galileo spacecraft gave us our first close-up views of these small

worlds and also positive proof that asteroids do in fact retain satellites, as in the case of (243) Ida. Man's appetite was whetted just decades before when the probes to the planet Mars revealed the surface of Phobos and Deimos. It was at that time surmised that this is perhaps what the asteroidal surfaces must look like, although the surface features of both moons differed dramatically. Phobos had a striking set of grooves and crater chains, unlike the smooth dusty terrain of Deimos. Just last year, the ill-fated Clementine mission was to image (1620) Geographos, which is an EAA type. It is not too difficult to imagine that in the near future a spacecraft will soft land on one of these worlds to take measurements and hitchhike its way into the inner solar system as these are the easiest targets to reach besides the moon.

Some of the asteroids have been observed to have a gaseous coma. Now the plot thickens, as it seems that the line separating asteroids and comments is no longer clear. The periodic comet P/Wilson-Harrington, discovered November 19, 1949, was found to be identical to the Apollo asteroid (1979) VA. So it seems that some asteroids may in fact be dead cometary nuclei. Another case in point is the asteroid (3200) Phaethon, which, although it has never shown any sort of coma or tail, has one characteristic which sets it apart from the normal asteroids. It has been shown that this particular minor object happens to have the same orbital elements as the Geminid meteor shower, and is quite possibly the parent body and a now-defunct comet nucleus. Last, but not least, is the strange case of (2060) Chiron. After its discovery by Charles Kowall from Mount Palomar during the 1970's, it was found to have a very strange orbit, as it lay beyond Saturn. A large object, among the larger of the known asteroids, Chiron was slowly approaching perihelion (closest point to the sun). But then routine monitoring of the giant asteroid began to reveal that it was becoming brighter. Several long exposures of the object finally solved the question. It seemed that Chiron had developed a coma and then a tail! Chiron was after all a giant comet nucleus. Although I have personally observed Chiron many times, I have not been able to detect any trace of a coma, nor around its smaller cousin (5145) Pholus, another Centaur type asteroid.

Other types are the Hildas and the Trojans, plus the Centaurs. Some of each are now within the reach of amateur astronomers with their big Dobsonian telescopes. Although the Trojans are quite faint, with a little patience and luck one can finally spot one of these elusive denizens of the solar system.

Other asteroids that are currently in the news are the Kuiper Belt Objects, some of which have been discovered by the Hubble Space Telescope. Several were discovered with Earth based instruments and some of these may prove to be not Kuiper Belt Objects at all, but Neptune Trojans. These are very faint objects, ranging from magnitude 20 (brightest) down to the limits of Hubble. Although a 20th magnitude object is not completely out of range with large amateur telescopes equipped with CCD cameras, it still requires a very long exposure and a very sensitive CCD array. Probably the best system to capture one of these would be to use, say, a 24-inch telescope coupled with an ST-6 CCD camera, and try the exposure when the object begins to retrograde. In this way, you would be assured of as little movement as possible during the exposure, which would be a prerequisite in order to get an image. The exposure would, of course, have to be probably 30 minutes minimum in order to get a bright enough image. Once the image is taken, another image will have to be obtained several hours later or preferably the next day with the same exposure, sky conditions, etc., as possible, then blink the image in one of the numerous computer programs. The object should jump back and forth if everything was done correctly and *if* the object is bright enough to register on the CCD array during the exposure.

Back during the 70's and early 80's, I enjoyed receiving a little-known bi-monthly publication known as "Tonight's Asteroids" by Dr. Jay U. Gunter of Raleigh, North Carolina, and was primarily devoted to minor planets, but was not confined to that realm alone. On several occasions, it would also contain the charts and details of a periodic comet or one that was getting bright enough to observe in amateur instruments. Unexpected visitors (comets) would, if they became bright, get a special announcement. All this was, of course, free, all one had to do was send several self-addressed stamped envelopes to Dr. Gunter and sure enough, you could follow asteroids and the brighter comets. The asteroids had to become brighter than 11.0 magnitude or else have some peculiarity about them such as close passage of the Apollo class asteroids. Comets, on the other hand, were generally 9.0 magnitude or brighter in order to warrant a notification.

I had the privilege of meeting Dr. Gunter at his home in 1980 and we sat for many hours discussing the minor members of the solar system. For his devotion to his hobby I personally gave Jay a painting of the asteroid (18) Melpomene with its possible satellite that Dr. Richard Williamson of Fernbank Science Center had recently discovered with his 36-inch telescope. Later in the year I received a call from Dr. Gunter telling me of the International Astronomical Union's decision to name asteroid (2136) JUGTA for him and his publication. The word stands for Jay U. Gunter, Tonight's Asteroids! Sadly, I learned of his death last December when I went to speak at the Raleigh Astronomy Club.

Tonight's Asteroids are unfortunately not published any longer, as no one has been able to fill the shoes of this admirable man. Gone is the historical text, with its witty humor of the discoverers or of the particular asteroid itself. However, one can still observe the tiny planets and it has become increasingly easier to do. A good example of this is during one night recently I was able to identify 32 asteroids visually! If one has access to a telescope and a CCD camera, you can take images of these tiny objects as fast as you can. In one evening's duration of just three hours, I was able to image forty asteroids, and this was done in spite of a nearly full moon in the sky!

Armed with a computer and such programs as Guide 4.0, you can conveniently select the asteroids you wish to observe. There is a publication called The Ephemerides of Minor Planets published by the Institute of Theoretical

Astronomy, Russian Academy of Sciences, that is available in the U.S. from White Nights Trading Company. The current volume costs approximately $55.00. With this, you can scan through the pages and look for certain asteroids that fit into the category you wish to observe. For example, I noted in my volume that there are 61 asteroids that will become brighter than 13.0 magnitude during November, 1995, and a few going up to the 9th. There is, however, several computer programs from the same company that sorts data, draws histograms, interpolating ephemeris data, etc. These will prove useful in selection of the asteroids and although not a must, they do make life easier. Pay close attention, however, to the times. Remember, these tiny worlds do move and some very rapidly. If you print your chart for the local time that is in your computer, chances are that by the time you observe the filed the asteroid will have moved appreciably. I find it best to set the program for 00:00 hours UT, and remember to convert your local date to the corresponding Universal Time date. Next, you can usually have the program display the asteroids' apparent motion relative to the stars with tick marks at hourly intervals. Thus one can infer from the trail exactly where the asteroid should be along the path. If the program calls for you to set your longitude, latitude, and the elevation, do so, for if there is a very close approach of, say, an Apollo or Aten class asteroid this will help solve any parallax problems that might occur.

All you have to do then is to go to the telescope and find the correct field, determine where the asteroid should be along its path, then look at all the stars and find the one that doesn't belong. I find that most asteroids brighter than 13.0 magnitude are readily apparent. This process also works with the fainter comets, but is a little more difficult, as quite a number of them have orbits that are not completely up-to-date, so they can vary a bit off of their predicted path. But do avoid the Milky Way regions, as they are impossibly crowded and a faint asteroid is very difficult to pick out from among them. It has been found that even though the Hubble Guide Star Catalog goes down to the 16th magnitude, this is not the case in the very crowded regions. Remember that this catalog was designed for use with the Hubble Space Telescope and the brighter guide stars were selected, so in reality if the field is full of 12.0 magnitude stars there would not be any reason to choose the fainter ones.

Once you have all of this information and your charts are printed, it should be no problem for you to find the interloper. If you are fortunate enough to possess one of the newer telescopes that are computer controlled, this should make your task a little easier. A program could be set up to see how many different asteroids you could observe in a single night. Again, if you have a CCD camera, some very useful work can be done with the asteroids. Positional measurements require timing to the nearest second in time and also knowing your exact longitude and latitude. There are programs available today that take all the math out of the reductions, and by using a computer one can now provide measurements of great accuracy.

About 6,500 asteroids now have reliable orbits, plus another 5,000 or 6,000 that are waiting for their orbits to be computed with greater accuracy. Several hundred are added each year and this has become quite a challenge for amateur astronomers. Dennis DiCicco of CCD Astronomy magazine regularly hunts for undiscovered asteroids and to date has credit for over 20 new finds. If and when these are followed for a long enough duration and a reliable orbit can be computed for it, the International Astronomical Union will assign it a permanent number. At that point, Dennis has the right to name it under the rules of the IAU. If accepted, it will be so christened. It's not everyday that an amateur astronomer gets the right to name a new world.

Jerry Armstrong

What's New

by David Riddle

Several articles of interest have appeared recently in professional journals that are of interest to amateur astronomers . Three concern globular clusters . A new globular has been located in the constellation of *Pyxis* at RA 09 07 57 Dec - 37 13 38 (2000) . Estimated to be 2 arc minutes in extent with a horizontal branch of magnitude + 18.7, this cluster may be visible (but not resolved !) in larger amateur instruments. I suspect this cluster will be quite a challenge for those of us that enjoy seeking out these sort of things.

Ruprecht 106 and **NGC 6540** have been reclassified from open clusters to globular clusters . **Ru 106** lies at RA 12 38 40 Dec -51 08 (2000). Although very low in the sky from the latitude of Atlanta it is a fairly bright globular of visual magnitude + 10.9 and a horizontal branch of + 18.5. A quick check of this cluster on my MegaStar program reveals a condensation of stars just to the northeast of the clusters position. This suggests the position of **Ru 106** has only been roughly determined and the cluster should show some resolution in small telescopes . **NGC 6540** (or *Djorg 3* or *C1803-278*) is on the popular ' Herschel 400 ' list sponsored by the Astronomical League.

With a published magnitude of + 14.6, **NGC 6540** was a surprisingly easy object in my 8" Schimdt Cassegrain and showed some resolution. Finally , a note on **IRAS 18333-2357** (*PK 009-07.1*), the planetary nebula centered in the globular cluster **Messier 22** . Hyne's book 'Planetary Nebulae' lists a visual magnitude of + 15. Be aware this is only a very rough estimate. The reported coordinates are uncertain with a margain of error of 27" in RA and 6" in Declination. The dimensions of this very dusty red planetary are 10" X 7" with the major axis running north to south . *PK 009-07.1* has a very strong OIII emissions and very low Hydrogen Beta emissions (users of the Lumicon filters take note !). In closing , I would like to mention an observation I made of the ' *lost* ' NGC

cluster (asterism ?) **7134** in Capricornus . While I would not call it spectacular (it consists of a tiny curving chain of four 14th to 15th magnitude stars about 30 arc seconds long), I received an E-mail from Brent Archinal of the US Naval Observatory stating I am apparently the first visual observer to see this thing since it's discovery in 1881 ! Does the sky hold more mysteries that amateur astronomers can solve ? You bet it does !

FROM THE OBSERVER'S NOTEBOOK

By Art Russell

Library.

The AAC has a small library with an eclectic selection of books. If you are interested in borrowing any of the books listed below, or the club's 4 1/4 inch reflector, don't hesitate to give me a call.

Title	Author	Publication Data	Description	Donated By
Observational Astronomy for Amateurs	Sidgwick, J. B.	Enslow Publishers, 4th edition, 1982	First published in 1957 and subsequently revised, the book is a little out of date. However it does present observational techniques needed in various fields of amateur astronomy. The book does not cover Deep-Sky issues.	Clay McHann
Lonely Hearts of the Cosmos	Overbye, Dennis	HarperPerenial Publishers, 1992	"A book detailing the "heartbreaking and often comical story of cosmology and the men and women devoted to discovering the secrets of the universe."	Clay McHann
The Physics of Space	Sutton, Richard M.	Holt, Rinehart and Winston Inc., 1965.	A short booklet describing the physics of space and related subjects.	Clay McHann
Bound to the Sun	Kippenhahn, Rudolph	by W. H. Freeman and Co, 1987.	Translated from the original German text. "The story of the human quest to discover the world of planets, moons and comets."	Clay McHann
Uranus: The planet, rings and satellites	Miner, Ellis D.	Ellis Horwood Limited, 1990.	Easily readable book on Uranus. Incorporates results of the Voyager 2 encounter.	Clay McHann
Pictorial Guide to the Moon	Alter, Dinsmore	Thomas Y. Crowell, 1973.	Pictures and details of the Moon.	Clay McHann

Exploration of the Universe	Abell, George O.; Morrison, David and Wolff, Sidney C.	Saunders College Publishers , sixth edition, 1991.	Textbook, possibly college level or advanced high school.	
Exercises in Practical Astronomy using Photographs: with solutions	Brück, M. T.	Adam Hilger, 1990.	Courses of work for astronomy and astrophysics.	Clay McHann
New Frontiers in Astronomy	Edited from Scientific American.	W. H. Freeman and Co., 1975.	Readings from various Scientific American articles. 2 copies.	Clay McHann, and Robert Cowart
Foundations of Astronomy	Seeds, Michael A.	Wadsworth Publishing, 1990.	College textbook.	Clay McHann
Stars and Planets, Peterson Field Guide Series	Menzel, Donald H. and Pasachoff, Jay M.	Houghton Mifflin Company ,1995.	Excellent pocket guide to the sky. Charts by Wil Tirion.	Clay McHann
Stars and Planets; The Sierra Club Guide to Sky Watching and Direction Finding	Kals, W. S.	Sierra Club Books, 1990.	A general beginner's level book.	Clay McHann
The Guide to Amateur Astronomy	Newton, Jack and Teece, Philip	Cambridge University, 1988.	A comprehensive guide on amateur astronomy.	Clay McHann
The Amateur Astronomer's Catalog of 500 Deep Sky Objects	Morales, Ronald	Aztex Corporation, 1986.	Catalogue of 500 deep sky objects with descriptions and some illustrations. Not well regarded in some circles.	Art Russell
Galaxies and the Universe	Edited by Eicher, David J.	Kalmbach Publishers, 1992.	An observing guide complied from Deep Sky Magazine articles.	Clay McHann
Observing the Constellations	Sanford, John	Simon & Schuster,1989.	A good reference of deep sky objects organized by constellation.	Clay McHann
The Cambridge Encyclopedia of Astronomy	Mitton, Simon	Crown Publishers, Inc., 1978.	Older edition of comprehensive and respected general reference on astronomy.	Clay McHann
Cambridge Star Atlas 2000.0	Tirion, Wil	Cambridge University, 1991.	Excellent star atlas for beginning astronomers.	Clay McHann
Welcome to Astronomy		Kalmbach Publishers	General Guide for beginners from Astronomy Magazine.	Robert Cowart
The Observer's Book of Astronomy	Moore, Patrick	Fredrich Waren & Co., 1963.	General guide for astronomy.	Robert Cowart
Night Watch	Dickinson, Terence	Camden House Publishing, 1983.	Good General Guide for astronomy. A favorite.	Robert Cowart
Astronomical Calendar		1993		Robert Cowart

Observer's Report.

Our Dark Site Observing Session on 21 October at Dauset Trails Nature Center was a resounding success! 14 telescopes kidnapped over thirty club members and guests, and held them hostage until about 1 A.M. the next morning. Early in the evening Comet Schwassmann-Wachman put on a beautiful appearance as it attempted to negotiate the hostages' release. Other notable negotiators included NGC 206, M27, M57, the Veil Nebula and the Helix Nebula, but to no avail. Fortunately late in the evening the telescopes' vision began to blur with dew and all of the hostages were able to safely affect their escape! None of the hostages were injured as a result of the experience, and several are now seriously contemplating adding to the ranks of telescope owning members.

Observing Sessions.

Dauset Trails. Since our Dark Site Observing Session on 21 October at Dauset Trails Nature Center was so well received, we're going to do it again next month! Join us on the evening of 18 November for a repeat Dark Site Observing Session at Dauset Trails. Dauset Trails is very easy to get to as the following directions will show. Don't forget to bring warm clothing, warm and dry boots, and something hot to drink as it's that time of year again! Additionally, bring your own electrical power (Frank Marchese, how about an article on how YOU do it!) for those high-speed scopes, computers and hair dryers. Clear Skies, here we come again!

Dauset Trails Directions

Take I-75 south from Atlanta to Exit 66, Jackson-Barnesville. Exit off and then pass over the interstate to the left (east).
Drive approximately 3.2 miles to High Falls Road. Turn right on High Falls Road.
Drive approximately 2.4 miles and look for a sign on the right to Dauset Trails. The road is Mt. Vernon Church Road.
Turn left on Mt. Vernon Church Road and drive approximately 3.3 miles.
Dauset Trails will be on your left.
Turn left into Dauset Trails and drive about 200 meters where you will see a gate and signs on the left side (note that there are clip-board hangers for notes). Do not turn at this point. Continue past for another 200 meters and you will pass through another gate leading into the trees/woods directly ahead.
Continue into the woods and stay on the main road which you are currently on. Several other roads intersect with this road, but do not take them. Continue for about 600 meters and as you come around a gentle left hand turn, the woods will open into a narrow field. You'll know you are in the right spot when you see the trellis cutting across the field.
Turn hard right at this point and head south 300 meters into the field. The field opens up with a low ridge providing a good vantage point for astronomy.
Look for the traffic cones along the way. We'll have them placed strategically to help keep you from getting lost in the woods. See you there!

Observatory Issues.

No more frozen nights at Villa Rica! No more will we be spider food!

Club member Richard Mintz recently insulated the Observatory's Warm-Up Shack! The improvement was immediately noticeable and significantly extends the shack's usefulness in cold weather. Not only that, but in insulating the building, he also reduced the ability of unwanted guests (spiders!) to take up residence. Those observers who tend to favor *COLD* weather will be particularly grateful for Richard's efforts. This past weekend the windows to the warm-up shack had their first recorded condensation due to heat inside the building. It was positively hot! Once again; thanks for the GREAT JOB RICHARD!

BEGINNERS' STAR-HOP; November-December, 1995

This month we pick up where we left off, with The Great Andromeda Galaxy. I hope you've taken time out to observe **M31** many times. Each time I do, I see something new. Well, lets get started. Our first star-hop takes us back to **M31**, except this time by a route different from last month's.

Star-hop #1. This month lets start by looking in our north-eastern skies for the distinctive "lazy 'W' shape" of the constellation Cassiopeia. This is a good starting point because it will take us to five different Messier objects. This first star-hop takes us to **M31, NGC 224** and its two companion galaxies, **M32, NGC 221,** and **M110, NGC 205**. We start our star-hop by using the north-western "V" in Cassiopeia's lazy "W" figure as a pointer. The stars *Gamma (γ) Cassiopeiae, Beta (β) Cassiopeiae* and *Alpha (α) Cassiopeiae, "Schedar,"* form our "V" pointer with *Alpha Cassiopeiae* leading the way. Imagine five of these "V" pointers stacked five in a row and you arrive at the star *Nu (ν) Andromedae* in the constellation Andromeda . Under dark skies, you can easily see **M31** as a diffuse glow located about 1 1/2 degrees due west from *Nu Andromedae*. Less obvious, but in low power fields of view are **M32** and **M110**. This past August I visited **M31** again and although I didn't record any notes, I can still vividly recall that it just seemed to go on and on. In a widefield eyepiece at 65X, **M31** seemed to stretch for three or

four fields of view before becoming too faint to see anymore. In September 1993, I noted: "Found without any problem using pointing stars in Cassiopeia. Center very bright with intense concentration of stars at 78X." Be careful while observing **M31**. There's a lot that escapes your attention the first few times you visit here. I only recently became aware of the presence of observable (?) globular clusters (!) in **M31**. However, it's best to reserve that kind of insanity for very dark, very clear nights on a BIG scope! Less than 1/2 degree to the South of **M31** is the small galaxy **M32**. My notes reflect: "...Companion to Andromeda Galaxy. Central portion appears as compact, but diffuse point at 102X." This small galaxy is dimly visible when you look at **M31**, but you have to hunt for it at magnitude 8.7. A little more than 1/2 degree to the north-west of **M31** is another companion galaxy, **M110**. I saw it the same evening as **M32** since it is almost directly across **M31** from **M32**. I noted: "...Found about three eye piece fields from center of **M31** at 78X. No color observable. Relatively bright central concentration, but much less extended than **M31**." **M110** is slightly dimmer than **M32** at 9th magnitude and in comparison, a little further away from **M31**. Located about "three Vs" away from the "V" in Cassiopeia, you may also find **NGC 147** and **NGC 185**. Both galaxies are companions of **M31** and members of our own "Local Group of Galaxies" as well.

Star-hop #2. This month's second star-hop takes us to the rich (lots of stars) open cluster **M52**, **NGC 7654**. Don't miss this open cluster, it's great in smaller scopes and worth the effort. In October 1993 I first observed **M52** while working on my Messier Certificate and recorded: "2155 hours. Open Cluster. 34X. Open cluster resembles globular cluster in appearance, but looser. 106X resolves all stars equally, but reduced contrast." Getting to **M52** is pretty straight forward, but pay attention, the Milky Way runs through the constellation Cassiopeia, so sometimes it's easy to get lost in the stars. With that in mind, lets go back to *Alpha Cassiopeiae*. From there, imagine a line extended through *Beta Cassiopeiae* to a distance slightly greater than that between *Alpha Cassiopeiae* and *Beta Cassiopeiae* where you'll find the star *4 Cassiopeiae*. **M52** is located less than a degree, one or two eyepiece fields of view, to the south-south-west. You'll find it a challenge for smaller scopes. How many stars can you count? Shining at magnitude 7, it has about 200 members. Did you find them all?

Star-hop #3. Our next star-hop is an easy one and takes us to another open cluster in the constellation Cassiopeia, **M103**, **NGC 581**. Lets start back at *Gamma Cassiopeiae*. From there, the next star in Cassiopeia's "lazy W" is the star *Delta (δ) Cassiopeiae*. Once there, **M103** is only a short distance away, about 1 degree to the north-east, or probably about one or two eyepiece fields of view. Easy to get to, isn't it? **M103** is another rich cluster with about 40 members. Together its stars shine at about magnitude 6.7 at a distance of about 8,000 light-years. In September 1993 I noted: "Small Open Cluster, not spectacular, but easily visible." How many stars did you count? While you are in this area, be sure to take time out to see the "**Perseus Double Cluster**," **NGC 884** and **NGC 869**. A remarkable view in a small scope, the "**Perseus Double Cluster**" is easily visible about 3/4 the way on an imaginary line from *Delta Cassiopeiae* and the star Eta (η) Persei. It's also time for me to get another observation of the "**Perseus Double Cluster**." This time I'll also remember to record my observation. As many times as I've looked, I've never written down anything! Don't forget how to get to *Delta Cassiopeiae*. You'll need to know it for ***Star-hop #6***.

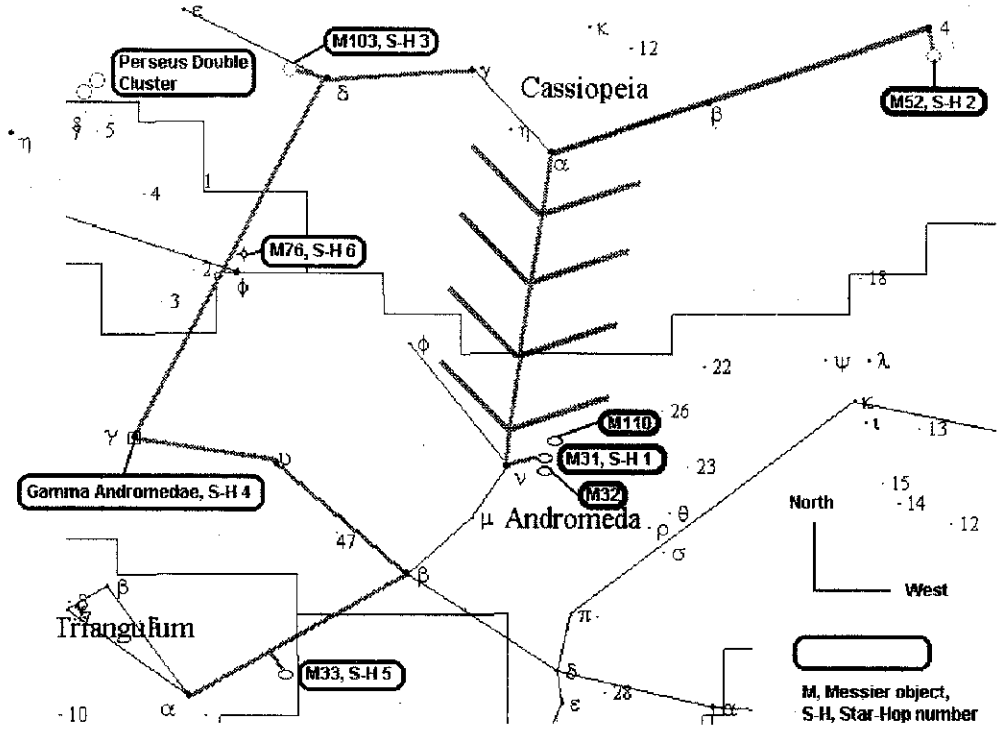
Star-hop #4. Lets start at the star *Beta* (β) *Andromedae* for the next two star-hops. The first one is a quickie to sate the appetites of our double-star fans. Its one of the best double stars for smaller telescopes, the star *Gamma (γ) Andromedae*, "*Almach*." To find *Gamma Andromedae*, we start at *Beta Andromeda* and jump to the next major star to the north-east, *Upsilon (υ) Andromedae*. From there, its one more hop to *Gamma Andromedae*, the next major star to the east-north-east. These two stars present a beautiful contrast with one star being a golden yellow color and the other star being blue or greenish-blue. Don't forget how to get to *Gamma Andromedae*. We'll be back there to start ***Star-hop #6***.

Star-hop #5. Back at *Beta Andromedae* again, lets track down the low surface brightness galaxy **M33**, **NGC 598**, "**The Pinwheel Galaxy**," in the constellation Triangulum. This galaxy can be tricky to find unless you're under dark and clear skies, so take your time to find it and use lower powered eyepieces. In September 1993 I recorded: "...Spiral Galaxy. Found at 102X, but view is better at 78X where it is still unresolved with a low surface brightness." Find M33 by imagining a line from *Beta Andromedae* to the star *Alpha (α) Trianguli*, "*Caput Trianguli*." **M33** is a little less than 3/4 the way from *Beta Andromedae* to *Alpha Trianguli* and located a little to the south-west of that imaginary line.

Star-hop #6. We're finally here. I've mentioned it twice, so here we go on our way to **M76**, **NGC 650/651**, "**The Little Dumbbell Nebula**." I first saw **M76** in October 1993 and had a great time with it recording: "...Planetary Nebula. 34X. Found in 45 mm eyepiece without much effort as a distinct smudge. 106x, distinct dumbbell structure very evident! 173X, increased contrast, bringing out dumbbell appearance." When you look at it, does it appear similar to **M27** that we saw last month? Take your time looking for this one. **M76** is pretty dim. At roughly magnitude 10 and about a distance of 3,400 light years, it can be hard to find the first time around. Enough said, lets head back to *Gamma Andromedae*. From there, imagine a line extending all the way back to *Delta Cassiopeiae* from ***Star-hop #3***. About half way there and to the south-west of the line, is the star *Phi (φ) Persei*. **M76** is a little less than one degree north-north-west of *Phi Persei*, perhaps one or two eyepiece fields of view away.

Good Luck and Happy Star-hopping!

Figure 1. ***Star-hops #1 thru #6***.



We're here to help! Here's how to reach us:

Address for New Memberships, Renewals, Magazine Subscriptions, and Book Orders:
Atlanta Astronomy Club
3595 Canton Road, Suite A9-305
Marietta, GA 30066

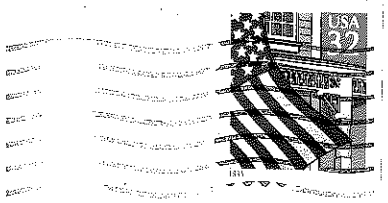
Atlanta Astronomy Club Information Line: 770-621-2661

Internet Home Page: http://www.mindspring.com/~aleko/atlastro.html

Officers, Board, and Committees:

Alex Langoussis	President	770-429-8384	aleko@mindspring.com
Jerry Armstrong	VP, Program Chairman	770-947-6548	
Art Russell	VP, Observing Chairman, Library, Beginner's Interest Group	770-448-6990	gs01har@panther.gsu.edu
Doug Chesser	Treasurer, Subscriptions, Books	770-457-5743	chesser@mindspring.com
Rich Jakiel	Newsletter Editor	404-352-0916	jakiel@crl.com
Ken Poshedly	Recording Secretary, Publicity, Peach State Star Gaze Chairman	770-979-9842	ken.poshedly@lightspeed.com
Eric Shelton	Board, Telescope Making Chairman	770-664-2837	eshelton@america.net
Tom Buchanan	Board, Light Pollution Chairman	770-587-0774	
Tushar Thrivikraman	Board	770-270-0742	
Lenny Abbey	Board, Publications	404-634-1222	labbey@mindspring.com
Steve Gilbreath	Board	770-409-1915	steve.gilbreath@oit.gatech.edu
Phil Bracken	Dark Site Search Chairman	770-941-6517	philb@mindspring.com
Ginny Mintz	Hospitality Chairman	770-422-7640	
Ginny Mauldin-Kinney	Information Line	770-414-9383	gs05vlm@panther.gsu.edu
Joe Sheppard	Program Audio-Visuals	770-784-7592	76101.1537@compuserve.com

THE FOCAL POINT



Newsletter of The Atlanta Astronomy Club, Inc.

FROM:
Richard Jakiel
1101 Collier Road
Apt. Q-1
Atlanta, Georgia 30318

First Class

The Atlanta Astronomy Club Inc., the South's largest and oldest astronomical society, meets at 8:00 p.m. on the third Friday of each month at Emory University's White Hall and other locations. Occasional meetings are held at other locations (check the hot line for details). Membership is open to all. Annual dues are $20 ($10 for students). Discounted subscriptions to Astronomy ($20), and Sky & Telescope ($27) magazines are available. Send dues to: **The Atlanta Astronomy Club, Inc., 3595 Canton Road, Suite A9-305, Marietta, Ga. 30066.**

Hot Line: Timely information on the night sky and astronomy in the Atlanta area is available on a twenty-four hour basis on the Atlanta Astronomy Club hot line: 707-621-2661.

Check out our ASTRO discussion list on the Internet: ASTRO@Mindspring.com. Also visit our Internet home-page: http://www.mindspring.com/~aleko/atlastro.html

Membership Expires (year & month) 9710
Alex & Nelda Langoussis
2936 Lowe Way
Marietta, GA 30066