

THE FOCAL POINT

The Atlanta Astronomy Club, Inc.

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August, 1995

"My Trip to the Outback"

The August 18 Meeting

by Richard Jakiel

Our next meeting will be Friday, August 18, at 8:00 p.m., in Emory University's White Hall. The meeting is free and open to the public. Back in September 1993, I took a research trip to the Hamersley Range in Western Australia. After 22 hours of plane flight and followed by another 800 kilometers of road travel from Perth, I found myself deep within a fantastic region of rugged banded iron formations (BIF), deep gorges, huntsman spiders, kangaroos and of course - some of the darkest skies in the world! My talk will include research on the origin of BIF and the evolution of the early atmosphere between 4.5 to 2.0 billion years ago. I will also include some of my deep sky observations with a 4 1/2-inch Astroscan (*and yes, M13 is puny compared to Omega and 47 Tucana.*). Come join us for a very interesting talk!

The July Meeting

By Ken Poshedly, Recording Secretary

The July 21 meeting of the Atlanta Astronomy Club was called to order at 8:15 p.m. by club president Alex Langoussis. There were 58 members and guests attending the meeting, held at Emory University's White Hall.

Prior to the main program, the following announcements were made:

- Ken Poshedly requested that anyone interested in working on next year's Peach Star Gaze contact him at (770) 979-9842.
- Dark Sky Site Committee chairman Phil Bracken asked for suggestions for dark sky observing sites for his committee to consider. The skies at our Villa Rica observing site have gotten progressively more light polluted over the years. And while we will continue to meet there, we are looking for additional east, west, north and south observing sites. Contact Phil at (770) 941-6517.

- AAC Light Pollution Committee chairman Tom Buchanan talked briefly on Georgia House Bill 942 and its proposals for outdoor lighting. Contact Tom at (770) 587-0774 for more information.
- Eric Shelton explained that the current heat wave kept his group from further work on finishing club scopes. Contact him at (770) 664-2837 for more information.
- Lenny Abbey announced that he will be the official sysop of Microsoft's new on-line Astronomy Forum (part of the Windows 95 project). Contact him at (404) 634-1222 for more information.
- Treasurer Doug Chesser stated that while we are still solvent, about 20 percent of the club membership renewals will come up in August and September. Also, if you spend any money for AAC business, you must submit signed receipts. Contact him at (770) 457-5743 for more information.
- Observing Committee chairman Art Russell recapped the recent beginners observing session at Villa Rica; while the weather had not been very cooperative, a dozen people attended and were able to open the observatory for general orientation of the club's 20-inch reflector. Art also announced the July 28 Dacuet Trail observing session, Aug. 19 Villa Rica observing session and Aug. 26 Brasstown bald observing session. AAC members requiring access to our Villa Rica observing site should contact Art at (770) 448-6990 for information about the combination locks.

Afterwards, Art Russell and Rich Jakiel presented a demonstration of how members across the metro area could assist in possibly narrowing down the search for an alternate dark sky observing site. The plan calls for using the constellations Lyra and the Little Dipper as observing aides in methodically providing notes of the limiting magnitude for the current evening. The site from where the estimate is taken should be away from nearby streetlights or similar lights, and the estimates should be taken on clear and Moonless nights. Both Rich ((404) 352-0916) and Art distributed photocopies of both constellations.

Finally, the main program consisted of several talks on nationally-known star parties. Tim Puckett and

Doug Chesser expounding on their account found in last month's Focal Point newsletter of the 1995 Texas Star Party. Sometimes great planning but poor restaurant choices make for bad results. Next Jerry Armstrong talked briefly on his experience at this year's Riverside Telescope Makers' Conference held in southern California. Finally, Fernbank Science Center's Ralph Buice presented a slide show and narration on his trip to Europe and the Zeiss Optical Works in the former East Germany and the possibility of a new planetarium projector at the Atlanta facility.

The meeting was adjourned at approximately 9:30 p.m. for refreshments and a visit to nearby Jaegers.

AAC/CNN Observing Session *by Ken Poshedly*

A dozen AAC members responded to the call of duty on July 31 to assist CNN with an observing session on Jupiter. Present were Lenny Abbey, Doug Chesser, Rich Glickman, Rich & Jennifer Jakiel, Alex Langoussis, Jim & Betty Monroe, Ken Poshedly, Art Russell and Tom & Judith Skidmore.

The event took place at an elementary school parking lot in Snellville on a mostly cloudless night of remarkably good seeing, as attested to by most of the observers that night. In other words, Jupiter's belts and Great Red Spot were obvious and steady (*editor's note: the "seeing" was excellent, rating about a 9 out of 10*). CNNAs Kate King and her crew were most appreciative for our efforts, and came away with what appeared to be superb taped footage of Jupiter taken through the eyepiece of Lenny Abbey's 10-inch f8 Cave Newtonian reflector.

As regular readers of this newsletter already know, the Atlanta Astronomy Club has been assisting CNN with observing sessions and interviews since this past spring, just after the Cable News Network began the once-a-month feature on amateur astronomy called "Backyard Universe."

Last month, AAC president Alex Langoussis was interviewed as part of a feature on observing artificial satellites. The observing session held that time was fortunate to see an extremely bright Mir/Space Shuttle move at a rather fast clip across the sky, just where Alex's posting forecast.

The CNN feature included not only Alex and his demonstration of the shareware program Traksat, but Alex's name and that of the Atlanta Astronomy Club for all the world to see!!

For more information about where to find Traksat, contact either Alex (770) 429-8384 or Ken Poshedly (770) 979-9842. Unfortunately, the logistics of these CNN observing sessions allow for only a few daysA

notice. If you wish to be contacted for future sessions, please contact Ken Poshedly at (770) 979-9842.

Calendar Notes

Remember that we now have new locks at Villa Rica. Be sure to call Art Russell if you don't have the new combinations!

18 August	Club Meeting at White Hall.
19 August	Observatory Clean Up, Public Viewing and Beginner's Interest Group at Villa Rica.
26 August	Club Observing Session at Brasstown Bald!
15 September	Club Meeting at White Hall.
16 September	Public Viewing at Villa Rica.
23 September	Joint Observing Session! The Atlanta Astronomy Club (AAC) and the Astronomical Society of the Atlantic (ASA) at Brasstown Bald!
20 October	Club Meeting at White Hall.
21 October	Dark Site Observing Session. Location to be announced.
28 October	Public Viewing and Beginner's Interest Group at Villa Rica.

The Faint Fuzzy Forum of the Focal Point *by Richard Jakiel*

During the past month, I've been re-examining my old records concerning the sky conditions at Villa Rica. Over the years I have documented the increase of light pollution at the site by making estimates of star faintness overhead. But why stop at the club's observing site? Why not do a comprehensive survey of the *entire* Atlanta Metro Area? At the club's last meeting (July 21), I presented a short talk on this very topic - doing a *Dark Sky Survey*. For those of you who have missed this presentation, or would like further details - I will now discuss all the pertinent details.

A Dark Sky Survey of the Atlanta Metro Area

During the last several years, Tom Buchanan has been lobbying for control of light pollution with a reasonable amount of success. However, he does lack a database of documenting the increase of light pollution over the metro area. In response, the Atlanta Astronomy Club will initiate the Dark Sky Survey Project to provide Tom a

valuable baseline study. The Dark Sky Committee will gather and standardize data from other members and use this data to produce contour maps covering the Atlanta Area and other parts of North Georgia. I must emphasize this is a **Group Project** and that *every* member can help. The more observations submitted, the more detailed and valuable our study will become. What is required from the membership is quite simple, and doesn't require anymore equipment than 1) your eyes and 2) a magnitude chart. First, we would like you to make estimates on the *faintest* star you can see at zenith. Enclosed is a chart of Lyra with star magnitudes listed. Whatever the faintest star's magnitude visible from your location - this is your magnitude estimate! In the city, you might only see to magnitude 4.0 to 4.5, while in the suburbs this may rise to 5.0 or better on a good night. Dark skies like at Brasstown Bald may exceed 6.5 to 7.0 magnitude.

Also important, is to estimate the time after sunset when the sky doesn't seem to get any darker. Normally, for this latitude twilight lasts about 90 minutes. However, in light polluted city skies twilight may last only 45 minutes while in Villa Rica this may be 75 to 80 minutes. It is very important to make all your estimates during periods of good transparency (not hazy) and when the Moon is not present. Since this is a metro-wide project, many of you can make estimates from your backyards. Please record the 1) date 2) location and 3) name of the observer(s) so that we can standardize the data.

How will this survey benefit me? Well, I believe the answer to that is fairly straight forward. First, it give you experience in judging just how good your skies are, and how they may compare to other observing sites. Second, this will provide the club a valuable baseline for the continual fight against light pollution. Third, if the data is good it is possible to see a future write-up in *Sky and Telescope* or *Astronomy* magazines. I hope most of you will find a little time and pitch in to what could be fun and worthwhile club project.

The Universe in My Computer: The Electronic Star Atlases *By Dave Riddle*

I collect star atlases. No, I *accumulate* star atlases. My first real star atlas was *Norton's Star Atlas*, purchased when I was a kid at the then astronomical sum of \$ 10.00. In succession came the Skalnate Pleso Observatory's *Atlas Of The Heavens* field and desk versions (complete with red galaxy symbols that vanished under a red flashlight), Menzel's photographic *Field Guide to the Stars and Planets* and a number of atlases from the Dutch

master, Wil Tirion : *Bright Star Atlas*, British Astronomical Association *Star Charts*, *Sky Atlas 2000* field, desk, laminated and 'Deluxe' (again complete with vanishing red galaxies) and two *Uranometria 2000* sets. One set was for my library and the other set is for use under the stars. The 'field' copies are starting to acquire their own 'character'. I've carefully colored each celestial object I've observed with a green pencil (no disappearing acts here!) and the covers are battered and creased, the bindings are getting a bit loose and the pages recall the nights of heavy dew and here and there preserve the small bloody remains of luckless biting insects that did not make successful getaways.

Then came the A.A.V.S.O. *Variable Star Atlas*, *The Supernova Search Charts*, Vehrenberg's photographic *Atlas Galaktischer Nebel* and *Atlas of Deep Sky Splendors* , Olcott's *A Field Book of the Stars* (1914 edition- a rare find), Hickson's *Atlas of Compact Groups of Galaxies* and the awesome two volume set *Carnegie Atlas of Galaxies*.

My first personal computer, (don't laugh) a Commodore 64, had a primitive planetarium program in it (*editor's note: that was "powerful" - I had a 16k Atari*). When I upgraded to a 486 computer with a CD-ROM drive I bought the Project Pluto *Guide Star Charts*, *HyperSky*, Astronomical Research's *Halton Arp Collection* and my favorite of all, E.L.B. Software's *MegaStar Deep Sky Atlas*.

What makes the *MegaStar* CD- ROM special? First of all it is a Windows program and is much easier to use than the original DOS version. (Yeah, I've got both of them.) With about 18 million stars plotted (compared to the *Uranometria's* 332,000 and *Sky Atlas 2000's* 43,000 stars) and over 84,000 deep sky objects, this program makes my *Uranometrias* look like a *Norton's Star Atlas*! Be aware that the stellar limiting magnitude varies according star density - Milky Way fields go down to about magnitude 13 while less populated areas may reach magnitude 15.5. Deep sky object coverage is somewhat spotty. For example, some very dim *Morphological Catalog* galaxies are plotted while a few *Index Catalog* and *New General Catalog* objects are absent. Emission nebulae exceeding an angular extent of one degree are not plotted and the dark nebulae listing is weak. But, this is not to imply that the primary database contains anything less than a staggering amount of information.

An auxiliary database (unique to *MegaStar*) allows you to plot the 'missing' objects of your choice. I became fascinated with the possibilities of the auxiliary database earlier this year and started to research the additional catalogs I wanted to add to the program. I have tried to add only the objects that I want to observe or are of a particular interest. My auxiliary database now includes the following catalogs:

* The Lynds Dark Nebulae Catalog (Astrophysical Journal Supplement, 1962.)

* The Barnard Dark Nebulae Catalog.

* The Sandqvist and Lindroos Catalog of Southern Sky Dark Nebulae (Astronomy and Astrophysics, 1976 & 1977)

* Selected brighter nebulae from the Sharpless HII Catalog along with the more prominent objects from the rather obscure catalogs of Cohen, Rogers, Campbell & Whiteoak (RCW), van den Bergh & Herbst (VDBH), Parsamyan, Dorschner & Gurtler (DG), Herbig & Haro (HH), Marsalkova (MRSL) and Dickel, Wendker & Bieritz (DWB).

* The Globular clusters and OB Associations of M31.

* The more prominent HII regions of near by galaxies according to Hubble, Hodge and Killen & Dufour.

* Newly discovered planetary nebulae from various sources. I have also extensively modified the primary database to include recently published estimates of visual magnitudes and sizes of the planetaries.

* Optical Supernova Remnants.(Astrophysical Journal Supplement, 1973)

* Selections from the *IRAS* catalog.

I estimate I have about 200 hours of work in this project (one of these days I am going to get a life...) and... was it worth the time and effort? I can only say this. There occurs a real sense of discovery when the dry coordinates and sizes of a 'new' celestial object are typed into my computer and then translated into a visual display on screen, accurately plotted, and sometimes surprisingly close to objects I have come to know well over the years. It becomes obvious as to why some of the Palomar globular clusters are so difficult to see (many are obscured by dark nebulae) and the relationship between emission and reflection nebulae and the dark nebulae is vividly displayed. I can only guess the benefits of 'my' atlas to the owners of large amateur telescopes doing visual, astrophotography or C.C.D. work. Yes, the age of the digital star atlas has arrived and I will not be surprised if the *Uranometria 2000* is the last of 'big' star atlases committed to paper... The Astronomical Society of the Pacific has announced the tentative availability of a compressed version of the *Palomar Observatory Sky Survey* to be made available on CD-ROMs at an affordable price to educators and amateur astronomers... I can hardly wait!

President's Soapbox

by Alex Langousis

I'd like to thank long-time member Bob Cowart for his donation of many years of Astronomy

Magazine to the Atlanta Astronomy Club Library. Also, thanks go to Jerry Armstrong for donating several boxes of books. Started by Art Russell this spring with books he donated, the library is now quite substantial.

Our club owes a great debt of gratitude to the many people and organizations that have donated time, equipment, and services to us. In fact, just about all of our assets have been donated to us! Of course, our greatest asset, the land at Villa Rica, was donated by the Barber family. The mirror of the 20" telescope came from the U.S. government. Our 8" Maksutov scope was a donation, as was the mirror to our under-construction 12.5 Dobsonian. Many of the materials used to build the observatory were donated, and it was built by the hard work of the members themselves.

Special thanks also go out to three educational institutions that have been so instrumental in helping our club. Agnes Scott College has been providing us a place to meet since our founding almost 50 years ago! Fernbank Science Center and it's staff of astronomers have not only let us meet there from time to time, but also have provided us with programs, and they've been helpful and supportive in many other ways too numerous to mention. More recently, Emory University has stepped in to provide a larger meeting place as our membership continues to grow.

So, to the many people and organizations who have contributed, we say THANKS! We couldn't have done it without you!

FROM THE OBSERVER'S NOTEBOOK

By Art Russell

Several of our experienced observers reported discovering damage to the 20 inch telescope when they observed at Villa Rica recently. Apparently someone inadvertently tried to rotate the diagonal between sides without releasing the detent-lock in the front of the telescope! Please know what you are doing with the equipment before you try to use it. If you don't know what you are doing, or are unsure, don't do it. A phone call to myself or one of the knowledgeable club members is a lot cheaper than any potential repair bill we might incur when we fix somebody's mistakes. Thanks - Art

Its that time of year again! The observatory needs a good cleaning to get ready for the first appearance of the Fall skies. With that in mind, I'll be hosting a clean up session for the Villa Rica observatory on 19 August. We need to drag off the old couch, take out the trash, clean and repair the telescopes, chase out the bugs and caulk the warm up shed. I'll start cleaning around 3 o'clock in the afternoon and knock off in time to get ready for the evening's observing session.

Observing Sessions.

This month we'll inaugurate a different approach to observing sessions for the Atlanta Astronomy Club with two scheduled observing sessions. The first session, 19 August, is the regularly scheduled monthly Public View session at Villa Rica which I've tied with a session for the Beginner's Interest Group. The second observing session, 26 August, is a Deep Sky Observing Session at Brasstown Bald to escape Atlanta's light pollution. It is a bit of a drive, but the skies are worth the trip! Bring lots of coffee and let's make it an ALL-NITER! Let's hope the weather clears for both events! I've also scheduled a repeat double header for October. We'll be doing a joint observing session with the Astronomical Society of the Atlantic (ASA) at Brasstown Bald as a Deep Sky Observing Session on 21 October. The Public Viewing and Beginner's Interest Group at Villa Rica will be on the 28th of October.

Observer's Report. On the evening of Friday, 28 July, the AAC held its first observing session at the Dauset Trails Nature Center, near Jackson, Georgia. This is just around the corner from the site of this year's successful Peach State Star Gaze. Although it was a Friday night, we had 9 AAC members and their scopes, and about twenty members of the local viewing public that the director of Dauset Trails had signed up to observe along with us. The observing was great and everybody enjoyed themselves, finally burning out at 0300 AM under the best skies of summer! Sky conditions varied throughout the evening, but it wasn't a problem. As one area was obscured with clouds, we'd all shift into a clear area of the sky. Even relatively clear skies were a welcome change for those of us that are "Deep Sky Challenged!" At its best, naked eye limiting magnitude was a touch past 6th magnitude and telescopic limiting magnitude was a little past 15th magnitude for the 18-inch. Needless to say, a welcome change from my 3rd magnitude skies in Norcross! Throughout the evening Jupiter blazed a those of us who got tired of hunting down the faint fuzzies. Later on, even Saturn, sans rings, put in a appearance, to everybody's approval. However, the best sight of the evening was Comet Hale-Bopp which I had just read about on the INTERNET. I found Comet Hale-Bopp with little difficulty using finder chart onto which I had plotted the path of projected positions based upon information which I found on Lenny Abbey's Astro Flux astronomy Listserver. I found the comet while sweeping its suspected area with a 35mm Panoptic at 65X (magnification) and then bumped up the power to a 12mm Type 2 Nagler at 190X for a better view. The comet was very diffuse at this point and could be overlooked if you aren't looking specifically for it. Additionally, the increase in power to 190X did help, but the comet remained diffuse. However,

the comet did seem to be ever so slightly extended towards the north and reminded me a bit of the Cone Nebula. The latest reports indicate this comet has the potential to develop into the comet of the century. Time will tell.

Beginner's Interest Group. The next Beginner's Interest Group will meet at Villa Rica on the 19th of August. The topic for the evening will be Globular Clusters (or anything else you might be interested in). The summer into fall time of the year is the best time for chasing down globular clusters. Come on out and lets give it a shot! I know of 147. How many can YOU find?! Give me a call if there's any other topic you'd like me to address!

Scrapin' the Horizon

by Richard Jakiel

How low can you go? ...Have you ever gone "bottom scraping", looking for those elusive deepsky objects that hug the southern horizon? It doesn't take a genius to figure out that the Southern Hemisphere is blessed with an abundance of superb deep sky objects. Many of the best clusters, planetaries, nebulae and galaxies visible from Georgia never rise more than 5 to 15 degrees above the horizon. The latitude of the Atlanta Metro Region is about +34 degrees, so it is theoretically possible to see down to -56 degrees declination. From the club observatory at Villa Rica, I have seen Canopus (-52° 40') barely clearing the treeline and Omega Centauri (-47°) was quite easy. However, since the late 1980's the skies have been severely compromised that I suggest finding a darker site if you want to see these and other objects to best advantage.

I plan to take you on a deepsky tour of summertime objects that are often neglected for easier, higher latitude prey. Starting from Scorpius, our tour will around the base and *under* the tail and end up in "underbelly" of Sagittarius. We will start with NGC 6124, a pretty open cluster just to the west of the scorpion tail. It is a large, loose and bright cluster with over a dozen stars brighter than 10th magnitude and easily visible in a small finder scope. In my 6" f/5, perhaps 40 stars are visible in a 1/2 degree field. Only 1 1/2 degrees to the northeast lies a fairly bright planetary nebula, NGC 6153. In my 13.1" scope, I saw a small greenish disk perhaps 20" across and shining at 11.5 magnitude. It lies at the end of a pretty telescopic asterism once described by observer Stephen Coe " that resembles Delphinus".

One of the most spectacular deep sky objects visible in the summer sky is NGC 6231, a spectacular open cluster discovered in 1755 by Lacaille. This object is often neglected perhaps a result of its far southern declination. Its certainly not the result of a difficult starhop since it lies less than one degree north of the naked eye double star Zeta Scorpii. It is visible to the naked eye as a 3rd magnitude nebulous patch and begins to resolve into its true nature with a good finder scope. In my 6" scope, it resolves into a brilliant, rich cluster of multicolored stars. Over 50 stars are visible, most of them packed into a tight 10' area. In the club's 20" f/4.5 scope, the view is simply awe-inspiring! Just to the north lies H-12, a huge, loose open cluster of over 100 stars. This cluster is over one degree across, and easily resolves into

stars with the slightest of optical aid. When observing this cluster try an UHC or O III filter. You may be able to discern IC 4628, a faint wedge-shaped nebula associated with the northern portion of the star cluster. The dense star fields in this region make for great sweeping with either binoculars or rich field telescopes.

Lurking under the tail are an interesting array of open and globular clusters with a nebula or two thrown in for "variety". One of the most interesting is the NGC 6193/6188 in the constellation of Ara. At $-48^{\circ}40'$, this open cluster - nebula combo requires a very dark, low southern horizon. I first viewed the open cluster NGC 6193 with a 4 1/2" Astroscan while on a trip to Western Australia. The cluster has a bright, condensed core with several nice outer star chains. I did not see the diffuse nebula (6188), but I suspect that it would be visible using an UHC or O III filter. This should be a good object to try using big aperture and filters at the Winter Star Party. Heading back across the Ara-Scorpius border lies the bright open cluster, NGC 6259. Though passed over by most observing guides, this cluster is very rich, oval swarm of over faint 100 stars. In my 13.1" scope it has the appearance of a loosely compressed globular cluster since most of the stars are between 12 to 15th magnitude. Tom Polakis and Steven Coe in May-June, 1988 *Observer's Guide* likened this cluster's appearance to NGC 7789 in Cassiopea.

Only about 32' (RA) due west lies the bright globular cluster NGC 6388. Like many objects in this region, its an easy starhop being only $1^{\circ}50'$ due south of the bright tail star Theta Scorpii. Shining at 6.8 magnitude, it is one of the brighter globulars in the sky and it begins to resolve with medium (12 to 15") aperture. Just across the border in Corona Australis lies another bright globular cluster. I am willing to bet that NGC 6541 is *the most neglected* bright globular cluster visible from mid-northern latitudes. I have scoured a number of observing guides for background information and it has been most thoroughly snubbed. Most observers have not heard of it, let alone seen it and yet the cluster is very bright and fairly easy to resolve. Measuring a robust 13.1' and glowing at 6.6 magnitude, it compares quite favorably to M10 and M12 in Ophiuchus. I was able to resolve most of the cluster with my 13.1" and I suspect it would rate high on the "showpiece scale" when viewed from a southern hemisphere site.

Instead of big, bright and easy globulars perhaps you desire want to test those observing skills with challenging objects. Lying within 5-6 degrees of M55 (*Uranometria*, page 379) are three distant, highly obscured globular clusters. Terzan's 7, 8 and Arp 2 are a trio of low surface brightness objects. Ranging from 12.0 to 12.4 magnitude and several arc-minutes in diameter, these objects will challenge owners of large aperture telescopes. Difficult objects from Villa Rica's light polluted skies, I suggest finding a very dark site before you decide to tackle them.

In contrast, near the Sagittarius-Corona Australis border lie a group of bright, easy deep sky objects that should be visible in the smallest telescopes. NGC's 6726/27 and 6729 are a trio of high surface brightness reflection nebula. NGC 6726/27 appears as a two glowing patches in contact, about 3' by 2' across. About five arc-minutes to the southeast, NGC 6729 appears like a distant comet. Surrounding the *T Tauri* star,

R CrA, this unusual nebula varies in size and brightness. In many ways, its behavior and characteristics are quite similar to *Hubble's Variable Nebula* (NGC 2261). Our final object, NGC 6723 is a pretty globular cluster less than 30' away. Shining at magnitude 7.1, it is easily resolvable into scores of 13 to 15th magnitude stars. Many southern observers consider this region one of the most diverse and interesting sky, so take the time and explore some these lesser known gems of the summer.

Details on Comet Hale-Bopp

From the Editor: *Comet Hale-Bopp, newly discovered on July 22, is a gigantic object over 100 miles in diameter (Halley was 5x 6 miles) and the will grace our skies for many months to come. Intrinsically, it is the brightest comet known and was discovered at a distance of over 7 AU. Here are some details recently gleamed from the internet. Also enclosed is a finder chart of the comet for the period 16August to 27September.*

From: Gary W. Kronk <kronkg@medicine.wustl.edu>
Subject: Comet Hale-Bopp

C/1995 O1 (Hale-Bopp)
(Orbit on IAUC 6198)

Discovery

After several months of no comet discoveries (marking one of the longest dry spells in recent years), it was announced on July 24 that Alan Hale (Cloudercroft, New Mexico) and Thomas Bopp (near Stanfield, Arizona) had independently reported the discovery of a new comet.

The comet was discovered by Hale shortly after 11 pm (local time) on July 22, and was independently found by Bopp about a half hour later. The comet was then in Sagittarius, not far from M70. It was described as diffuse, with some condensation, and about magnitude 10.5.

Daniel Green (Central Bureau for Astronomical Telegrams) made the announcement on IAU Circular 6187, issued on the afternoon of July 24, and followed it up with IAUC 6188 listing numerous precise positions that had been received from Australia and Japan after a confirmation request had been sent out.

A prediscovery image was announced on IAUC 6198. R. H. McNaught (Anglo-Australian Observatory) found the image on a plate exposed by C. P. Cass on April 27, 1993. The comet's total magnitude was then 18 and the coma was 0.4 arc minutes across. The orbit given on IAUC 6198 indicates the comet was then 13.1 AU from the sun.

Observations

A look at the observations made during the first few days after discovery indicated the comet was between magnitude 10.5 and 11. It had some condensation and a short tail or elongation toward the north. The coma was reported as about 1 or 2 arc minutes in diameter. As of the beginning of August, the comet is being widely observed and various observers are indicating the comet is

magnitude 10.5, about 2 to 3 arc minutes across, and weakly condensed. There is still a trace of a tail, or a slight elongation of the coma, towards the north.

Marsden wrote on IAUC 6194 that CCD imaging by W. Offutt (Clouderoft, New Mexico) during July 24 to July 31, seemed to indicate the coma was shrinking. It was also mentioned that Zdenek Sekanina (Jet Propulsion Laboratory) examined the measurements Offutt obtained from his images and has commented that the coma may be spiral-shaped, similar to that shown by periodic comet Schwassmann-Wachmann 1 when it undergoes an outburst.

Orbit

Green issued IAUC 6191 on July 26, which gave the first orbit computation (listed as highly uncertain). Based on 57 positions obtained on July 24-26, it indicated the comet would pass perihelion in early 1997!

Brian Marsden (Central Bureau for Astronomical Telegrams) issued IAUC 6194 on August 1. It gave a parabolic orbit based on 208 positions obtained during the period of July 24 to August 1. This new orbit, which is still considered "somewhat uncertain", had a perihelion date of April 1, 1997, and a perihelion distance of 0.9 AU.

McNaught's predisccovery image was announced on IAUC 6198 and enabled Marsden to compute a very precise orbit. This new orbit indicated the general correctness of the orbit on IAUC 6194, except that the comet is moving in a long-period ellipse. It currently has an orbital period of about 4000 years, but the original orbit may have had a period of about 3200 years. Marsden comments that comet Hale-Bopp "is not on its first pass from the Oort Cloud."

The orbit from IAUC 6198, based on 248 positions, is as follows (equinox 2000.0):

Epoch=1995 Oct. 10.0 TT
T=1997 April 1.3922 TT
e=0.996348
q=0.916702 AU
Argument of Perihelion=130.4405 deg.
Ascending Node=282.4733 deg.
Inclination=88.8797 deg.

The comet's brightness trend is still a matter of question. The brightness in April 1993 is about 4 magnitudes fainter than the predicted magnitude based on the comet's currently accepted brightness model. Although this is a photographic magnitude and may run a little faint, this observation still offers additional evidence that the comet may be experiencing an outburst. It is, however, interesting that McNaught also announced that the comet was not visible on a plate exposed on September 1, 1991. The plates in question have normal magnitude limits of 21, and the predicted magnitude for the 1991 observation should have been only one magnitude less than that of the 1993 observation. The explanation might be that the comet was also undergoing an outburst at the time of the 1993 photograph. On the other hand, it could indicate that the current brightness model does not fit this comet and might need to be revised. Additional observations are

needed before an accurate brightness model can be developed.

Thomas Bopp's Story

by Thomas Bopp

*(Communicated by Kevin Gill -Black Mtn
Observatory, Carefree, Az)*

On the night of July 22, 1995 some friends and I headed out into the desert for a dark of the moon observing session. The site, which is west of Stanfield, AZ and a few mile south of Interstate 8 is about 90 miles southwest from my home. My friend Jim Stevens had brought his 17-1/2" Dobsonian.

We started the evening observing some of the Messier objects such as the Veil and North American Nebulae in Cygnus, when Jim said "Let's look at some of the globulars in Sagittarius." We started our tour with M22 and M28, observing at 50X and then at 180X. Around 11:00 local time, we had M-70 in the field when Jim went to the charts to determine the next object of investigation. I continued watching M-70 slowly drift across the field, when it reached a point 3/4 of the way across a slight glow appeared on the eastern edge. I repositioned the scope to center on the new object but was unable to resolve it. I called to Jim and asked him if he knew what it might be, after a visual inspection he stated he wasn't familiar with it but would check the charts.

After determining the general position of the object he was unable to find it on either Sky Atlas 2000.0 or Uranometria. The moment Jim said "we might have something" excitement began to grow among our group and I breathed a silent prayer thanking God for his wondrous creation. My friend, Kevin Gill then took a position from his digital setting circles and estimated a magnitude. At 11:15 I said that we needed to check the object for motion and should watch it for an hour. The group observed it change position against the star field over that period and at 12:25 I decided to drive home and report our finding.

Arriving at home initial attempts to send the telegram were unsuccessful due to an incomplete address I had. After searching my library I was able to locate the correct address and confirmation was requested. At 8:25 AM July 23, 1995 Daniel Green of the Harvard Smithsonian Astrophysical Observatory telephoned and said, "Congratulations Tom, I believe you discovered a new comet." and that was one of the most exciting moments of my life.

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

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

Atlanta Astronomy Club Information Line: 621-2661

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

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THE FOCAL POINT

Newsletter of The Atlanta Astronomy Club, Inc.

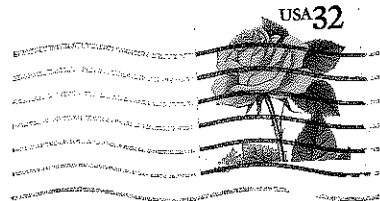
FROM:

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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 (\$18), and Sky & Telescope (\$24) 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: 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>



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