

THE FOCAL POINT

The Atlanta Astronomy Club, Inc.

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March, 1996

The March Meeting

The Atlanta Astronomy Club's next meeting will be Friday, March 15, at 8:00 P.M. at Emory University's White Hall. We will have a "smorgasbord" of topics to be covered. Comet expert Jerry Armstrong will discuss the latest details on the upcoming rendezvous of the brilliant comet 1996B2, better known as Comet Hyakutake. Details on the 1996 Winter Star party and the upcoming Peach State Star Gaze will also be "hot" topics. Please join us for a highly informative series of talks and, as always, food and fellowship afterwards.

- Mar. 13 CNN Photo Session at Dauset Trails
- Mar. 15 Monthly Meeting
- Mar. 23 Observing Comet Hyakutake at Villa Rica
- Apr. 13 Sidewalk Astronomy with John Dobson
- Apr. 18-21 Peach State Star Gaze
- Apr. 26 Annual Banquet with Richard Berry
- May 17 May Meeting

Minutes of the February Meeting

By Ken Poshedly, recording secretary

The February 9, 1996 meeting of the Atlanta Astronomy Club was called to order shortly after 8 p.m. at the Fernbank Science Center by AAC president Alex Langoussis. By actual count, there were at least 80 persons attending. Note that this meeting was held the second Friday night of the month instead of our usual third Friday due to scheduling needs by our planned speaker, Richard Berry.

- Alex recognized members of the Astronomical Society of the Atlantic and the North Georgia Astronomy Club who were also attending this meeting.
- Alex announced a last-minute change in programs. Our planned speaker, Richard Berry, was stranded in Oregon due to mudslides and foul weather. In his absence, AAC member Lenny Abbey graciously agreed to fill in with a program on the history of telescopes. In appreciation, all present joyfully voted by acclamation to appoint Lenny as *Grand Potentate*. Considering Lenny's many, many, many, etc., years of service to the AAC, we are sure he'll live up to this new office.

- A tentative list of upcoming AAC programs and activities was described. One highlight includes a visit April 13 and 14 by the renowned John Dobson, inventor of the "Dobsonian" telescope mount and popularizer of the "Sidewalk Astronomer" phenomenon. Hopefully, we'll be able to hold our own Sidewalk Astronomer evening with John on April 13.
- AAC member Larry Higgins has been working to establish our own Sidewalk Astronomer group and asks all who can work with him on this project to contact him at ...
- Ken Poshedly gave a brief progress report on the upcoming Peach State Star Gaze, scheduled for April 18-21 at Indian Springs State Park, near Jackson. A separate write-up about the event is located elsewhere in this *Focal Point*.
- Following the announcements, Lenny Abbey presented a top-notch show on telescopes from the time of their invention up to today. Highlights included photos of the actual telescopes Galileo used in his discoveries of the Jovian moons, bits and bytes on scopes that were huge in their day, but not much by today's standards, and background on the 100-inch reflector at Mt. Wilson and 200-inch reflector at Mt. Palomar. More amusing—and educational—were a series of slides showing Lenny himself with his first telescope in 1951, shortly after he joined the AAC, followed by how he and wife Eugenia loaded, transported, unloaded and set up Lenny's Cave Astrola 10-inch Newtonian reflector in 1966 or so. Let's just say that we're sure Eugenia knows just how it's done and Lenny makes a good foreman. Thanks again, Lenny and Eugenia! Following light refreshments in the classroom, a group of two dozen or so completed the evening at Athens Pizza on Clairmont Rd.

ATTENTION FOCAL POINT SUBMITTERS!

Because of the amount of material that we're required to sift through in the editing of the newsletter, it's easiest for us if we don't have to change entire article formats to fit the standard newsletter form. Also, we need to get things

in as soon as possible. Starting with the April edition, all submissions will be required to be in by certain deadline dates or risk being omitted or pushed back to later issues of the Focal Point.

Deadline for news stories for April is April 12, all other articles April 5.

Deadline for May news is May 3, all other articles April 26.

If you use MicroSoft Word, Works, or WordPerfect, please follow certain format guidelines. All articles should be in Times New Roman font, size 10 (headers size 12), using only style Normal. They should be in single column format, preferably with full justification and spellchecked, and any illustrations should be included at the end of the article on a separate page (not a separate file, we might miss it). Any article not following this format will be rejected or delayed. **NO EXCEPTIONS!** Submissions by email are preferred.

Handwritten or typed submissions should be legible and double-spaced.

Peach State Star Gaze Update

Registration Forms Mailed—On February 14, the United States Postal Service was deluged with 1,779 Peach State Star Gaze registration packets for delivery across the southeastern U.S. Since they were bulk mailed, the delivery time varies. At this writing (early March), some AAC members were finally receiving their registration packets.

Volunteers Needed: Georgia's largest annual celebration of amateur astronomy needs your help. While it may pale in comparison with Billy Payne's Centennial Olympics, we could use a few hands to help make the PSSG the best ever. Various folks have already signed up to help make the event run smoothly, but more will be needed.

For those of you who haven't heard, the Atlanta Astronomy Club's Peach State Star Gaze weekend will be held Thursday afternoon through Sunday noon, April 18-21, at Indian Springs State Park's Camp McIntosh (near Jackson). Besides the dark skies and great comradery, our featured speakers include Jim Rouse, Dawn Jenkins, Julius Benton, Paul Trauffer and Don Parker.

Registration and lodging fees are so low, almost anybody can afford it!

If you haven't yet received your PSSG registration packet yet or wish to volunteer for the event, contact Ken Poshedly at (770) 979-9842 for more information.

AAC Board Meeting Scheduled

The next quarterly meeting of the Atlanta Astronomy Club's officers and board of directors is tentatively scheduled for Sunday, March 24 at the home of Lenny Abbey. At this time, the agenda includes discussion on arrangements for the Peach State Star Gaze, an update on the proposed merger of the AAC and ASA and miscellaneous committee reports.

If you wish to attend the meeting or have items to add to the agenda, please contact Ken Poshedly, chairman of the board, at (770) 979-9842.

CNN and AAC: In the Dark Again

Hopefully, you're aware of Comet Hyakutake (officially called C/1996 B2). As a member of the largest and best astronomy club around, we should hope so.

CNN knows about Hyakutake, so it's no great surprise that they once more called on us to help show amateur astronomers in action observing this object. The comet will be featured in the next segment of "Backyard Universe" set to air Saturday, March 16, at 11 a.m. Eastern Time as part of the show "Science & Technology Week" (and repeated the next day at 4 p.m.). And as part of that segment, the AAC scheduled an observing session for **late Wednesday night, March 13, at Dauset Trails, near Jackson.**

If you receive this issue of "Focal Point" soon enough and are interested in participating in this AAC-CNN observing session, contact Ken Poshedly at (770) 979-9842. Who knows? You might wind up on worldwide television.

Comet Hyakutake!

By Richard Jakiel

During the next couple months, we will be treated to a brilliant comet as it moves across the northern skies. Known as Comet Hyakutake or 1996B2, this comet will pass a mere 0.10 AU (or ~ 9 million miles) from Earth on March 25.3 (Universal Time). At this time, the comet is predicted to rise in brightness from about 3.7 magnitude (March 15) to 0.5 to -1.0 magnitude (!!!) on March 25th. The coma will swell to perhaps a couple degrees in diameter, with a huge diffuse tail up to 40 degrees long! Make no mistake - this is a great comet, not "duds" like Kohoutek (1973) or Austin (1989). So far, the brightness has been running about one magnitude above the "predicted" estimates.

Comet Hyakutake will be cruising the north polar skies during its close rendezvous with Earth in late March. It will pass through Ursa Major and Minor, and make a close approach to Polaris, so it will be easily viewable by northern observers. Moving at better than 18 degrees a day, you'll be able to track its motion even on an hourly basis with the naked eye. Telescopically, you will be able to watch the comet move in "real time". Since its moving so fast, its best to plot its path using an ephemeris on a wide field sky chart. The recent *IAU Circular # 6329* gives detailed specifics on 1996B2:

COMET C/1996 B2 (HYAKUTAKE)

In adopting, originally on IAU 6304, the magnitude formula ($5.5 + 5 \log \Delta + 10 \log r$) for this comet, we were well aware that CCD observations were then running up to 2 mag fainter and visual estimates up to 1 mag brighter than this. This is still the case (see MPC 26606-26608, IAU 6328), which mainly serves to confirm that the choice of the term $10 \log r$ (r^{*-4} variation) was not unreasonable. The following general orbit, from MPC 26724 and utilizing observations through Feb. 27, shows a 5-sigma departure from a parabolic solution, some worry about this

determination arising from the use of the isolated Jan. 1 predisccovery observations:

Epoch = 1996 Apr. 27.0 TT

T = 1996 May 1.4025 TT

e = 0.999846

q = 0.230123 AU

Peri. = 130.1925

Node = 188.0514 2000.0

Incl. = 124.9016

Nevertheless, the adjustment necessary to obtain the "original" barycentric orbit is quite large for this comet. The indications are thus that this is NOT a "new" comet in the Oort sense, and that it was last near the sun 10 000-20 000 years ago. This may inspire further confidence in the r^{-4} law, and since visual observations would seem more relevant than CCD observations in discussions of naked-eye visibility, one might expect the comet to become even brighter than predicted. It is important to note, however, that when the comet is closest to the earth (0.102 AU on Mar. 25.3 UT), that brightness is likely to be diffused over an area several degrees across. More typical tail development is likely to come later as the comet approaches the sun. The comet is unique in its close passage to the earth and subsequent small perihelion distance. If the brightness holds, it will be the intrinsically brightest comet to pass so close to the earth since 1556. The ephemeris uncertainty is still at least 1'.

A SHORT EPHEMERIS IS ON PAGE 8

Winter Star Party Report

by Alex Langoussis

This year's Winter Star Party in the Florida Keys once again had a large group of Atlantans in attendance. Those who made the journey this year included Doug and Angie Chesser, Jerry and Judy Armstrong, Dave and Cindy Sanders, Eric Greene, Harry Gelblat, Tom Faber, Chris Johnson, Rick Johnson, Harry Taylor, Jim Brant, Eric Shelton, David Hanon, and myself.

The toughest ticket on the star party circuit, this year the WSP was filled up within a week of registration mailouts, and for good reason. Besides the pleasant temperatures, the Keys boast excellent seeing conditions and plenty of clear skies. These climate conditions then draw the top amateur observers from around the world. And so the speakers and observers in attendance become an additional draw!

This year we had only 5 clear nights out of 6. There were 2 very windy nights, and 2 more with lots of dew. What is incredible is that even when the conditions were not as good as possible, they were still much better than we are used to here at home.

Galaxies that usually are a blur showed glorious spiral structure. The air was steady enough that even Venus looked 3-dimensional, "a small world instead of a scintillating blob" in Eric Shelton's words. Eta Carinae and Omega Centauri put on their usual show above the palm trees and the mirror-like water. The Horeshead Nebula is viewed so easily from the WSP that it is almost a cliché. My own favorite observation of the week was the exploration of the Vela Supernova Remnant. Often mistakenly labeled as the Gum Nebula, it is the equivalent

of about 20 Veil Nebulas branching from and criss-crossing each other.

To ensure that nobody got any sleep, the daytimes were filled with talks, 25 in all during the week. John Dobson(ian), who will be here with us in April, was the closing speaker. Also keeping us awake were the vendor booths. What would the WSP be without running our charge cards to the limit? I think almost everyone came away with some major purchase. Harry Gelblat and I both ended up with laser collimators. Eric Shelton came away with several hundred dollars worth of goodies, including a 2" UHC filter and a 2" star diagonal. And Eric Greene came home with a new piece of glass. Jerry Armstrong was the exception. He was a vendor, and was very successful in taking everyone else's money, selling a van load of his paintings!

For those of you who have never attended a national star party, I highly recommend the experience. It is a wonderful way to expand your observing skills, your equipment knowledge, and your circle of astronomy-minded friends. Best of all, it's a heck of a lot of fun!

WINDOWS AND WORM TRACKS

By Dave Riddle

A rather obscure galaxy lies just to the south-southwest of the open cluster NGC 2483 in the constellation of Puppis. Known as ESO 430-1 (or IRAS 07531-2802 or Principal Galaxy Catalogue 22177), this galaxy softly glows at about the 14th magnitude. ESO 430-1 merits attention because it lies in the 'zone of avoidance' - an area that almost no galaxies are to be found. The reason for the absence of galaxies in the 'zone' is simple; it is the region of the sky that our own Milky Way galaxy's spiral arms mask our view of the distant galaxies. ESO 430-1 lies almost exactly on the Galactic Equator, surrounded by our Milky Way's open star clusters, HII regions and planetary nebulae. This low absorption 'window' that allows the distant galaxies to be seen is known as the "Puppis Window". A pair of similar windows lie in the constellation of Sagittarius but they have an important difference - they are 'holes' that allow astronomers to peer through the Sagittarius arm of our own galaxy toward the otherwise obscured region of the Milky Way's core. These are "Baade's Windows".

The Rosette Nebula is a popular target for amateur astronomers this time of year. The Rosette has an unjustified reputation as being difficult to see. I have seen it from Villa Rica using only a 76mm refractor and an Oxygen III filter and it is obvious in 7X50 binoculars from a darker site. A careful inspection of the Rosette Nebula with the Atlanta Astronomy Club's 20-inch reflector will reveal curious dark lanes crossing the bright nebulosity. These dark lanes are known as 'elephant trunks' or 'worm tracks'. Personally, I prefer the term 'worm tracks' (borrowed from the European Southern Observatory's terminology for filament dark nebulae) you only have

see them to understand why! The bright open cluster NGC 2244 is a naked eye cluster that lies centered in the heart of the Rosette. The powerful stellar winds of this young cluster are responsible for the 'cavity' in the nebulosity ... the winds are sweeping a clearing in the nebulosity from which the cluster formed. My observing notes reflected an uncertainty on the nature of NGC 2239, an open cluster that lies immediately to the west of NGC 2244 . I noted I couldn't see any obvious clustering of stars in the area back in the winter of 1994. As it turns out , NGC 2239 is a 'non-existent ' open cluster ' ! The confusion dates back to 1833 when John Herschel duplicated an observation of NGC 2244 . The Uranometria charts list NGC 2239 as a 'real' cluster ... one of the many errors in the Uranometria 2000 maps .

The Diffuse Nebulae Complexes of the Southern Winter Sky

by Richard Jakiel

Diffuse nebula are not randomly strewn about in the sky, rather they are confined to a narrow region centered on the Galactic Plane. A particularly fascinating area for telescopic study can be found in the southern winter Milky Way. Stretching in a huge arc from the Orion Nebula (M42) to the Vela Supernova Remnant (SNR) in the far south there are three major diffuse nebulae "complexes". These can be roughly defined as the *Orion*, *Seagull*, and *Vela SNR-Gum* nebulae complexes. This collection of nebulae includes some real showpieces, along with objects that will test the largest telescopes and most seasoned deep-sky enthusiast.

The "Orion Complex"

By far the most familiar to northern observers is the Orion Complex of diffuse nebulae. This includes the wonderfully intricate *Great Orion nebula*, the "*Dagger*" (with the *Horsehead*), *Pi* (π) or *Flame Nebula*, *Barnard's Loop* and a host of smaller and/or lesser known nebulae. Perhaps the best place to start is with *M42*, the *Orion Nebula*. The most famous diffuse nebula in the sky, a tremendous amount of material has been written about its observation. Regardless of how much is "written", by far the best way to experience the Orion Nebula is through detailed observation. When possible, spend some "quality time" observing and *drawing* this wondrous structure. Look at it through a variety of eyepieces, filters and even telescopes. In time, you will begin to really appreciate the awesome nature of this object, plus the added bonus of improving your observation skills.

Much less has been written about nearby *NGC 1973-5-7*. This pretty nebula surrounds several bright stars and is located less than 1/2 degree north of *M42/43*. It is easily visible in even rather modest backyard telescopes. Closer inspection will reveal several dark lanes that subdivide the nebulosity in brighter knots, hence the multiple NGC number designation. Just off the southern

outskirts of *M42* lies the pale glow of *NGC 1980*. Like *NGC 1973-5-7*, it suffers from the proximity of the dazzling *M42*, but its delicate glow is well worth the effort.

The area surrounding Zeta Orionis (ζ) is also well known to deep-sky observers and a favorite target for astrophotographers. Extending southward from ζ is the faint emission nebula, *IC 434*. The *Horsehead Nebula* or *B33*, is a dark nebula that obscures part of the glowing nebula. In pre-filter times, the Horsehead was considered a challenging object, visible under only the darkest skies with sharp, clean optics. Filters have made a world of difference, especially the hydrogen-beta (*H-Beta*) and to a lesser degree, the narrow band nebula or UHC filter. With a *H-Beta* filter, the Horsehead is a fairly easy object with a medium sized scope under dark skies. Larger instruments will reveal the distinctive shape plus subtle variations in *IC 434*. Nearby, *NGC 2023* and *IC 435* are small patches of bright nebulosity surrounding brighter illuminating stars.

Lying just east of ζ lies the beautiful emission nebula, *NGC 2024*. Easy to photograph and richly detailed in medium or larger scopes, none-the-less this object is often ignored. This may be partially due to brilliant ζ which can overwhelm its delicate diffuse glow. If you carefully place ζ just out of the field, the nebula will become much more obvious. This nebula is over 20 arc-minutes across and is dissected by a series of dark rifts. The most prominent runs nearly north-south, with numerous indentations and side branches. The pattern of dark rifts had lead to interesting names as the *Pi* (π) and *Flame Nebula*, though I believe the most unusual name is the *Tank Track Nebula* courtesy of Arizona deep-sky observers...

Of all the nebulae in the Orion Complex, by far the most challenging to observe visually is the very large, extremely faint arc of nebulosity better known as *Barnard's Loop*. Discovered by E.E. Barnard photographically in the late 19th century, this is part of an immense shell of hydrogen gas that covers much of constellation. This giant shell is thought to be a product of the intense solar winds derived from the class O and B stars in the region. Though fairly easy to photograph, this object is far more difficult to observe. A richfield telescope coupled with a nebula filter and dark, contrasty skies are recommended for success. During the 1993 Winter Star Party (WSP), I observed a large, faint arc of light with a 4 1/2-inch f/4 telescope with O III and H-Beta nebula filters. I was able to follow its ghostly glow for over 6°, and it varied between 3/4 to 1° wide. Although difficult, it was more a function of dark skies and contrast rather than the use large aperture.

Around the "Seagull"

The *Seagull* or *IC 2177*, is a large, luminous arc of gas that straddles the Canis Major/Monoceros border. Recent references classify it as a "probable supernova remnant" or SNR. Also designated as *Gum 2*, it may be affiliated with the Gum Complex farther to the south. An interesting target for astrophotographers, it bears

considerable resemblance to a "seagull in flight". The *Seagull* can be found by starhopping north from Sirius to Theta (θ) Canis Majoris, and then proceeding about 2.5 degrees due east. This will bring you to the southern section of the nebula. On the southern tip of the *Seagull* is *Cederblad 90*, a small, moderately bright diffuse glow surrounding a seventh magnitude star. Moving northward, another bright "knot" in IC 2177 is *NGC 2327*. This is a small reflection nebula that surrounds a 10th magnitude star. Along the northern "wing" of the *Seagull* lie a number of small clusters embedded in a rich star field. These are a delight to the eye and help enhance the view of this subtle nebula.

Nearby, lies one of the most unusual nebula of the winter sky. Designated as *NGC 2359* it can be best located by starhopping 4.5 degrees west of M47 along an irregular line of 6th and 7th magnitude stars. It has also been designated as *Gum 4*, though it is not part of that complex. This nebula has a most bizarre shape that has engendered some original nicknames. Perhaps the most descriptive is "*Thor's Helmet*". The central bubble ("the helmet") is actually a shell of gas blown out from the Wolf-Rayet star W-R-7. Two other partial "shells" are also visible, the brighter projections in the east form "the horns", while the more subtle shell remnants in the west form Thor's "hair". These structures are best seen with an O III filter and make an exquisite sight in a medium sized or larger telescope.

The Extensive Gum Nebula Complex

This is a gigantic diffuse nebula + supernova remnant complex that covers a major portion of the southern winter milky way. Even larger than the Orion Complex, The "Gum Nebula" spans well over 30 degrees. It was discovered photographically by the Australian astronomer Colin S. Gum back in 1952. Much of the nebula complex is too faint to be detected visually, though many of brighter parts have "NGC" and other designations. Some of the brighter fragments can be found quite close to *Seagull* nebula region (which also may be a northerly extension of the complex). One of these is *Sharpless 2-301* (= *Gum 5*), a small patch of nebulosity nearly 7 1/2 degrees south of IC 2177. In my 13.1-inch (O III filter), it appeared as a bright, "wedge" shaped glow measuring less than 10' across.

If you want a greater challenge, try the nebula/open cluster complex *Sharpless 2-302* (= *Gum 6*). The nebula quite faint and requires the combination of dark skies, clean optics and filters for visual detection. Two sparse open clusters - *Bochum 5* and *4* are associated with this nebula. Far more pleasing to the eye is *NGC 2467* (= *Sharpless 2-311* or *Gum 9*), a beautiful nebulous cluster in a rich star field. This object is about 3 degrees southeast of M93, in Puppis. This object is quite remarkable and bears a striking resemblance to the *Lagoon Nebula* (M8). Other observers liken it to the "*Pacman*" (*NGC 281*) in *Cassiopeia*. Easily visible in small telescopes, larger instruments reveal an irregularly round nebula

superimposed on a rich open cluster. With an UHC or O III filter, dark rifts and low contrast filaments and condensations may be visible.

Near the "center" of the *Gum Nebula* complex is a most remarkable structure - the *Vela Supernova Remnant* (*SNR*). It is not actually part of the *Gum Nebula*, but a separate entity. Unfortunately, its true identity is often confused with the *Gum*, and in many references and star atlases it is misidentified. This unique object forms a huge curved arc nebulosity over six degrees long, with many intricate side branches and filaments. This *SNR* covers several times the area of the much better known *Veil in Cygnus*, and will fill many low power fields of view. Good observations of this object are spotty at best, especially since it is not listed in any of the better known observing guides. The *Vela SNR* has been branded as "...very faint, only visible on photographs..." which is most certainly NOT the case. Deepsky observer David Riddle using a 15-inch scope and O III filter describes the main section as "...a long filament, over 4 degrees long, brightest on the western end. A prominent "hook" defines the eastern end. It is about as bright as the *Veil Nebula* as seen in an 8-inch scope." Alex Langoussis calls the complex the "*Energizer Nebula*" ...as it "keeps going and going." Veteran observer Tom Polakis noted the intricate detail of the filaments, and its resemblance to the *Veil*, but on a much larger scale. Large scopes may reveal all the major filaments plotted in the *Uranometria 2000*. The general consensus is that the *Vela SNR* is quite similar to the famous *Veil Nebula*, except the surface brightness is at least one magnitude fainter.

Moving east from the *Vela SNR*, are some particularly bright fragments of the *Gum Nebula*. One of my personal favorites is *NGC 2736*. On March 1, 1835 John Herschel discovered this beautiful object from his Cape of Good Hope observatory. He described it as an "extraordinary long ray of excessively feeble light". In medium or larger scopes, *Herschel's Ray* is visible as a ghostly streak of light nearly 20' long and only 30" wide. Observing from the Florida Keys with my 13.1-inch scope, I observed a delicate shaft of light spanning across the field at 135x. Plainly visible without a filter, it was very distinct and showed some interesting secondary structure with an UHC filter. *Herschel's Ray* bore considerable resemblance to a narrow comet tail, or an edge-on galaxy but without the nuclear hub.

Several other brighter "fragments" of the *Gum* nebula are visible in this region. *NGC 2626* is a small diffuse patch of nebulosity less than 5' across. Another small patch (*Gum 15*) surrounds a 6th magnitude star in the sparse open star cluster *Cr 197*. Somewhat easier to observe is *Gum 23*, a moderate sized, weak glow located 1.5° due south of *Herschel's Ray*. All these objects are best observed with nebula filters and moderate or larger sized telescopes. Other fragments of the *Gum* Complex extend into the *Eta Carinae* region. If you have access to dark southern skies, take some time and explore these lesser known nebulae of the winter Milky Way.

Beginner's Star-Hop; March, 1996

By Art Russell

Here we go for our March star-hop. First off, be sure to take a look at the planet Venus in the western skies after sunset. Venus is continuing to get higher in the sky and will culminate on the evening of 1 April (Really, I'm not making this up, its not an April Fools thing!). Thereafter, Venus will reach lower altitudes each evening until we will finally be unable to see it sometime during the summer. This month we start off with an open cluster, NGC 2244, and its associated nebula, the Rosette Nebula. From there we'll look at a series of Messier's open clusters, M50, M41, M47, M46, and lastly, M93. This is a full plate for observing, so lets get started! First, get out your own star charts so you can follow along. Then to star-hop #1.

Star-Hop #1. To begin, start at Lambda (λ) Orionis, the head of Orion the Hunter, in the constellation Orion. From there, extend a line through the star Betelgeuse for a distance a little more than half again as much as that between Lambda Orionis and Betelgeuse. At that point you'll come to the star Epsilon (ϵ) Monocerotis. The open cluster NGC 2244 is at the right angle of a right triangle formed with 13 Monocerotis on the left end and Epsilon Monocerotis at the right end. [Observation #76 (NGC 2244): At 90X (magnification), I noted that the cluster did not seem remarkable, but that it seemed to form a double row of stars oriented northeast to southwest]. The interesting thing about NGC 2244 is that it is associated with the Rosette Nebula, NGC 2237, which you can easily see in telescopes and even binoculars. It is well worth taking the time to find. [Observation #75 (Rosette Nebula): At 51X and using an OIII filter (brightens the image of certain nebula types), I note that the nebula was very apparent and formed a distinct crescent around NGC 2244]. Try to find this one if you can. It is well worth the trip. Can you do it with binoculars?

Star-Hop #2. Our next star-hops take us southeast of Orion. The best way to get there is to start at the three aligned stars which make up the Belt of Orion and use it to point to the southeast and the constellation Canis Major. There we find the star Sirius, Alpha (α) Canis Majoris, the "Dog Star," the brightest star in the sky. From there we'll head to the open cluster M50, NGC 2323, also known as the "Galactic Smiley Face" ☺ (I don't know which one of the club's Deep-Sky Zombies christened it: Dave Riddle, Clay McHann, or Rich Jakiel. Will the real culprit please stand up?). To get the M50, extend a line from Sirius through the star Theta (θ) Canis Majoris for a distance equal to that between Sirius and Theta Canis Majoris. [Observation #49: At 34X, M50 fits within the field of view and is easily distinguished from the background. Overall shape is similar to a "Galactic Smiley Face" with a triangular aspect. Stars concentrated towards the center of the cluster. No noticed nebulosity. At 93X, M50 loses some of the triangular appearance, but with increased resolution of the cluster's stars].

Star-Hop #3. Our next star-hop takes us to the open cluster M41, NGC 2287. You should have no problem finding this cluster from dark skies. I have even found it from the roof top of the Fernbank Science Center with a pair of binoculars! The quickest way I have found to locate M41 is to start at Sirius. From Sirius extend a line southeast to the 3rd magnitude star Omicron (\omicron) Canis Majoris. Half way there you'll arrive at the much dimmer, 4.3 magnitude star 15 Canis Majoris. 15 Canis Majoris and M41 form the apex of the legs of an isosceles triangle with Sirius as its

apex. [Observation #50: M41 is distinct in the finder, but loses distinction at 93X. Stars seem to form several arcs and arms of stars streaming radially away from the center of the cluster. No other deep sky objects are visible].

Star-Hop #4. M47, NGC 2422, a 4.4 magnitude open cluster, is our next stop. Can you guess where we start? You're right! Its Sirius again! From Sirius extend a line through the star Gamma (γ) Canis Majoris to a distance about twice that between Sirius and Gamma Canis Majoris to arrive at M47 in the constellation Puppis. [Observation #53: At 34X, M47 is easily found from Sirius. The open cluster is almost entirely within the field of view. The cluster seems to have an "X" of stars in its center. No other deep-sky objects are visible. Possible color hinted in some of the stars in the cluster. Very pretty and easy to find. Pretty yellow-orange star is visible just on the edge of the field of view]. You might also take a look about half a degree to the north of M47 in your field of view. There you'll find the open cluster NGC 2423.

Star-Hop #5. Now lets head to M46, also in Puppis, and find two objects at once. In this case the planetary nebula NGC 2438 seems to be a member of M46. M46 is relatively easy to find from M47 as it is only a little more than a degree to the southeast away. The best way to get there is to simply use your finder and gently nudge your scope in that direction away from M47. Don't go too far. At low power, it won't take much, perhaps just one field of view. Those using binoculars may find that they can see both M47 and M46 in the same field of view. [Observation #54 (M46): At 34X, M46 is very clearly visible. Most of the cluster is contained within the field of view. Planetary nebula NGC 2438 is easily seen in the cluster. Crescent shape, but with bulge at one end. No noticeable color in stars. No other nebulosity visible]. [Observation #55 (NGC 2438): At 109X, the planetary nebula easily stands out. At 163X, the central star seems located slightly off-center of the ring. The planetary nebula has a distorted annular appearance and is blue-gray in color. At 175X without an OIII filter, there seems to be an annular there is no additional detail visible].

Star-Hop #6. Don't give up yet! We've got only two more star-hops to go! Our next star-hop takes us out of Canis Major, through the constellation Monoceros, and into the constellation Hydra. There we find the open cluster M48. Starting at Sirius (not surprised are you?), extend a line through the star Alpha (α) Monocerotis for a distance a little more than half that between Sirius and Alpha Monocerotis and you'll arrive at M48. You may also note that M48 and Zeta (ζ) Monocerotis form the base legs for an isosceles triangle formed with Alpha Monocerotis at the apex. [Observation #52 (M48): At 34X, M48 is immediately visible. It seems to form a triangle within another triangle. No other deep-sky objects are visible within the field of view. At 93X, M48 fills the entire field of view. At 163X, M48 appears to have arcs of stars comprising a larger arc of stars at the north edge of the cluster].

Star-Hop #7. Our last star-hop takes us to the 6.2 magnitude open cluster M93 which is located in Puppis. Start at Sirius and extend a line south through Canis Major to the star Xi (ξ) Puppis. M93 is about 1 1/2 degrees northwest of Xi Puppis and should be easy to find. Using binoculars, you should see M93 and Xi Puppis in the same field of view. [Observation #66 (M93): At 51X, M93 is an easy object to see with most of the cluster in the field of view. The cluster seems to form an arc of stars].

FROM THE OBSERVER'S NOTEBOOK

By Art Russell

Beginners' Interest Group.

There will be no scheduled activities for the Beginners' Interest Group this month (Sorry folks, I'm getting married this month and I'd rather spend my honeymoon in Key West than freezing my b _ _ t off observing; I'm sure you understand). However, get out whenever you can to see Comet Hyakutake, it could be the best comet in 20 Years!!! Most importantly, make sure you attend at least one evening of the Peach State Star Gaze! Its a great way to get introduced to the STARS and things astronomical!

Observer's Report.

FLASH!... Stalwart Volunteers Recollimate the 20 Inch Telescope at Villa Rica! During the last several months the views through our 20 inch telescope at Villa Rica had deteriorated to the point that the scope was unusable. This was due primarily to the misguided efforts of a user who DID NOT RELEASE THE DETENT PIN ON THE SECONDARY (DIAGONAL MIRROR) ASSEMBLY when changing from viewing between the east and west focusers. Later efforts to recollimate the 20 inch were a matter of too little, too late. However, that is all in the past! Our band of fearless volunteers (Alex Langoussis, Dave Riddle, Rich Jakiel, Eric Shelton and Kemper Smith; did I miss anybody?) successfully recollimated the 20 inch, performed necessary minor repairs and tuned up the observatory's 10 inch Cave Astrola as well (*a couple of us also pushed off the huge dead tree that blocked the outhouse*). Thanks for the job guys (I owe you big time...!)! It also looks like their timing couldn't have been better, here comes Hyakutake!

Comet Hyakutake! Mark your calendars now for the evening of 23 March.

Come on out to Villa Rica for a public observing session and check out the views through the newly re-collimated 20 inch telescope! Club member Larry Higgins will be running the observatory in my absence (its going to be a tough honeymoon!) so come on out!

Observatory Check Out Procedures. I'm willing to check out club members at the observatory on a one-to-one basis by appointment. Upon successful checkout you'll receive all combinations to the observatory site. Call me for specific details on the procedures and to arrange a date. The checkout procedures have been under review ever since the advent of damage to the observatory and 20 inch telescope (both now repaired). I hope the new procedures will help successfully acquaint new members on observatory operations.

12.5 Inch Fork Mounted Telescope Framework. The superstructure for a 12.5 inch fork mounted telescope is in the warm-up shack at Villa Rica. Anybody interested in using it for their own telescope project is encouraged

(please!) to pick it up as soon as possible. The superstructure has no optics as they have been used as the heart of a new(!) club loaner telescope currently under construction by Eric Shelton. I'll dispose of the superstructure at the end of May if nobody expresses and interest in it (Mel Tolbert and the Mirror-Making Interest Group--Take Note; a possible project?).

Great Globular Challenge. Who's observing globular clusters? To date only Alex Langoussis, Mark Wilson, and Larry Higgins have mentioned observing Globulars. Get your observations to me not later than the Tuesday (23 April, 1996) after the Peach State Star Gaze if you'd like to be considered for the Grande Prix! Just think of the prestige and esteem you'll garner as winner of the Great Globular Challenge! Not to mention the prize it self! (*the winner should make Art eat those nasty covered, smothered, chunked and sludged hashbrowns!* -ed) For those of you who haven't heard about the Great Globular Challenge, give me a call and I'll explain the details to you. However, in a nutshell, observe as many globular clusters as you can from the start date of the Great Globular Challenge (23 Sept., 1995), i.e., check your observing notes (You ARE recording your observations, aren't you?), and send in your descriptions to me by 23 April. I will then declare an arbitrary winner at the club's Annual Banquet in April! Remember, only those observations of globulars since 23 September, 1995, count. Additionally, you must have found your globulars without using any form of setting circles.

Observations.

In Review. I just finished reading Craig Crossen and Wil Tirion's "Binocular Astronomy." While no book on astronomy can cover everything, "Binocular Astronomy" does provide good coverage of what you might be able to see using your binoculars. But don't stop there. You can use his suggestions when you are using your telescopes as well, small or large. As a first purchase on astronomy, you could do far worse. Not only does the author provide good information, but he also includes a very good set of star charts as well, the Tirion Bright Star Catalogue. I've already given copies to relatives for Christmas presents. I've also started recommending "Binocular Astronomy" for beginners.

Be sure to mark your calendars for 13 April. John Dobson, for whom the "Dobsonian" telescope is named, will be in town and we hope to have an observing session with him. Come on out and tune up your scope for the Peach State Star Gaze!

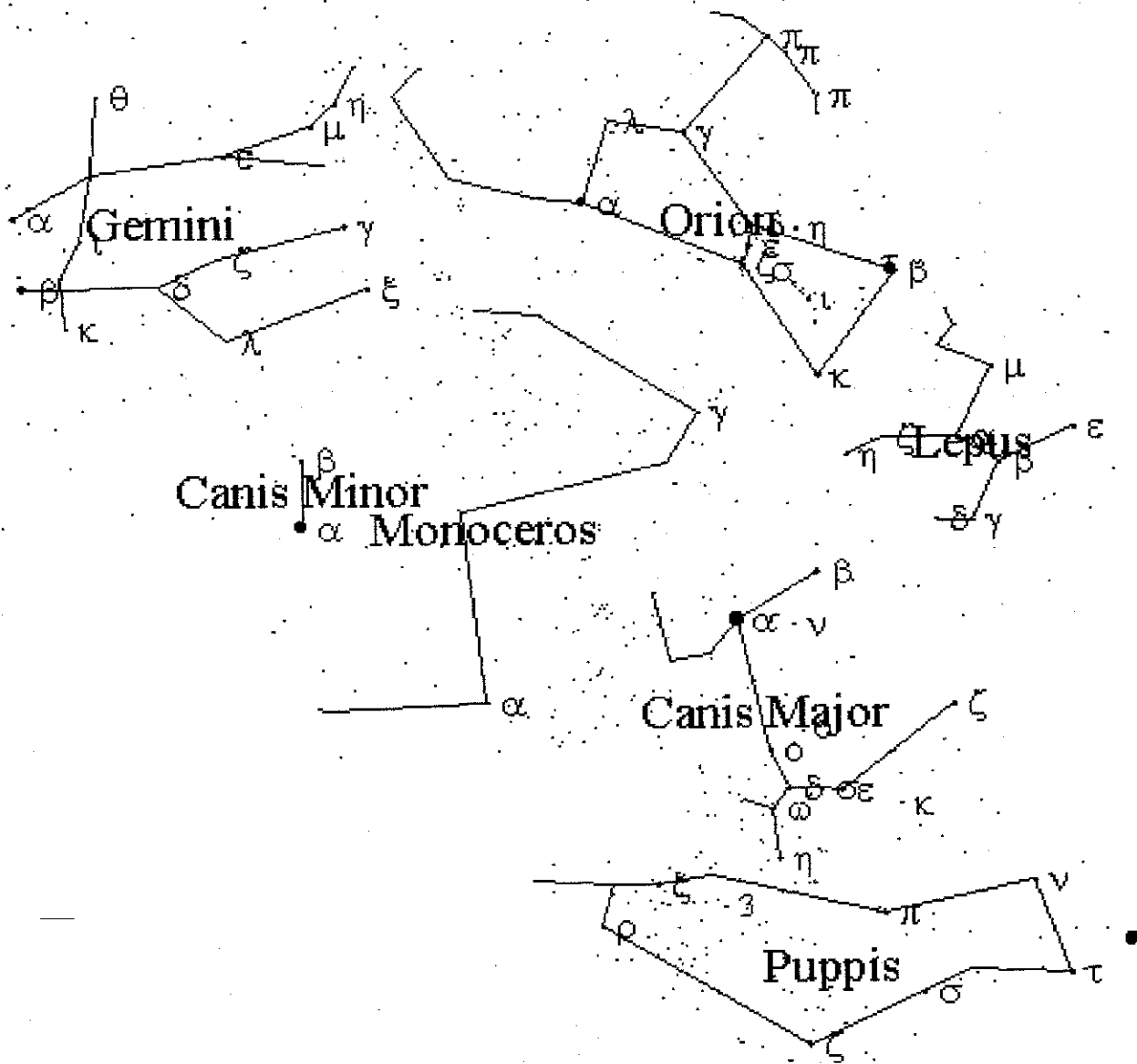
(COMET HYAKUTAKE)

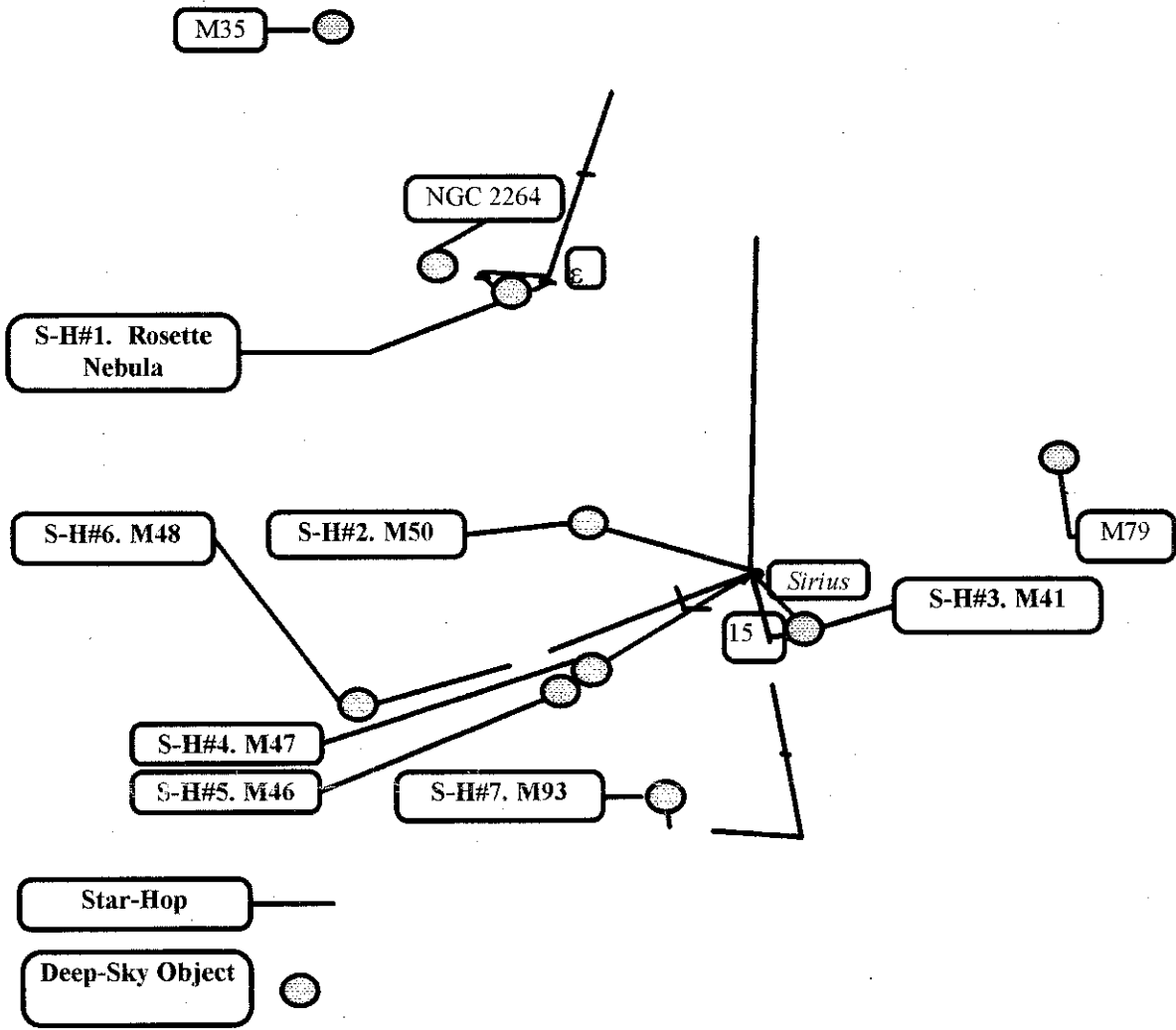
1996 TT	R. A. (2000)	Decl.	Delta	r	Elong.	Phase	m1
Mar. 13	14 55.36	-16 20.4	0.422	1.290	126.6	38.2	4.7
14	14 55.40	-15 10.7	0.389	1.271	127.9	38.1	4.5
15	14 55.38	-13 48.0	0.357	1.251	129.2	38.0	4.2
16	14 55.26	-12 08.8	0.325	1.232	130.6	37.8	4.0
17	14 55.04	-10 07.9	0.294	1.212	132.1	37.5	3.7
18	14 54.69	-7 38.0	0.263	1.192	133.6	37.2	3.4
19	14 54.16	-4 28.2	0.232	1.172	135.1	36.9	3.0
20	14 53.38	-0 22.4	0.203	1.152	136.4	36.6	2.7

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1996 February 29

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Brian G. Marsden





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

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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 or occasionally 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 (\$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: 770-621-2661.

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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