

THE FOCAL POINT

The Atlanta Astronomy Club, Inc.

Vol. VIII No. 1

June, 1995

President's Soapbox

by Alex Langoussis

This month marks the start of another year for our club. We have new officers and a new board. While a few of us have been active here for many years, many of us are relatively new faces. I hope this is a trend that continues.

I don't think the membership likes to see the "same old faces" running things year after year. On the flip side, those who, year after year, end up doing the bulk of the work get burned out, to the point that astronomy isn't as much fun any more. The solution is to get more of you involved! This is YOUR club. And we need YOUR help. This will be an exciting year, with many things to do, and therefore, many ways for you to participate.

We need people to write articles for our newsletter. Many of you have a wealth of knowledge to share. An article for the Focal Point would be an opportunity to do so. We could also use some extra hands producing and mailing it.

The board has approved a large sum of money to make improvements out at Barber Observatory. But money doesn't fix things. People fix things. A half dozen folks working out there can make a huge difference very quickly.

The search for a dark observing site is now getting into high gear. There is a lot of territory to cover, and many doors to knock on. The more of you we have participating in the effort, the quicker we will have our new observing site.

Jerry will be reaching out to schools this year. Again, that's a lot of work, and difficult to do alone. In spring, we will again host the Peach State Star Gaze. Kenpo has done an outstanding job organizing it. But he shouldn't have to do this alone. Let's give him some help.

The more people we have participating in these and other projects, the healthier the club will be. More importantly, it's a lot more fun, and that's what we're here for! I guarantee we will find a meaningful job for any member who would like to participate.

John Bortle to Speak at June Meeting

by Ken Poshedly

Some folks feel it's not a complete week unless they get out the scope to observe at least once a week for an hour or so. Others are lucky to get out twice a month.

On June 16, the Atlanta Astronomy Club will hear from a really dedicated observer, John Bortle.

John, who is flying in from New York for the program, is no slacker when it comes to observing. He is considered one of the premier visual observers of our time; since 1953, he has studied over 170 comets and has completed over 120,000 (yes, that one hundred and twenty thousand!) variable star observations. Not surprisingly, John has been editor of the AAVSO Circulars since their founding in 1970. Today, he also serves as a contributing editor to *Sky & Telescope* magazine, writing each month's "Comet Digest" forum. In recognition of his prolific observing contributions, asteroid (4673) Bortle bears his name.

Mark your calendar for 8 p.m., Friday, June 16, and join us for a truly enjoyable evening with John Bortle at Emory University's White Hall.

CALENDAR NOTES

NEW OBSERVATORY LOCKS! MAKE SURE YOU CALL ART RUSSELL FOR THE NEW COMBINATIONS BEFORE COMING OUT!

16 June *June Meeting: John Bortle at White Hall*

24 June *Observing at Villa Rica*

24 June *Beginner's Interest Group at Villa Rica*

21 July *Meeting at White Hall*

28 July *Observing at Dauset Trails*

ACC Board Meeting

by Ken Poshedly

The newly elected officers and members of the board of directors of the Atlanta Astronomy Club met at the home of Jerry Armstrong, Tuesday, May 30. Those present included officers Alex Langoussis (president), Jerry Armstrong (first vice president - programs), Art Russell (2nd vice president - observatory), Doug Chesser (treasurer), Rich Jakiel (corresponding secretary - newsletter editor), and Ken Poshedly (recording secretary), board members Leonard Abbey, Tom Buchanan and Eric Shelton. AAC members Joe Sheppard and Phil Bracken were also present. The meeting was called to order by Alex at 7:45 p.m. Items of business included:

- * Election of Ken Poshedly as chairman of the board
- * General discussion about getting members more active, finding additional dark-sky observing sites and the donation by Rich Jakiel of a 6-inch optical assembly to the club.
- * Alex announced his appointments to various AAC committees (see listing elsewhere in this issue of your AAC newsletter).
- * Payment of an insurance premium to cover our Villa Rica site.
- * A proposed budget submitted by Alex. Treasurer Doug Chesser retains some discretion when faced with certain expenses not covered by this budget.
- * Purchase of an airline ticket for our June speaker, John Bortle.
- * Up to \$300 in funding for the completion of a 12.5-inch reflector for the club.
- * Up to \$150 in funding for miscellaneous maintenance costs for the Villa Rica observing site.
- * Considerable discussion on the idea of moving the AAC meeting date from the third Friday of each month to other dates to accommodate new moon weekends. Details on this issue to be brought up at a future AAC meeting.
- * The subject of AAC meeting places was also discussed. Of the various sites proposed, Emory University's White Hall was selected. Meetings will be held there through November and any major fluctuations in meeting attendance will be noted.

May Meeting Report

by Ken Poshedly

The Atlanta Astronomy Club annual dinner was held Friday, May 19, at the Fernbank Museum of Natural History. The event was attended by over 50 persons and was called to order just after 8p.m. by Steve Gilbreath. Following the dinner, graciously arranged by Ralph Buice, the Atlanta Astronomy Club gave special recognition to AAC members Tom Buchanan, Tushar Trivikraman, Ken Poshedly, and Lenny Abbey. Tom was honored for his successful efforts to work for passage of a light pollution control ordinance by the Atlanta City Council. Tushar was recognized for his being named to the Governor's Honor's Program as a result of his research paper on eclipsing binary stars. Currently, he is a sophomore at Henderson High School. Ken was thanked for his work on the 1995 Peach State Star Gaze. The event drew 100 persons and bolstered the club treasury. Lenny was recognized for his many years of active participation in the AAC.

The only other order of business was the election of a slate of officers for the next year. After announcing the names submitted by the nominating committee, additional nominations were solicited. After none were received, the announced slate was approved by general acclamation of those members present.

The program of the evening was by Fernbank Science Center astronomer Dr. Richard Williamson, who spoke on something that we share today with every living thing on the planet Earth from the time before there was life - the gas argon. As it turns out, the little bit of argon that we inhale with each breath today is the same argon breathed in and out by all land-based Earth creatures great and small since life began.

The Atlanta Astronomy Club, its officers and members, wish to extend their most sincere gratitude to the Fernbank Science Center and its staff for their support over the past year, and to the Fernbank Museum of Natural History for their beautiful dinner and surroundings accorded us for our annual dinner.

Trivia Notes

M13, the "giant" globular cluster of the Northern Skies is actually outclassed by several other Messier Globulars. M22 is both considerably larger and brighter, while both M5 and M4 are larger and slightly brighter. M13 ranks only 8th in brightness and 10th in size.

From the Observer's Note Book

by Art Russell

The club's May observing session was a "wash-out" - literally. I suppose its indicative of just how badly some of us in the club have been bitten by this astronomy bug when six of us show up at Villa Rica just to watch it rain! Fortunately, Waffle House abides!

So, Who's Observing, and Where this Evening? If this is a question that passes through your thoughts before heading out for an evening session under the stars, give me a call. During my tenure as observing chairman, I'll act as a central clearing house for that type of information. With that in mind, as you figure out where and when you intend to observe, give me a call. I'll record it and should anybody else be looking for an evening's observing partner, they can give me a call and I'll let them know what seems to be happening that particular evening. This can serve two purposes. First, its a great way to find observing partners. Secondly, it can help avoid scheduling conflicts at Villa Rica on those rare occasions when a member takes out the Boy Scouts or Girl Scouts.

Observing Session. The next club Observing Session will be on 24 June at Villa Rica. This will be a third quarter moon weekend with the moon rising around 3 AM. A great weekend for astronomy, come on out! Mark your calendars now for an observing session at Dauset Trails on 28 July. Alex Langoussis has done the ground work to get us an opportunity to observe from this site near Jackson, GA. Expect that we'll have up to 15 non-club members observing as well, but they should leave by around 11 PM.

Beginner's Interest Group. The next Beginner's Interest Group orientation will be at Villa Rica on the 24th of June at Villa Rica as well. The Beginner's Interest Group provides point of contact for beginners and as a general starting point in astronomy. I will generally schedule beginners sessions on alternate months in conjunction with club observing sessions. Additionally, I hope to provide help and instruction on items of interest for beginning astronomers on what to look for in a new telescope, how the sky works and how to find that illusive object, observing notes and the fine art of Waffle House dining etiquette.

Observatory Issues. **I WILL BE CHANGING THE LOCKS AT VILLA RICA.** Call me before heading out to the observatory. Additionally, please give me a call if you need to be checked out on the club's observatory telescope. We can work out a time convenient to both of us or schedule time at any of the club's scheduled sessions at Villa Rica.

The May observing session at Villa Rica was not a total waste. Alex Langoussis and I did an inventory of site facilities and will recommend future observatory projects to the board for improving the observatory. Most of the projects are maintenance in nature and while not immediately pressing, will contribute generally to the cleanliness and utility of the observatory. As an overview, here's a list of the work needed at the observatory: Grounds: Replace Gate Post, New Locks, Dump the couch. Warm Up Shed: General Clean Up, throw away unused boxes, trash and junk, clear out the insects, caulk and insulate the building, use an insect bomb to discourage the shed's more interesting residents. The observatory itself needs some minor maintenance and repainting. Telescope maintenance: 20 inch Newtonian: General cleaning; fix or replace differential gear box; clean the primary mirror; improvise a means to prevent condensation on the primary mirror; repair the Tectron Focuser. 10 inch Cave Newtonian: Reorient the declination axis on Polaris; repair the focuser; repair the right ascension drive indicator light; general cleaning. 8 inch Maksutov-Cassegrain: Determine its focal length; acquire a dew shield; build a permanent pier outside the observatory building.

As a general rule, please sign the observatory log book which is normally in the observatory proper. We'd like to know who has been out to the observatory, the type of observations you have been doing, and any problems you have noted with the equipment.

Library Notes. The library now has a 4 1/4 inch Newtonian Reflector. It has a few years on it and was recently donated to the club by a friend of Steve Gilbreath. At this point it needs a bit of refurbishing, but once complete, will make a good loaner. Does anyone have an unused finder scope or eyepieces? This scope needs both before it is ready to hit the road.

Please do not hesitate to give me a call if I can help in any way.

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THE FAINT FUZZY FORUM OF THE FOCAL POINT

by Richard Jakiel

"RING ...RING ...RING ..Hello, this is Steve Gilbreath and we of the nominating committee were wondering if you'd like to be the new editor of the Focal Point..." "Errrr, yeah, ..I will consider it..." Inside, I was *shocked* (maybe even afraid?), since I'd never done anything quite like this before and I knew it would be a LOT of work. Well, after some soul searching and numerous conversations with Art Russell and Alex Langoussis, I decided it was worth a try.

Every editor has his own distinctive style and I'm no exception to this rule. The new format will feature articles primarily from local contributors. Some of the new columns include: a presidential "soapbox", observation challenges (deep sky, planetary -etc.), an equipment atlas (books, atlases, telescope accessories -etc.), and the "Amateur of the Month". Standard columns pertaining to local news and events, such as Ken Poshedly's "AAC Activities" and Sun-Lunar Almanac ("What's Up") will also be included. I will be getting a lot of help from several key members, and I'm lining up contributors for these columns. But, to keep this newsletter from falling into a rut, I will need YOUR contributions. That means ALL the ACC membership, not just the active core! So please, send your contributions to my address (located on the mailing side) or to jakiel@crl.com . I will gladly accept manuscripts on 3 1/2" floppy disks.

So, Okay ..enough of the standard rant for new articles, its time for a topic near and dear to my heart - OBSERVING. I've been involved in astronomy for nearly 25 years, and I like all aspects of observational astronomy - deep sky, planetary, comets, meteor showers, and atmospheric phenomena to name a few. One of the best ways an amateur can hone his/her skills is to develop a personal observing program. Without a good program, or a specific goal(s), many amateurs will suffer from "burnout" within a few years. Programs *don't* need to involve fancy/hi-tech equipment, or astronomical research, instead they can be quite simple. The Astronomical League Newsletter - *REFLECTOR*, posts several good programs that anyone can pursue. Upon completion of each program, pins and certificates are awarded (details to follow..). Since the AAC does belong to the AL, all club members have the potential to receive these awards. So, lets discuss a few of the main programs and see what is actually involved.-

Perhaps the easiest program to complete is the observation of the 110 Messier objects, nearly all of which are bright and interesting. Most of these are observable with a good pair of binoculars, and all are visible with a small 3" refractor. However, for those of you just starting out, I'd suggest using a 6 to 8"

scope. Observations for this, and all other programs requires the writing of a good description., something more than a half-thought-out jotting like .."pretty" . Regular certificates are awarded to those who observe any 70 (why stop here- keep going!), and those who persist and observe all 110 receive a Honorary certificate and a Messier pin. For those who want to try it the "small and dim" way, there's a Binocular messier Club. Observations of any 50 Messier objects will entitle you to a certificate and pin. The best binoculars to use are 7 x 50's or larger, and using big 11 x 80's will allow you to bag nearly all the Messiers

Once you've completed the Messiers, perhaps you now feel that you have seen all the really neat, "cool" stuff out there. HA! Not a chance!!! You've glimpsed only the tiniest sliver of what's visible in a large scope like the 20" at Villa Rica. A more involved program like the Herschel 400 will set you well on the way to tap the true potential of your scope and observing skills. William Herschel catalogued 2477 objects of which, the "best" 400 were chosen for this program. Many of these objects are **spectacular**, rivaling the best of the Messiers. Others fall in the "dim fuzzy" category, requiring a large scope to really appreciate their structure. The Herschel 400 were originally observed using a 6" scope, but larger instruments will definitely make your task easier. Observations should be well written, and for both Messier and Herschel clubs - **NO** electronic setting circles! So, if you own a LX200 you might as well remove the control paddle.

Allow yourself ample time to complete each program, and plan your observing sessions accordingly. Generally, it takes around 1-2 years to finish the Messiers, and several more years to complete the Herschel 400. In March, conditions are right to run a "Messier Marathon", where you could complete nearly the entire list in a single night! However, the speed at which you complete any program is not important, its what you get out of it that's important. If you are interested in these or other observing programs (i.e.: Deep Sky Binocular, Double Star.), check the *REFLECTOR* or contact Art Russell for more details. Perhaps you'd rather stick to solar system objects, so the Association of Lunar and Planetary Observers (ALPO) might be your bag. They are always interested in well documented drawings, photographs and CCD images of the Moon, planets, comets and the Sun. If so, you might want to contact Ken Poshedly for further details. Or, strike out on your own and design a personal observing program around your interests and capabilities. Either way, you'll be well on the path to becoming a better, more seasoned observer.

REFLECTIONS ON A STAR PARTY...

by Richard Jakiel

The Peach State Star Gaze, or PSSG '95, in my opinion was the finest star party ever held in Georgia. The facilities at Camp McIntosh were excellent, the programs varied and generally superb (*pats* self on back...), and probably the finest observing site less than 1 1/2 hours drive from Atlanta. Hats off to Ken Poshedly and the Atlanta Astronomy Club for organizing and hosting this event.

Last month, Ken wrote a good report on the major activities of PSSG so I don't want to spend much time retreading the same material. Instead, I'd like to talk about my own experiences, in particular the excellent observing conditions we were privileged to have throughout much of the star gaze. Originally, I was going to arrive Thursday evening, but with the passing of a weather front and generally grim looking skies, I decided to arrive on Friday instead. Packing Friday morning was a hectic affair, making sure that we had included all the important stuff, and NOT just telescopes and observing accessories! We arrived at "Camp Mac" around 2 p.m., and already much of the main observing field was cluttered with telescopes and tents. Perhaps 40 to 50 scopes were set up, concentrated on the northerly 1/3 of the observing field. Another 1/2 dozen scopes stood between the main meeting hall and "Mission Control", where the CCD crowd conducted their programs. The center of the field was dominated by large dobsonians, perhaps a dozen scopes ranging from my trusty 13.1-inch to a spectacular 33-inch f/5 near the northernmost end of the field.

The sky remained a deep, azure color until around dinner time when the first thin wisps of cirrus swept in from the west. The skies deteriorated gradually, and by sunset the entire sky was shot with thick cirrus and altocumulus. However, our luck would hold, as this was a minor "wave" in the upper atmosphere and conditions began to improve shortly after sunset, becoming crystal clear by midnight. I started my observing program looking at the shrunken reddish disc of Mars, much faded from its opposition back in February. Meanwhile, Art Russell saw first light from his magnificent 18-inch Tectron dobsonian. When asked how Mars looked, he replied, "BOY! Mars is *boiling!*" proving once again that an unsettled atmosphere generally nullifies great optics <grins>. I began to pick my way through the Virgo Cluster, picking out several dim 14 to 15 magnitude fuzzies among the much brighter NGC and IC objects. As I hunted for more dim galaxies, I could hear the whirl and clicking of electric drives, the whine of a distant hair dryer, and casual conversations regarding "visibility" of the dark lane in NGC 3628, or the spiral structure in M51. Touring the brighter regions of the Virgo Cluster, including the "smiley face" galacticism(?), I then swept southward observing the odd planetary NGC 4361 (Corvus) and the globular M68. Soon I was hunting in the rich fields of Hydra and Centaurus, in areas of the sky difficult to explore in the light polluted skies of Villa Rica.

As the night wore on, I made tours of the observing field looking through other telescopes or just to casually chat with the owners. I made a couple of forays to CCD mission control, listening to hard rock and sipping down a can of beer as images of distant galaxies popped up on computer screens. *Coffee... Caffeine fix!* At 2 a.m., it often takes more than desire to see deep sky objects, sometimes a stimulant helps! Thankfully, the main meeting hall had an abundant supply of coffee-making fixin's to help spur the late night crowd on.

Now, at last the true splendor of the night sky was revealed. Jupiter was blazing high in the south, casting a very low contrast shadow for those who looked for it. The Milky Way was now rising high in the eastern sky, and blazing forth with an intensity reminiscent of those seen in the Florida Keys. Even now, most of the scopes remain occupied as observers reap the photon harvest.

..Arrgghh., it is now 4 a.m., and I am beginning to drag. My feet are killing me, and coffee no longer has that wonderful effect like it did only a few hours ago. Hmm, I haven't checked out the 33-inch and maybe now would be a good time. The gigantic scope looms over me, as the owner scampers down a 12 foot ladder. We began a late night tour of bright objects, starting with the unusual planetary nebula - NGC 6302, a.k.a. the "Bug Nebula". It is a fantastic object, with a brilliant core and bright wispy strands radiating outward. Both M16 (Eagle Nebula) and M20 (Trifid) were almost three-dimensional, with more detail visible than any photograph I've seen. M17 was so large that it spanned several fields, and bright enough to cause some loss of *dark adaptation!* But perhaps the most amazing sight was the giant globular cluster, M22. The cluster easily spanned the field even at low power, and the stars were a bright, *golden* yellow making for an awe-inspiring field of view. Finally, the call of sleep nearly overtook me ..and I slowly made my way off to the cabin.

On Saturday I gave my talk on "Observing The Virgo Cluster" after much scrambling around for equipment and materials. The talk seemed well received, which was a relief due to my generally sleep-deprived condition. I scrambled back to my cabin afterwards, to catch up on some sleep needed for another night's campaign. After the door prizes were distributed, most of the crowd adjourned for dinner at some of the local eateries. Many of us migrated to Buckner's, a buffet-styled country restaurant. Eating is always high on the list of "things to do" at any star party, since everyone needs to keep up their "strength" on the long night vigils. Of course, observing and

catching up on gossip are other important rituals associated with a good star party. Well, as the star partiers drifted back, the skies started to seriously deteriorate.

At first, we were treated to a good display of circumzenith arcs and sun dogs. But by nightfall, the sky had become totally overcast, and any sort of observing looked **grim**. As it became more apparent that the overcast was "here to stay", telescopes were packed up at a rapid rate. Soon mission control was shut down, and perhaps two-thirds of all the scopes had been packed away. Aperture was being sacrificed to the sky gods, and when the huge 33-inch scope had been completely dismantled and its owner heading back to Indiana -- it *happened!* The gods, pleased with the massive sacrifice of aperture relented, and behold - the skies did clear and the observing faithful (read: diehards) were rewarded with another beautiful night of observing.

The galaxy-rich fields of Virgo were now nearly overhead, and the large globulars M13 and M92 had cleared the eastern treeline. I spent considerable time studying some of the best objects the spring sky can offer, comparing these sights in my 13.1-inch to those in Phil Bracken's 15-inch and David Riddle's 18-inch scopes. Even a couple inches of aperture can make a *major* difference, especially when viewing low contrast structures. In my scope, M51's spiral structure is distinct, yet the arms are quite soft and diffuse. In the 18-inch scope, the arms are much more contrasty, with numerous bright knots and dark patches. Even the 15-inch scope, objects were noticeably brighter and contrasty, yet it gathers only ~ 25 percent more light than my old scope. I feel aperture fever building in me, and the urge to go out and buy an 18-inch dobsonian becomes nearly overpowering. Luckily, my thin pocketbook talks to me and I settled on re-aluminizing my mirror and secondary during the hazy summer months.

Now past midnight, I turn my scope to my old nemesis - the dreaded Coma Galaxy Cluster. Far more densely packed than the Virgo Cluster and with most members fainter than 14th magnitude, this is one of the tougher areas to explore in a large scope. I lay out my dew covered Megastar charts and began my search for the dim and fuzzy. Hmmm ...these objects should be easier, I mutter to myself. Even my 80mm finder seems to have trouble locating the correct fields. Ack! Dew has covered the finder's lens and my eyepieces robbing precious photons from my eye! Now begins the night-long battle against moisture, as the hair dryers fire up again and again. My optics are clear for the time being, and the 14th magnitude galaxies pop back into view. I finish off a small section of the cluster and head down south, deep into the heart of Scorpius. I pull out my "door prize", a 5mm Plossl (300x) and check out the globular cluster M4. It looks surprisingly like a giant arachnid with an elongated body and numerous star streamers radiating out from the core. Nearby, Jupiter shows detailed structure in the bands and the Galilean satellites are resolved into distinct disks. Who says large dobbies are only good as "light buckets"?

Clouds begin to reappear in the west and I'm bone weary from two long nights of observing. I slip back to my warm cabin and sleep heavily until morning. By 10 a.m. Sunday morning, the sky is now seriously shot and the observing field is nearly vacant. But a smile returns to my face as I reflect on one of the best observing events I've attended in quite some time.

THE DISCOVERY OF THE SPIRAL NEBULAE

by David Riddle

In the year 1850, the largest telescope in the world belonged to William Parsons, the Third Earl of Rosse. Located at Birr Castle in northern Ireland, the 72" reflector had been completed in 1845 but had been little used until 1848 due to a potato famine and typhus outbreak.

In 1850, Parsons announced to the world the discovery of a new class of nebulae. He had detected a 'spiral' structure in the 51st entry of Charles Messier's catalog of nebulae and star clusters along with 13 other spiral nebulae. The announcement caused considerable excitement among astronomers world wide. Were these new found spiral nebulae solar systems caught in the act of formation as theorized by Pierre-Simon Laplace in 1796 or, as John Herschel advocated, independent 'Milky Ways' similar our home galaxy? Of course, Herschel proved to be right but it would be almost 75 years before this was certain. Ironically, the process of photography that Herschel both named and helped pioneer was instrumental in solving the mystery of the spirals.

One nagging question remains to be answered. Why did it take so long for visual observers to recognize the spiral patterns of some of the galaxies? Although the "Leviathan", as the Parsons telescope was called, was indeed the largest in the world it is important to remember that the mirror was a speculum mirror made of an alloy of copper and tin and weighed 4 *tons*. The mirror lost its optical figure and reflectivity (no better than about 60% even when freshly polished) rapidly due to oxidation of its surface. A mirror of this size probably never reached thermal equilibrium due to its mass and the huge supporting masonry walls that stood to the east and west of the instrument. To quote a German astronomer that visited Birr Castle, "They showed me something they said was Saturn and I believed them." This speaks of a poor quality telescope. Others claim the telescope was capable of sub arc second resolution.

The light grasp of the 72" mirror would still be the equivalent of roughly a modern 50" mirror (assuming a 60% reflectivity factor) and it does not require a large 50" scope to see M51's spiral pattern. Parson's famous

drawing of M51 is rather fanciful in my opinion but a drawing finished in 1864 is a surprisingly realistic portrayal. This sketch alone convinces me that the 72" was a good deep sky instrument when a skilled observer used it.

John Herschel detected a 'ring' structure in M51 in the decade prior to Parsons' observations. Using an 18 3/4" speculum mirror (perhaps the equal of a modern 14" reflector, again assuming a 60% reflectivity factor) Herschel drew a luminous ring surrounding a detached internal nucleus. This arrangement resembled the form of what was thought to be the shape of our own Milky Way in the 1830s. Herschel went as far as to call M51 a 'brother system' to our own galaxy. I have to admit to being puzzled by Herschel's observation. It is not likely he missed seeing the spirals due to poor observing skills. Perhaps a slightly tarnished mirror hid the faint details that would have turned the ring into a spiral pattern. Or maybe, Herschel saw what he wanted to see. A subconscious preconception? (Or to borrow a phrase from a certain televised media circus murder trial- an "examiner's bias"?)

After Parsons announced his discovery, suddenly observers using much smaller telescopes were seeing the spirals. Modern day observers should take note. *Approach your observations with an unbiased mind!* A telescope in the 12" to 14" aperture range is entirely capable of revealing the nature of the spirals like M51, M33 and M101 visually under a dark sky, but it took a much larger telescope to discover them.

In his classic book *The Messier Album*, author John Mallas reproduces a sketch he made of M51 using a 4" f/15 Unitron refractor showing a weakly defined spiral pattern with the 'bridge' that connects to NGC 5195. He admits these details were probably invisible in his telescope but his familiarity with photographs allowed him to 'see' them. A classic case of 'observer's bias'! That he did not reobserve M51 to either confirm or deny these suspected structures is surprising especially since his observations were to reach a wide audience with their publication. Earlier observers had missed seeing the spirals because they did not expect to see them; Mallas 'saw' them because he expected he would see them! (Although William Parsons justly deserves credit for visually detecting the first spiral galaxies perhaps he too was guilty of seeing spirals where none existed. He reported seeing spiral patterns in M12, M92 and M30, three globular clusters, M97, the "Owl" nebula, a planetary, and M78, a reflection nebula. He claimed to see M76, the Little Dumbbell planetary in Perseus, as a spiral. He was right about M76. It strongly resembles barred spiral galaxy in the club's 20" reflector.)

The late Walter Scott Houston, writer of the popular 'Deep Sky Wonders' column for *Sky and Telescope* magazine, stated he had never seen any spirals in any galaxy clearly enough to justify a "discovery" situation, and this was using telescopes up to 36 inches in aperture. I find this difficult to believe. Using telescopes in the 12" to 18" range under a good sky I have always thought the spiral structure of M51 and M101 more than obvious enough to 'discover' them.

An excellent introduction to deep sky observing using M51 as a case example is found in Roger Clark's *Visual Astronomy of the Deep Sky*. By carefully observing M51 using a wide variety of magnifications Clark has managed to detect subtle details in the Whirlpool galaxy using an 8" telescope. Well aware that his familiarity with M51 photographs could influence his observations, Clark carefully drew what he saw through his telescope and used a photograph afterwards to confirm what he had seen. He makes a strong case for the visibility of M51's arms in small amateur telescopes. The point Clark stresses throughout his book concerns the use of as high a magnification as possible on any particular deep sky object to see its details but *not* overmagnify and lose contrast.

The spiral structure of M51 is easier to see than that of any other spiral in the sky. Why did it take so long to be recognized? I think that a combination of factors contributed to the problem. The most important factor is the observer. Observers using telescopes that *should* have revealed the spirals did not see them until Parsons made his findings public. This can be attributed to poor observing techniques. I suppose that M51 and the other bright spirals were not critically examined by these early observers. Secondly there is the factor of the telescopes themselves.

An example is John Herschel's 18 3/4" reflector. Modern estimates indicate he could see stars of about the 15th magnitude using this telescope. In 1834, Herschel carried his reflector to South Africa to continue his father's survey of the sky. A list of double stars he discovered there contains very few that are separated by less than 2 arc seconds. Modern observers will note that a 15th magnitude limit for an 18" telescope is well below the performance of a similar modern instrument and resolution of 2 arc seconds can be achieved with a well-made *three* inch telescope under ideal conditions. The 2 arc second limit could very possibly be due to poor seeing conditions and not an indication of poor optical quality. Herschel thought the poor resolution of his telescope was due to tube currents and considered replacing the tube with an open framework. Although Herschel's telescope would not perform as well as an 18" telescope of modern design, it is impossible to deny his achievements. It is interesting to note Herschel carried *three* mirrors for his 18" telescope with him on his expedition. They tarnished so rapidly he rotated his mirrors in and out of service.

This spring marks the 150th anniversary of Parsons's discovery of 1845. How small a telescope does it take to see these majestic objects? Perhaps interested observers should survey the great spirals to help answer this question. I for one would like to know of your results. You should be the judge. What can you see?

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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THE FOCAL POINT

Newsletter of The Atlanta Astronomy Club, Inc.

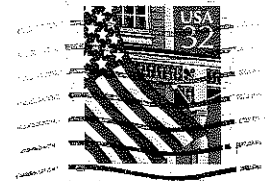
FROM:

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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 (\$20) 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>



First Class

9510.

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