

AD ASTRA

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The Newsletter of the Atlanta Astronomy Club

October 1987

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CLUB CALENDAR

Next Meeting: October 17 (rain date October 24)
Program: Picnic at the Walter Barber Observatory at Villa Rica - see enclosed article for map and details. **THERE WILL BE NO MEETING AT AGNES SCOTT THIS MONTH.**

AD ASTRA is published monthly during the academic year by the Atlanta Astronomy Club, Inc. The Atlanta Astronomy Club, a non-profit organization dedicated to the advancement of amateur astronomy, meets on the third Friday of each month (second Friday of December) at the Bradley Observatory on the Agnes Scott College campus at 8:00 PM. Membership dues are \$25 annually and include a subscription to *Sky & Telescope* magazine and use of club observatory facilities.

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Submissions: Article submissions are most welcome, and may be delivered the editor for consideration.

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CLUB MINUTES

The September 18, 1987 meeting of the Atlanta Astronomy Club was held at the Bradley Observatory with Lee Wilson presiding.

I. The club voted to have a picnic on October 17, 1987 at the Villa Rica Observatory. This will be to celebrate the 10th anniversary of this observing site. The club's 40th birthday is also in the month of October.

II. David Roberts made a motion to sell the club's 13" Dobsonian telescope which is used very little by the membership. David suggested that the money could be used for repairs that are needed at the Villa Rica Observatory. After some discussion, the club voted to sell the 13" to the highest bidder without membership being a requirement for the buyer.

III. Tom Buchanan, chairman of the light pollution committee, requested help from anyone wanting to assist him in his effort to reduce the amount of light pollution in the Atlanta area.

IV. Jerry Armstrong passed around his pencil drawings of planetary nebulae and galaxies. He did his drawings while looking through his 16" f/6.2 newtonian telescope.

STARRY NIGHT - OH?

by Sharone Franklin

Astronomy is more than a science. It's also an art that is expressed with the utmost detail. It affects our daily lives directly and indirectly. Whether or not we acknowledge its presence makes no difference in the way it is. When you introduce yourself to astronomy, you say hello to a continuing discovery of mysteries and beauty.

These thoughts flow through my mind every time I'm asked to set up my telescope for a public gathering. I know that most people consider astronomy untouchable. To them it is pure science that very few can understand and enjoy. They are wrong.

On the evening of last August 14, the Ad Astra staff traveled to the Etowah Indian Mounds near Cartersville, Ga. Don Barry was scheduled to give a talk about the Perseid meteor shower. I had agreed to take my 6" f/6 newtonian telescope.

As we left the pale concrete structures of Atlanta, I reminisced about a public gathering for Halley's Comet near the downtown area in December, 1985. The temperature was 41° and 82 people were standing in line (not patiently) to look through my scope. Halley of course was dim. How do you convince someone that a show is still worth watching when the leading actor forgets to wear his costume? The sky show at the Etowah Indian Mounds was different.

We were to do our program from atop mound A, the largest of all the mounds. As we crossed the bridge that extends over the moat, I could see the huge 60 foot elevation. Its immensity was overwhelming. The mound's base covers 3 acres. The structure ascends from the Etowah valley as though it was put there for the stars to view.

I began thinking about the Indians that built these mounds and occupied this region over 400 years ago. It seemed a bit odd if not paradoxical that I had rights of passage to this territory. Our European ascendants did not want to accept the ideology of the American Indian. He only wanted the resourceful land that the Indian occupied. So, through various ways (mostly war) the Indian culture was finally subverted. Now that the American Indian is no longer a threat to us, we work diligently to understand his doctrine and preserve whatever is left of his homelands.

About 30 people came to the top of mound A to hear Don's talk and to look through my telescope. The summer milky way was brilliant and the appearance of a telescope on top of the mound was enchanting. Although there weren't very many meteors to be seen, there was Saturn. No one was disappointed in the telescopic view of this beautiful ringed planet. After Saturn I pointed the scope at the sparkling bouquet of M13, then the Lagoon nebula and finally Albireo. The silence of the night had evolved from murmurs and whispers into laughter. Everyone was having a good time and so was I.

As we began the descent from the .5 acre top, the celestial sphere and its countless suns hung over the Etowah Valley. It was an elegant display. I wondered how the sky looked here about 30

years ago before so much light and industrial pollution had clouded its transparency. I thought about Cartersville and its residents. The town is still growing and that means more pollution is yet to come. Visitors and the people from Cartersville will again one night climb to the top of mound A. There will be few if any stars to be seen. As with any city, economics will continue to supersede ecology. Most likely the American Indian would not have allowed this situation to evolve.

The trip to the Etowah Indian Mounds was a fun one. The Indians of the Etowah Valley are gone, but I felt their spirit as I walked upon what was once their land. I hope the present day owners (Georgia taxpayers) will continue to preserve this scenery of clustered uplands that reach out and greet the starry night.

PICNIC IN HONOR OF TWO
IMPORTANT ASTRONOMY CLUB
ANNIVERSARIES -
OUR FORTIETH CLUB YEAR
AND TENTH ANNIVERSARY OF
THE WALTER BARBER, JR.
MEMORIAL OBSERVATORY

Everyone is cordially invited to Villa Rica for a Celebration on Saturday, October 17, 1987. Come as early as 4 PM to visit if you wish. The picnic will be served at 5 PM. All members, with the exception of the charter members, are asked to bring either a casserole or vegetable, salad, or dessert. Meat, drink, and paper supplies will be handled by the Club.

Please R.S.V.P. to Judy or Gene Powell, 872-0891, Lee Wilson, 872-8534, or Bud Rosser, 879-0304 by October 14. Let us know what you are planning to bring. Rain date will be Saturday, October 24. Observing after the picnic can be enjoyed by those who wish.

Arrange car pools if you can. Let us know if you need transportation, and bring folding chairs and beach towels.

We hope to see everyone on the 17th!

CLASSIFIED

For Sale: C90 Spotting scope with 1 1/4" visual back and diagonal. Glass solar filter and case, \$285. Also 14.5" f/5.4 Newtonian with motor driven Dec and RA, 90 mm Superfinder and piggyback camera mount, \$2900. Les Weaver, (404)629-8352.

REMEMBERED EXPERIENCES

by Lee Wilson

On occasions in the past I've photographed our club observing site. Each time I seem to get two nondescript buildings and a bleak and lonely landscape. My camera just doesn't reveal any of the images in my mind.

In little over an hour on a morning in 1977 I had set up the 800 foot water hose from Mr. Barber's house, mixed sand and cement, put a bricklayer's string in with a level, and stacked cement blocks on a scaffold. I was all set up to straighten out the crooked wall that had developed along the east side of our observatory. By the time I had placed 2 or 3 blocks, other members began to show up. Club president, Tom Stanley, was one of the first. I tried to get him interested in mixing cement, bringing cement blocks, anything else. He only wanted to lay blocks, so I gave up and handed him my trowel.

Other people were showing up and most of those only wanted to do exciting work. All of them seemed to need some form of guidance. Soon I noticed that the leveling string that I had placed with such care was missing. Tom said that it was in his way. That was the day I realized that I would have to confine most of my activities to doing things that other people didn't want to do, and other necessary chores that they didn't know about. For people who have never had any construction experience the chance to help make a building rise from the ground had to be exhilarating, so I didn't begrudge their desire to do the "exciting" work.

By early fall everyone had experienced blisters, along with discovering what cement blocks can do to your hands. So when work got underway on the warm-up building it wasn't many weeks till I virtually had that building all to myself. Whenever anyone wanted to lay blocks I would tell them to work on the back wall. The front wall and the ends were all mine.

Early on, it became obvious that Mr. Barber was going to keep the grass cut for us. However, his equipment was being damaged by the many rocks lying on the ground. So I began working at getting the rocks picked up, but for some reason it was nearly impossible to get anyone to help with the rocks. It seemed as though they considered it to be the lowest kind of menial work. That was discouraging. Walt and Cleo Barber were our benefactors, our hosts. It would be insulting if we failed to pick up the rocks.

After a while I became intrigued by the rocks. They were uniformly distributed over the area. There was a similarity in size, from fist size to 7 or 8 pounds. Most looked a little like they had spent some time in a creek bed, but I considered the smoothness to be long term weathering. How did a small hillside become saturated with small, uniformly distributed rocks? One day I was standing and gazing at the 5 to 10 mile wide swamp stretched out toward the northeast. It occurred to me that the swamp could be an impact crater. Our observing site might be located on the inner rim of an ancient meteor crater. It was exciting! No one showed any interest, though, and I had no one to talk to.

In the spring, when we were digging the trenches preparatory to pouring the foundation for the observatory walls, I discovered the southeast corner foundation stake lying on the side of the terrace hill. David Speering was digging nearby. It was in the way, he said. That was rather strange because the week before, he and

I had worked together at putting the alignment stakes in place. The people digging in the northeast trench were disregarding the alignment stake on that side. A little observation revealed that the instinctively following the slope of the hill and terrace. They were using a string to measure the distance between the trenches, and were missing the alignment stakes by about a foot. I looked and thought about the situation for a while. A group of happy people were working in the trenches; I decided to say nothing. That is how the 5 degree misalignment of the building with the North Pole happened.

A few weeks later David was exercising his newly acquired authority as first V.P. and announced that he was going to take full charge of installing the observatory door. He took the door home to saw a piece off the top -- about 8 inches too much. At this time we had reached floor level with the walls. The next week David started installing the door frame on top of the wall, cut in the hinge locations, and hung the door. To keep this contraption from falling over he nailed 2X4's to the top of the frame and braced them at the ground with stakes. When we returned the next week there had been two days of heavy rain. David thoughtfully decided that he should take the door home for a while -- he only needed the door frame as a guide to build the walls.

In late fall of 1979 I was finally nearing completion of the warm-up building, and had designed and installed a center beam floor support. From there I would use 2X4's to span the open spaces to the east and west walls. On that day I had spent the afternoon treating the wood with a solution of kerosene and creosote. On my next trip out it would be easy to complete the flooring. It was a good feeling of accomplishment. However, it would be 3 weeks before I had a chance to come out again and when I looked inside I was confronted with the strangest sight you could imagine. In the open space just inside the door was a 12 foot long contraption that looked like the spinal column of a prehistoric animal. Nearly all of my 2X4's had been cut into small pieces and used as ribs. The spacing was about 8 to 10 inches and each rib had 6 or 8 nails to attach it to the spine and wall, or center beam. Three cement blocks had been shoved underneath to keep the contraption from sagging to the ground. I wanted to sit down and cry. After a while I began picking through the ruins, and found that if I used 30 to 35 inch spacing there were enough 2X4's to complete the open area on the east side. Observing chairman, Mark Christensen, had designed the strange contraption. He had a reputation at Georgia Tech of being a tough math professor, half of his students failing the course or dropping out to avoid failure. I asked him what kind of grade his surviving students would give him if they could have a chance to observe his accomplishment.

The nicest event was one afternoon when a new club member drove up and asked if there was anything he could do. So I told him about how much time and effort it took for me to go down to the lower terrace and bring back cement blocks, one in each hand. Usually when I said that to someone I would be lucky if they brought 3 or 4 blocks. A few minutes later I discovered that this man had emptied the contents from the trunk of his Buick sedan and was loading up with blocks. After about half a dozen trips there were two high stacks of blocks next to the warm-up building. I was aware that he had some kind of health problem, and he knew he was dying from cancer, but none of that was talked about. We enjoyed a

pleasant conversation throughout the afternoon. He talked about retiring from his job the year before and moving to Georgia. He had bought some land near Lake Hartwell and had started a vineyard. He said he could help me with the electrical wiring when I was ready. I promised to come for a visit and see the vineyard. He died the next spring, and I hadn't found the time to visit.

A happy event occurred late one afternoon when I was laying the last row of blocks on the warm-up building walls. As I started down for the day Mr. Barber stopped by. Two of his hired hands were with him. He asked if I needed any help. I wasn't sure of the propriety of asking him to do *our* work. After a moment I ventured that I wouldn't mind if someone wanted to lay a few blocks. Walt promptly said, "Can you keep my men supplied with cement?" So we went at it. After a few minutes I found that I was going to run out of cement mix. I remembered someone saying you could get by with 95% sand if you mix it well. So I quickly added a large amount of sand and started collecting the clumps that had fallen to the ground. The few blades of grass wouldn't hurt, I surmised. For about an hour I worked like a beaver. They laid the top layer *and* the cap blocks. The warm-up building walls were finally up!

In early 1977 when observatory planning got underway, the club's money cupboard was nearly bare (as usual). It was determined that \$2000 was needed. A suggestion was made that an asterisk be added to names on the membership list of those who contributed \$20. Jerry Armstrong had been doing astronomical paintings, and he offered these to the club to be sold at auction with the proceeds to be contributed to the observatory fund. There were 2 or 3 auctions. At the first one, Mark Christensen bought over \$200 of paintings and was credited with contributing to the observatory fund. The next time Tom Stanley bought over \$300 of paintings and Jerry's close friend, George Roberts, bought \$200 worth of paintings. Each was credited to contributing to the observatory fund. In all, over \$800 was raised.

An artist is worth something!

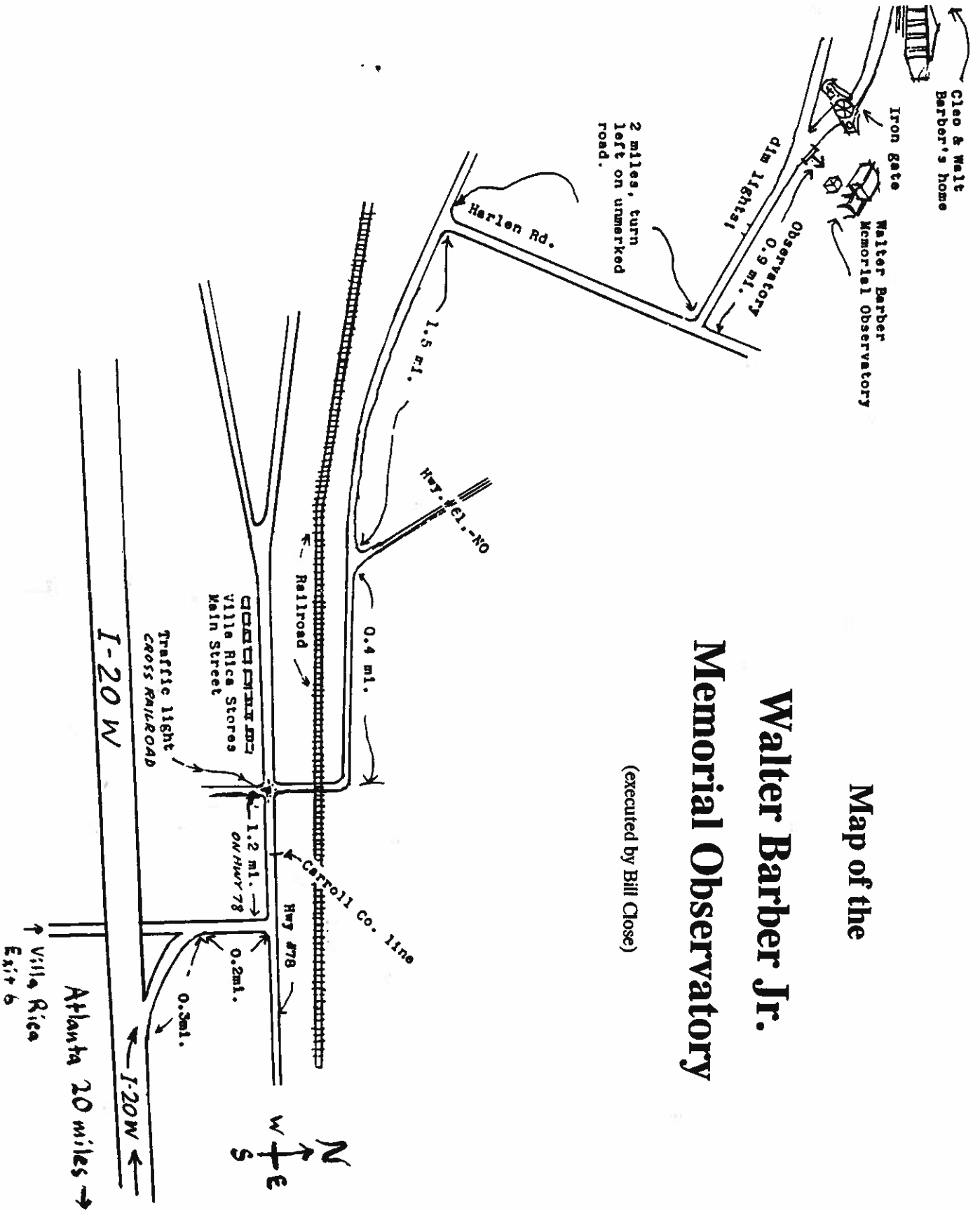
Anyone spending the night at our observing site has a good chance of experiencing something interesting. Shortly after the warm-up building was completed Mark Christensen and I took advantage of that accommodation. My sleeping bag cushioned the plywood floor a little bit. About 3 AM I awoke and decided to go outside. Clouds that had begun arriving in late evening were present everywhere, high, thin cirrus. The moon, now above Atlanta's glow, easily cut through the thin clouds and transformed everything into light and shadow. Venus was nearby and looked like a small moon in its own right. Another planet and a few stars were also visible in the white sky. There was a profound silence -- nothing was stirring. I felt I had been transported to a planet far, far away. Fascinating. There was movement and sound, now. Somewhere I could hear something that sounded a little like puppy dogs playing. At 3 AM? I traced the sound to a small V shaped area at the swamp's edge, more than a thousand feet away. Movement of shadows and highlighting from the moon revealed seven or eight dog-like animals. After a few moments one sat down, looked up to the sky, and a sound unlike anything I had heard before filled the air. Goose bumps ran up the back of my neck. Instinctively, I looked toward Mr. Barber's house. His usually vocal dogs didn't make a noise. Quickly I looked back to the swamp. The mysterious animals had vanished -- complete silence. What a beautiful night!

Map of the

Walter Barber Jr.

Memorial Observatory

(executed by Bill Close)



"SMALL, DIM, AND ROUND"

by Richard Jakiel

This month we inaugurate a new column dedicated to deep sky observation. Richard Jakiel and Rick Clark will report on observations made by club members at the Walter Barber observatory and other locations. Richard is a new member to the club, and comes to us from the Buffalo Astronomical Association, where he distinguished himself by observing over 1300 objects. Please send your contributions to him at 6640 Akers Mill Rd. Apt. 22 T 5, Atlanta, GA 30339.

The Ring Nebula of M-57 is one of the most frequently observed objects in the sky. With the 20" f/4.5 telescope it is very bright and impressive with a tremendous amount of structural detail evident. The inner region is decidedly "streaky" with the central star (mag. 15.6) clearly visible. Faint nebulous extensions can be seen emanating from the main mass at 405x. On an exceptional night using a 8" f/6 at high power I barely detected the faint central star -- usually this feat requires a minimum of 12.5". IC1296 is a very faint, small galaxy described in the August 1987 issue of *Sky & Tel*. This object is a major test for the 20" and epitomizes the title of "small, round, and dim". It is about 16th magnitude and in the words of Rick Clark is "deadly dim".

The Helix (NGC7293) is a very large, fairly faint planetary nebula located in the SW portion of Aquarius. With the 20" using a nebula filter this object was extremely impressive. Essentially all the detail visible in the photos is plainly evident when using such a filter. Even with a smaller telescope such as a 8" f/6 a considerable amount of structural detail is evident.

In northern Pegasus there is a large galaxy - NGC 7331. On September 20/21, using the 20", this galaxy fills a substantial portion of the field and shows a number of bright and dark regions. Six small companion galaxies, four on the eastern side, and two to the NW can be seen surrounding this galaxy. The brightest companion, NGC 7335 is also visible using an 8" scope. Stephen's Quintet (actually a quartet - the other galaxy is a foreground object) can be located about 30' SSW of 7331. All five galaxies are easily visible with the 20", the brightest 7319 is 13.9 magnitude, and is visible (along with 7318) in a 8" telescope.

NGC 7008 is a large, bright green planetary located near the Cygnus-Cepheus border. It is fan-shaped, and has several stars embedded in the nebulosity. NGC 7009 is located much farther to the south and is known as the Saturn nebula. At 536x, it looks like a dim afterglow image of Saturn with both inner and outer shells visible. An eight or ten inch scope will show the ansae or "ears" of the nebula on nights of good seeing.

One of my favorite objects is a huge globular star cluster in Hercules. NO - it is not M-13, but M-92, one of the most neglected bright show objects in the sky. Easily resolvable using a 6 to 8" scope, in a 20" it is totally amazing. M-92 is a brilliant, seething mass of stars with an intensely bright core region. So when in Hercules, skip M-13 for once. It's too passe' - instead go for M-92 -- it's almost as nice and deserves better treatment.

It just goes to show you, if you use nothing but setting circles to find objects you're going to miss a lot. On September 20 Bud Rosser was star hopping to the Saturn Nebula. Bud took a bad hop and wound up where he shouldn't have been, but managed to find a geosynchronous satellite by accident. It was obviously geosynchronous because the satellite stayed centered in the telescope field the half hour we watched it, and there was no drive on the telescope. The satellite attracted Bud's attention because it was flashing on

and off. The thing was spin stabilized, and about 80 times a minute we could see a flash about as bright as an 8th or 9th magnitude star. The satellite was quite invisible between flashes.

The Club has a Lumicon off-axis guider for use on the 20". There have been reports that you can't get to the telescope focal plane with the guider on. Please note that there is a removable Nikon screw mount adapter on the off-axis guider. We think people have been trying to put their camera adapter on the Nikon adapter. This eats up over half an inch of focus travel and prevents access to the focal plane. Experiments with an Olympus OM-1 show that if the Nikon adapter is removed (as it should be) and the proper adapter for your camera used, you *can* get to the focal plane.

The 20" is imaging better than ever thanks to the collimation efforts of Don Barry and Rick Clark on July 4. These fellows worked for several hours to get the telescope precisely collimated for both eyepiece stations. They found that if you spin the secondary from one station to the other too rapidly, the secondary mount will turn slightly on its threaded bolt and misalign the telescope. Take it easy when changing stations.

Also, the club membership deserves a pat on the back for following the rules concerning the use of the 20". People have been avoiding using the instrument if they have not been checked out on it. As a result, there has been no damage to the telescope (or observers). The telescope has also maintained alignment for some months now. Keep up the good work!

Tom Buchanan reports seeing Wilson's comet from Andy Mountain with his DS-10A Meade on May 25, 1987. It appeared as a hazy spot with nucleus, and slight elongation, although no tail was visible. Comet Bradfield has been observed with several instruments at Villa Rica, and may prove to be a "real comet". A tail is visible, and the comet will continue to brighten. Comet Brooks II is near perihelion, and is visible later in the evening in Pegasus at magnitude 12. It also shows evidence of tail development. Keep an eye on these beasts in the next month.

FORMER GAINESVILLE MEMBER PASSES

by Anna Belle Close

The Atlanta Astronomy Club has lost a dear friend and former member with the unexpected passing of Anna Prince last April 9th. The Club was indebted to her and her late husband Albert in many ways. Albert designed and built the boards that hold our name cards, and Anna presided over them in the lobby for years as club Hostess. The couple drove over every month from their home 11 miles north of Gainesville, and entertained us numerous times in their wooded picnic grounds at the foot of a scenic waterfall.

Albert was a self-made amateur astronomer, having observed for himself as a young man working his garden in Alabama the phases of the moon, the swinging north and south of the sun in its annual trek and the wandering of the planets against the starry night's background. He was a "natural" for membership in our group.

Bill and I were passing by their home recently and decided to drop in to see if we could learn how to get in touch with their daughter Joanne Epps, who would come to meetings with her mother after Albert's death. By great good fortune we found her there helping her brother James and his wife Peggy to move in. They are as genial as their cordial parents were, and it is heartwarming to know that family will continue to keep the home alive.

OBSERVER'S ALMANAC
by Don Barry

Moon Rise, Set, and Phase
(All times are EST)

Date	Rise	Set	Phase	Date	Rise	Set	Phase
10/10	20:18	10:24	89%	11/01	15:36	02:35	77%
10/11	21:04	11:28	81%	11/02	16:03	03:42	85%
10/12	21:55	12:26	73%	11/03	16:32	04:47	92%
10/13	22:51	13:18	64%	11/04	17:01	05:53	97%
10/14	23:49	14:03	55%	11/05	17:34	06:59	99%
10/15	---	14:41	45%	11/06	18:12	08:05	99%
10/16	00:48	15:14	36%	11/07	18:55	09:10	97%
10/17	01:47	15:42	27%	11/08	19:45	10:12	93%
10/18	02:45	16:08	19%	11/09	20:39	11:08	87%
10/19	03:43	16:33	12%	11/10	21:37	11:56	80%
10/20	04:41	16:58	6%	11/11	22:36	12:37	71%
10/21	05:40	17:23	2%	11/12	23:35	13:12	62%
10/22	06:42	17:52	0%	11/13	---	13:42	53%
10/23	07:47	18:24	0%	11/14	00:33	14:09	44%
10/24	08:55	19:03	2%	11/15	01:30	14:34	35%
10/25	10:05	19:51	7%	11/16	02:27	14:58	26%
10/26	11:13	20:47	14%	11/17	03:25	15:23	17%
10/27	12:16	21:53	22%	11/18	04:25	15:50	10%
10/28	13:10	23:04	33%	11/19	05:29	16:21	5%
10/29	13:56	---	44%	11/20	06:37	16:58	1%
10/30	14:34	00:16	55%	11/21	07:47	17:42	0%
10/31	15:06	01:27	66%	11/22	08:58	18:37	1%

SATELLITES IN THE SKY

Many of you may have heard the recent announcements over local radio and TV stations describing passes of the Russian space station Mir. During October, Mir will make a number of favorable passes over the Atlanta area, and the probability of clear skies makes this one of the best times of year to observe the station. The following are predictions run using current orbital elements for Mir during October. These should be accurate early in the month, but may be a few minutes off later on. (Az)imuth is eastwards from north, Range is in kilometers, and (H)eading is direction in the sky -- up, down, left, or right.

Tuesday morning, 6 October

Time(EDT)	Az	El	H	Range	Mag
Shadow exit.					
05:50:31AM	033.9	20.2	R	00854	+0.7
05:51:01AM	049.7	19.4	R	00875	+0.6
05:51:32AM	063.7	17.1	R	00946	+0.7

Wednesday morning, 7 October

Time(EDT)	Az	El	H	Range	Mag
Shadow exit.					
06:06:58AM	040.3	60.0	R	00389	-1.0
06:07:58AM	108.6	33.5	D	00579	-0.4
06:08:59AM	120.2	16.6	D	00950	+0.7

Sunday evening, 11 October

Time(EDT)	Az	El	H	Range	Mag
Shadow entry.					
08:17:54PM	203.6	16.1	U	01009	+1.1
08:18:55PM	188.2	30.0	L	00656	+0.3
08:19:56PM	135.7	46.6	L	00476	+0.2

Monday evening, 12 October

Time(EDT)	Az	El	H	Range	Mag
Shadow entry.					
08:33:51PM	249.6	16.7	U	00990	+0.7
08:34:52PM	266.6	30.9	R	00645	-0.2
08:35:53PM	321.1	45.9	R	00485	-0.6
08:36:24PM	354.3	40.0	R	00537	-0.1

Thursday evening, 15 October

Time(EDT)	Az	El	H	Range	Mag
Shadow entry.					
07:47:11PM	280.9	16.2	R	01007	+0.8
07:48:42PM	325.2	23.7	R	00787	+0.5
07:50:14PM	007.8	15.9	R	01037	+1.6

Sunday evening, 01 November

Time(EST)	Az	El	H	Range	Mag
Shadow entry.					
06:24:28PM	329.7	16.7	U	01003	+1.0
06:26:30PM	039.1	47.9	R	00473	+0.1
06:28:33PM	111.7	17.2	D	00987	+3.8

Monday evening, 02 November

Time(EST)	Az	El	H	Range	Mag
Shadow entry.					
06:38:59PM	296.4	17.1	U	00989	+0.7
06:40:00PM	280.0	31.6	L	00640	-0.2
06:41:01PM	224.3	47.0	L	00477	-0.6
06:42:02PM	171.7	30.4	L	00658	+0.8
06:43:03PM	156.3	16.5	D	01011	+2.2

COMET BROOKS II

Comet Brooks II was observed from Villa Rica in mid September and proved brighter than predictions. It should stay near 12th magnitude in October.

Date(0H ET)	R.A.	Dec	(1950 Epoch)
Oct 7	00h26.7m	-00d09.2m	
Oct 12	00h25.4m	-00d47.4m	
Oct 17	00h24.4m	-01d21.5m	
Oct 22	00h23.9m	-01d50.2m	
Oct 27	00h23.9m	-02d12.6m	
Nov 1	00h24.5m	-02d28.0m	
Nov 6	00h25.8m	-02d36.2m	

AD ASTRA

Please direct all address changes or corrections to:

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