

AD ASTRA

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The Newsletter of the Atlanta Astronomy Club

November 1987

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CLUB CALENDAR

Next Meeting: November 20, 8:00 p.m. at Bradley Observatory
Program: To be announced.

AD ASTRA is published monthly during the academic year by the Atlanta Astronomy Club, Inc. The AAC, a non-profit organization, is dedicated to the advancement of amateur astronomy, and fostering the social, literary, and educational needs of its members. Meetings are held on the third Friday of each month (second Friday of December) unless otherwise announced in this publication. Membership dues are \$25 annually and include a subscription to *Sky & Telescope* magazine and use of club observatory facilities.

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CLUB MINUTES

The October 17, 1987 meeting of the Atlanta Astronomy Club was held at the Walter Barber Jr. Memorial Observatory in Villa Rica, Ga. Club members had a picnic to celebrate the 10th anniversary of this observing site and the club's 40th birthday.

Many people stayed after sundown to observe the beautiful starry sky. A number of club members brought telescopes, and had a chance to swap views of the many items seen. Perhaps the most interesting object of the evening was comet Bradfield which was in Ophiuchus and displayed a tail of about a half of a degree's length.

THE GRAND DESIGN (What Is Yours? What Is Mine?)

by Sharone Franklin

Myrose bushes produce most of their blooms in the spring and fall. In October when northern cold fronts begin to decrease Atlanta's temperature, I am reminded that their blooms will soon fade. The Peace rose is especially attractive -- its yellow wrappings fringed with pink.

Close to the roses is a hedge that is speckled with small white flowers through out the summer months. During this time the flowers will attract several species of bumble bees, butterflies and skippers. Not far away is a patch of Celosia. It has begun to wither now. The shorter daylight hours and cool nights have taken away the energy needed for its life support. During the summer I watched tiny spiders hiding inside the folds of the Celosia's blooms. Some would construct elaborate nets to catch unsuspecting insects, while others would wait in crawl spaces and ambush their prey. All of these undersized lifeforms are gone now. Some have retreated to hideouts for a long winter sleep. Others have died.

October mornings are dark at six a.m. when I go outside to retrieve the newspaper. The hedging and rose bushes appear lifeless, their branches mere shadow forms standing upright while hidden roots anchor them securely. I turn my eyes to the sky and gaze at Sirius and Orion. At this moment all life's existence seems perfect. The earth, utilizing a centripetal force directed toward the sun, also utilizes the sun's energy to make life possible as we know it. How unusual it is that we are here experiencing. Or is it?

As winter approaches, the nights will feel frosty, and hopefully the sky will be transparent. The star clusters of Auriga will again present themselves in my telescope. As John Marsh once said to me, "Seeing the beauty of a star cluster makes me feel all is well with the world."

John is right. When I see the beauty of a star cluster I too feel all is well with the world. Nature has an endless list of subjects and situations that are beautifying and create an easy feeling within me. It is not difficult for me to forget that less than a half of a mile from my house, trees are being destroyed to make room for more houses for more people to live in. These people will come to take part in the endless cycle of more industry to attract more people to attract more industry. This theme and its variations are carried out the world over. It is as circuitous as the earth itself.

We are a different world now than we were just 10-15 years ago. Because of complex yet very accessible communication systems, information is exchanged over our planet at a prodigious rate. This results in sudden changes in our attitude about our lives in general. Some folks say this is simply progress and progress must take place because there is always something to progress toward. Others say that these changes are in the scheme of things -- a part of the Grand Design. Grand Design? Whose Grand Design? Is it progress to overpopulate the planet? Is it in the scheme of things to have so many humans that the earth cannot provide enough natural resources to meet their needs? Is it not our multitude that has amplified our changing needs such that we destroy plants and animals on a large scale?

We come from the stars. We are their elements. Therefore, we are an extension of their design. Yet, just as each star has some individuality, so does each one of us. This creates a feeling of separateness -- a type of loneliness that becomes the human condition. How we react to this condition shows in the way we fashion our lives and interact with one another.

If there is a Grand Design, the tools for sketching have been provided by the laws of nature. We have a free hand in drawing the picture we desire, but we must use nature's tools. There is a writer, illustrator and dramatist in each of us. We are natural born inventors. Being creative is our birthright. This is why there is always something to progress toward. This is why there is constant change. There is so much that we can do. We are zealous and we make mistakes. Can we not also direct this zeal toward correcting some of these mistakes?

Our design (individually and collectively) is interlaced with the cosmic network. The earth is our portfolio. Cataloged is a wounded landscape that will eventually bleed to death. What a pity.

SOME NOVEMBER ASTRONOMICAL ANNIVERSARIES

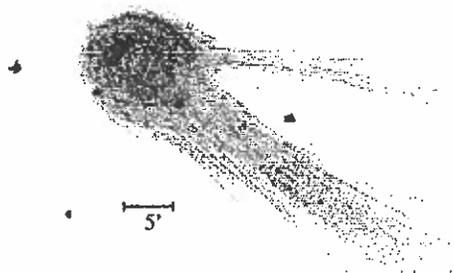
by Frank Dibbell

- Nov 1, 1889 E.E. Barnard observes an eclipse of Iapetus by the shadow of Saturn's ring with the 12 inch refractor at Lick Observatory. No one else has ever seen this rare satellite phenomenon.
- Nov 2, 1885 Harlow Shapley born. Director of Harvard Observatory from 1921 to 1952.
- Nov 2, 1944 Sir Arthur S. Eddington, noted English astrophysicist, died.
- Nov 2, 1962 Dedication of the 60 inch, 300 foot long McMath solar telescope, at Kitt Peak National Observatory.
- Nov 3, 1958 Soviet Astronomer N. A. Kozyrev observed indications of a volcanic process in the crater Alphonsus.
- Nov 3, 1960 Sir Harold Spencer Jones, 10th Astronomer Royal and Director of Greenwich Observatory, died.
- Nov 4, 1934 Arthur N. Brown, outstanding English amateur observer of variable stars, died. He contributed more than 22,000 magnitude determinations to the British Astronomical Association between 1906 and 1934.
- Nov 6, 1892 Edwin Holmes, a London amateur, discovers a remarkable periodic comet. After having been missed on seven successive returns, Comet Holmes was recovered in 1964.
- Nov 7, 1631 Pierre Gassendi is the first to observe a transit of Mercury.
- Nov 7, 1960 Transit of Mercury across the Sun's disk, widely observed in the U.S.
- Nov 8, 1656 Edmund Halley is born.
- Nov 9, 1934 Carl Sagan is born.
- Nov 12, 1799 A. von Humboldt observes an extremely rich Leonid meteor shower from Peru. This observation helped initiate the scientific study of meteors.
- Nov 14, 1896 J. M. Schaeberle discovered the white-dwarf companion of Procyon, using the 36 inch Lick refractor.
- Nov 15, 1630 Johannes Kepler died.
- Nov 15, 1738 Sir William Herschel is born.
- Nov 16, 1835 Halley's Comet passed through perihelion.
- Nov 17, 1954 Thaddeus Banachiewicz, prominent Polish astronomer and mathematician, died.
- Nov 17, 1966 Over 40,000 meteors fall over Arizona in 20 minutes.
- Nov 20, 1889 Edwin P. Hubble, American expert on galaxies

- and cosmology, is born.
- Nov 20, 1952 Jupiter occults the star Sigma Arietis, which is observed by both the 60 inch and 100 inch reflectors at Mt Wilson.
- Nov 23, 1725 French scientist Pierre Bouguer made first determination of atmospheric extinction, by comparing the Moon's brightness at altitudes of 66 and 19 degrees, using candles for a photometric standard.
- Nov 23, 1864 William Struve, successively director of Dorpat and Pulkovo Observatories, died. He founded modern double star astronomy.
- Nov 25, 1611 Nicholas Peiresc, a French naturalist, discovers the Orion Nebula.
- Nov 26, 1818 Encke's Comet discovered.
- Nov 27, 1872 Great shower of Andromedid meteors.
- Nov 27, 1885 First photograph of a meteor trail taken at Prague.
- Nov 27, 1964 V. V. Sharonov, professor at Leningrad University, died. He was a distinguished planetary and lunar expert.
- Nov 30, 1962 J. L. Pawsey, an Australian radio astronomer, died.

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, price now \$2500. Les Weaver, (404)629-8352.



Above: Comet Bradfield, 1987s, as drawn by Richard Jakiel on October 23, 1987 at 90x with the club's 20" f/4.5 reflector and 24mm Televue Wide-Field. Estimated magnitude at the time was ~6.0.

Upper Right: M-33, the Pinwheel Galaxy, in Triangulum. Richard Jakiel used the same instrument at 175x with a 13mm Nagler.

"SMALL, ROUND, AND DIM"

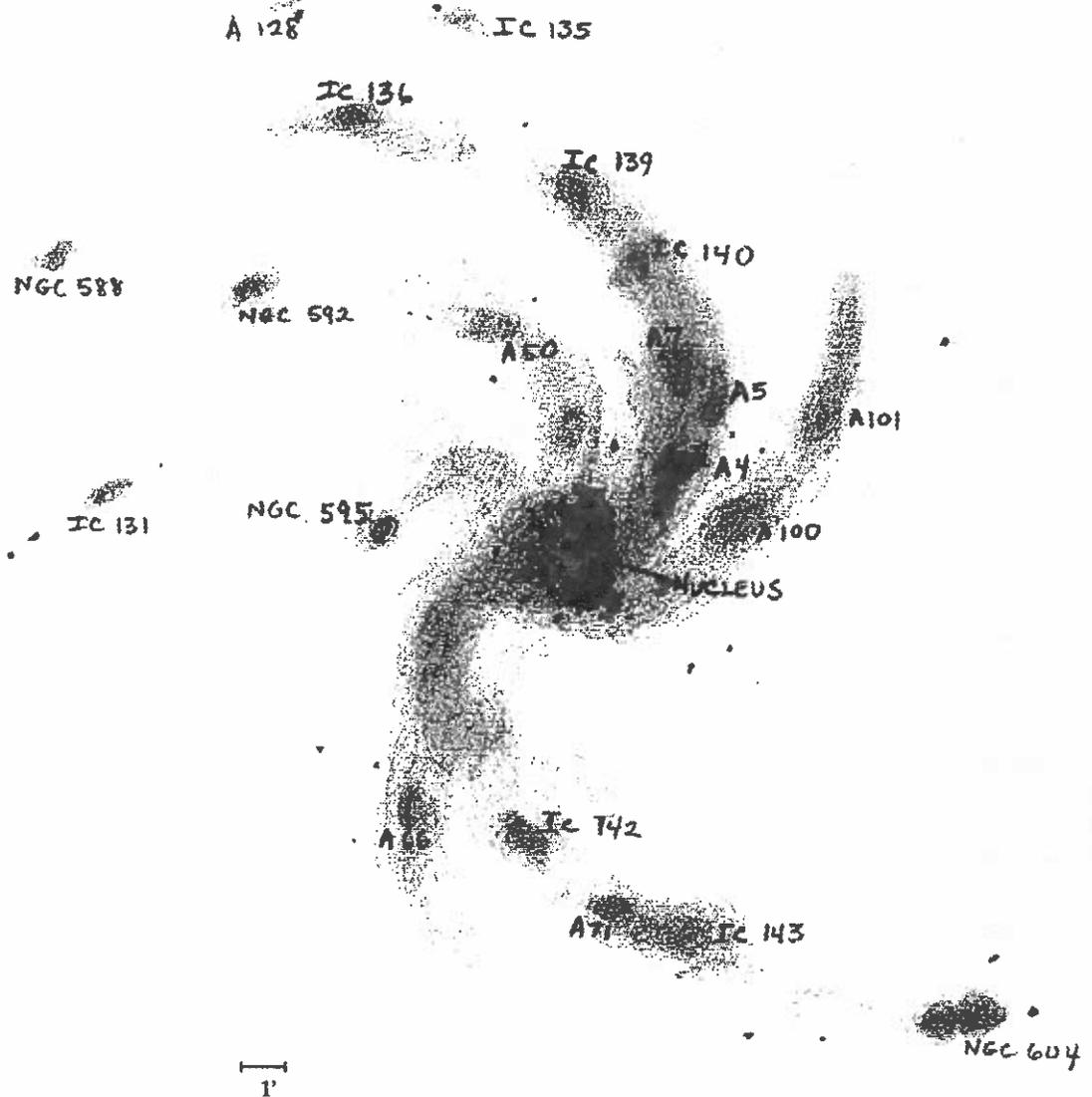
by Rick Clark and Richard Jakiel

This month's feature object is M-33 (NGC 598), a huge spiral galaxy located in Triangulum. According to Burnham's *Celestial Handbook* (Vol. 3), M-33 is a loose S_c spiral 2.4 million light years away and occupies 60' x 35' of the sky. Its magnitude is 6.5, which makes it a rather low contrast object as a result of its large angular extent.

The specifications are in the books -- what does it look like in a telescope? In my old 8" f/7 telescope at 50x M-33 appears as a large, nebulous, hazy ellipse (nearly 1° across) with a brighter core region. Closer scrutiny reveals a tiny 12 magnitude nucleus with 2 large spiral arms spreading out from that locus to form a large inverted "S". Several giant H II regions are also visible, most notably NGC 604, 598, 592, and 588. Using the 20" f/4.5 scope at Villa Rica, M-33 shows such a wealth of detail that it gives a new meaning to what is meant by "spiral galaxy". Bright show objects such as M-51 or M-101 might show a few spiral arms, a few H II regions, but these pale in significance to what is visible in M-33 on a very clear and steady night. During a stretch running from October 14-17, I saw nearly 2 dozen H II regions and star associations along with traces of 5 spiral arms. The H II regions are vast regions of gas and dust up to 1000x the size of the "puny" Great Orion Nebula (M 42/43). The star associations (labelled "A" on the diagram) are large groups of spectral class O and B supergiants with absolute magnitudes up to -9 (800,000x brighter than the Sun).

NGC 604, located at the end of the main northern arm, is a giant H II regions that is easily visible even in a small telescope. In my old 8" scope, it appears as a small, bright, nebulous clump with a distinctly higher surface brightness than the galaxy itself. Using the 20" scope and a 13mm Nagler/barlow setup, NGC 604 was distinctly bi-lobed in appearance, with 4 very dim (magnitude 15-16) stars embedded in it. These faint stars are brilliant O+B supergiants and are easily the most distant individual stars visible in this telescope.

When exploring M-33 with the 20", first use a low power eyepiece to get a "feel" of the galaxy's structure. Then switch over to the 13mm Nagler and explore the H II regions, star associations, and spiral structure. With careful viewing and using a chart such as the one presented in the October 1986 *Sky & Telescope*, you too can take a tour of the Pinwheel galaxy.



Only a short hop away is the large edge-on spiral galaxy NGC 891. In an 8" or 10" scope, this galaxy appears as a very elongated patch of nebulosity about 12' long by 3' wide. A thick dark lane is visible along the long axis of the galaxy. In the 20", this feature is very prominent along with a general brightening in the core region. Close by is ABELL 347, a cluster of 13 and 14 magnitude galaxies. These galaxies definitely fit the description of being "small, round, and dim".

On the night of October 23, after the usual clamors to view Andromeda, M-13, and Vega through the 20", observing commenced with Comet Bradfield. Although not as bright as Comet Halley at its peak, it had much more tail structure. In the 20" at 95x, this comet had a 1° dust tail which was very prominent. About 30° in a counterclockwise direction, the comet had a slightly shorter but much fainter ion tail! (the drawing greatly exaggerates the prominence of the ion tail)

This comet, to our great surprise, has a short antitail. This tail was very short: it looked more like a hump coming out of the nucleus than the typical spike usually associated with antitails.

And like 1982i, it was "sort of green".

OBSERVER'S ALMANAC
by Don Barry

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

Date	Rise	Set	Phase	Date	Rise	Set	Phase
11/21	07:47	17:42	0%	12/12	---	12:35	62%
11/22	08:58	18:37	1%	12/13	00:15	12:59	52%
11/23	10:05	19:41	5%	12/14	01:11	13:23	43%
11/24	11:04	20:53	11%	12/15	02:09	13:48	33%
11/25	11:53	22:06	19%	12/16	03:10	14:17	24%
11/26	12:34	23:18	29%	12/17	04:15	14:50	15%
11/27	13:08	---	40%	12/18	05:24	15:31	8%
11/28	13:38	00:27	52%	12/19	06:35	16:21	3%
11/29	14:02	01:34	63%	12/20	07:46	17:22	0%
11/30	14:34	02:38	73%	12/21	08:50	18:33	0%
12/01	15:02	03:42	82%	12/22	09:45	19:48	3%
12/02	15:33	04:47	89%	12/23	10:30	21:04	8%
12/03	16:08	05:52	95%	12/24	11:08	22:16	16%
12/04	16:49	06:56	98%	12/25	11:40	23:25	25%
12/05	17:36	07:59	99%	12/26	12:09	---	36%
12/06	18:29	08:57	99%	12/27	12:37	00:31	47%
12/07	19:26	09:49	96%	12/28	13:05	01:36	58%
12/08	20:25	10:33	91%	12/29	13:35	02:40	68%
12/09	21:24	11:10	86%	12/30	14:08	03:44	78%
12/10	22:22	11:42	78%	12/31	14:46	04:48	85%
12/11	23:19	12:09	70%				

EYE ON THE SKY

The following are favorable evening passes for the Salyut 7 and Mir space stations over Atlanta. Times may vary for later predictions due to unpredictable effects of atmospheric drag and station maneuvering.

Wednesday evening, 25 November 1987

Time(EST)	Az	El	Range	RA/2000	D/2000	Mag
06:56:22PM	321.7	18.0	01225	15:37.0	+52d23	+2.6
06:57:40PM	331.4	36.2	00761	17:34.8	+66d30	+1.6
06:58:58PM	040.3	66.5	00516	00:13.7	+49d45	+1.2

Shadow entry.
Salyut 7 USSR =1982 033 A =N13138

Thursday evening, 26 November 1987

Time(EST)	Az	El	Range	RA/2000	D/2000	Mag
06:25:23PM	326.5	17.3	01254	14:48.7	+55d46	+2.6
06:26:41PM	340.5	33.5	00805	16:28.5	+73d46	+1.8
06:28:00PM	039.0	54.4	00576	00:56.2	+56d00	+1.6
06:29:18PM	100.2	34.2	00790	01:58.0	+11d03	+3.5
06:30:36PM	114.9	17.6	01234	02:20.5	-09d28	+5.3

Shadow entry.
Salyut 7 USSR =1982 033 A =N13138

Friday evening, 11 December 1987

Time(EST)	Az	El	Range	RA/2000	D/2000	Mag
06:21:34PM	217.3	27.5	00642	20:46.7	-19d13	+0.2
06:22:49PM	138.0	76.1	00329	23:47.0	+23d05	-0.9
06:24:05PM	053.6	27.6	00635	04:38.3	+44d01	+1.1

Shadow entry.
Mir USSR =1986 017 A =N16609

Saturday evening, 12 December 1987

Time(EST)	Az	El	Range	RA/2000	D/2000	Mag
06:32:43PM	272.3	21.2	00780	18:27.4	+13d24	+0.2
06:33:59PM	322.7	32.0	00571	17:50.2	+58d45	-0.4
06:35:14PM	010.9	20.2	00799	08:50.2	+73d17	+0.8

Shadow entry.
Mir USSR =1986 017 A =N16609

Tuesday evening, 29 December 1987

Time(EST)	Az	El	Range	RA/2000	D/2000	Mag
06:23:59PM	340.4	23.3	00715	16:33.0	+69d55	+0.2
06:25:15PM	038.9	42.8	00447	04:27.4	+58d28	-0.1
06:26:30PM	100.2	23.5	00696	04:41.1	+05d01	+2.6

Shadow entry.
Mir USSR =1986 017 A =N16609

ELEMENTS FOR COMETS BRADFIELD (1987S)
AND MCNAUGHT (1987B1)

Bradfield		McNaught	
T=7.2739 Nov 87	i=34.0897	T=11.977 Dec 87	i=97.049
q=0.868989	w=73.9085	q=0.83536	w=17.9
e=0.994811	W=267.3835	e=1.0	W=260.790

Comet McNaught is currently too far south to be visible but near Christmas should appear at 7th or 8th magnitude for a time in the morning sky. Bradfield continues a fine apparition -- its positions are:

Date	RA (1950)	Dec
24 Nov	19:17.4	+11d47
29 Nov	19:45.9	+14d36
03 Dec	20:10.6	+16d48
08 Dec	20:43.7	+19d23
13 Dec	21:18.8	+21d41
18 Dec	21:55.2	+23d33

AD ASTRA

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