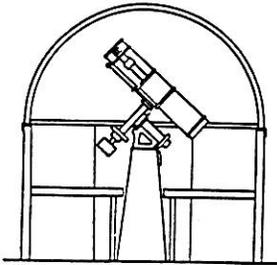




BUFFALO ASTRONOMICAL ASSOCIATION, Inc.

MAY - JUNE 1993



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 Stephen Kramer - Treasurer
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>> MEETING NOTICES <<

MAY 14th: Annual Dinner Meeting at the Coachman's Inn! Great food! Our speaker will be Dr. Dave Toot from Alfred University on solar research at Alfred.

JUNE 11th: Planetarium show: LEGENDS: Greek Mythology Brought to Life; also annual elections.

Meetings: 2nd Fridays @ 7:30pm Jan-June and Sep-Dec.

Location: Auditorium of the New Science Building at Buffalo State College on Elmwood Ave.

We hope to see you all there at these meetings.
 As usual refreshments will follow!

For information and reservations for the May dinner meeting call Melissa Marcus at 773-5015. Complete info in the March-April Spectrum p7. Don't delay!

The June meeting is the annual business meeting with the election of at-large board members. A couple short talks are scheduled and a new 45 minute Planetarium show will follow in the Ferguson Planetarium downstairs.

Come one, come all and welcome our speakers!



BEAVER MEADOW OBSERVATORY *457-3104*

Well it is STAR PARTY time!!! Star parties are all booked for the summer!

Saturday May 1: Public Day at the Observatory! From 10am to 5pm and public night to follow. Need the usual help with computers, and telescopes.

Saturday June 12: Dr Jack and Jayne Mack invite you to their home at 1 Hunters Lane, Williamsville, from 7:30pm to 12:00, tel 632-6210. Although their skies are poor, they encourage you to bring a scope, and any other neat toys you have. This is a great place to test Light Pollution Filters, so bring one if you have one.

Saturday June 26: Irene, and Rolland Rupp invite you to their cottage #316 at Lime Lake, starting at 1:00pm. This is a bring a dish to pass picnic. The Rupps will provide the drinks, and the hot dogs. As usual Rowland will be happy to take on all comers in horse shoes, so bring your lucky set. There will also be volley ball, swimming, and the romantic early evening boat ride around Lime Lake.

The big telescope is here! If you wish to learn how to use the equipment at the Observatory, come out any public night!! We hold them rain or shine, so there will be someone who can start to introduce you to the equipment. Besides this year has to be better than last year, we might even have summer!

Daniel Marcus



MEMBERSHIP CORNER

Well, spring is upon us and summer is just around the corner. For those unwilling to brave the cold winter nights, that means it's time to dust off those scopes and star atlases and get out to your favorite observing site to renew your acquaintance with the night (or day) sky. For the more intrepid gazers, it's time to bid a fond farewell to Orion, the Pleiades and Mira and start to think about Sagittarius, the Ring Nebula and Albireo. This time of year also brings an end to our reminders to renew your membership in the BAA (yeah!). So we would like to thank those members who renewed for another year and would like to extend a hearty "Welcome aboard" to our new members. The club's new 20" Obsession telescope, (almost) new

computer equipment, and planned expansion of the Beaver Meadow Observatory should provide some new experiences and opportunities for veteran members and newcomers alike as well as for the visiting public.

In closing we would like to remind everyone that the quality of our club depends on the diversity of its members and the degree to which those members take an active interest in the club. So, if you know or happen to meet someone whose interests match those of the BAA, encourage him/her to attend one of our meetings or other club activities. And if you have any ideas to improve the BAA let one of the officers or board members know; I'm sure they would be more than happy to listen to your suggestion(s). We hope you have a great summer.

Joe and Bev Orzechowski



PRESIDENT'S MINUTE

STOP, LOOK, RESOLVE AND VOLUNTEER

Spring has arrived and that white stuff and cold are gone. The observatory expansion is underway. Soon the public will come to see "what's up in Astronomy". If one of your goals this year was to do more astronomy (reading, viewing, demonstrating,....) then this is the place and time.

Two things to keep goals on track are: 1) pick a goal you can realistically reach. Try for too much and you won't start. 2) Use the motivational trick of writing down your goal and keep it visible.

Volunteering to hold or attend star parties, to be a helper for public nights and being part of a committee are prime areas in need. We intend to hold club classes in observing, astrophotography, PC astro programs and a public night assistant's refresher course. People are needed to both develop, lead and attend these help seminars. Your own ideas are welcome and vital.

We're strengthened by the diversity of our members and we encourage members to get more involved where they can. I invite anyone interested in using their talents to help in any of the areas described here and those on the members activity sheet. We have a need, and a place for everyone who wants to help. Call any board member to help find your niche or initiate your own group!

Bill Smith



ASTRONOMICAL HAPPENINGS

MAY 1993

- 1 - PHI BOOTID meteoros
- 3 - Conjunction - JUPITER & MOON
MOON at perigee (362,697 km)
OMICRON SCORPIID meteoros
- 4 - ETA AQUARID meteoros *****
- 5 - FULL (FLOWER) MOON
- 6 - VENUS at greatest brilliancy (-4.5)
- 10 - Conjunction - NEPTUNE & MOON
Conjunction - URANUS & MOON
The SUN leaves ARIES and enters TAURUS
- 13 - LAST QUARTER MOON
- 14 - Conjunction - SATURN & MOON
PLUTO at opposition
Meeting of the Buffalo Astronomical Association
- 15 - MOON at apogee (404,908 km)
MERCURY at superior conjunction
0 CETID meteoros (daytime)
- 17 - ZETA HERDULID meteoros
- 21 - NEW MOON - A partial solar eclipse will be seen throughout much of North America. If at all, we might perceive a graze here in Western New York. The occurrence here will be at 8:20 AM EST.
- 26 - Conjunction - JUNO & MOON
- 27 - Conjunction - MARS & MOON
- 28 - FIRST QUARTER MOON
- 30 - Conjunction - JUPITER & MOON
ETA PEGASID meteoros
- 31 - MOON at perigee (367,759 km)

JUNE 1993

- 1 - JUPITER stationary
- 3 - TAU HERCULID meteoros
- 4 - FULL (STRAWBERRY) MOON - Unfortunately we here in the Western New York area will miss out on this year's lunar eclipse. It will begin early morning on the West Coast of North America and continue on through the Pacific Ocean and to Australia and Asia, finishing on the East Coast of Africa.
- 5 - CHI SCORPIID meteoros
- 7 - Conjunction - NEPTUNE & MOON
Conjunction - URANUS & MOON
- 8 - LIBRID meteoros
ARIETID meteoros (daytime)
- 9 - ZETA PERSEID meteoros (daytime)
ALPHA SCORPIID meteoros
- 10 - VENUS at greatest elongation (46° West)
Conjunction - SATURN & MOON
JUNE AQUARID meteoros
- 11 - SATURN stationary
SAGITTARIID meteoros
- 12 - MOON at apogee (404,241 km)
LAST QUARTER MOON
- 13 - THETA OPHIUCHID meteoros
- 14 - Meeting of the Buffalo Astronomical Association
- 15 - LYRID meteoros
- 16 - Conjunction - VENUS & MOON
- 17 - MERCURY at greatest elongation (25° East)
- 19 - NEW MOON
The SUN leaves TAURUS and enters GEMINI
- 20 - PHIUCHID meteoros ***
- 21 - Conjunction - MERCURY & MOON
SUMMER SOLSTICE
Conjunction - MERCURY & POLLUX
- 22 - Conjunction - MARS & REGULUS
- 23 - Conjunction - JUNO & MOON
- 24 - Conjunction - MARS & MOON
PALLAS stationary
- 25 - MOON at perigee (369,357 km)
VULPECULID meteoros
- 26 - Conjunction - JUPITER & MOON
FIRST QUARTER MOON
CORVID Meteoros
- 28 - BOOTID meteoros
DRACONID meteoros *****
- 30 - MERCURY stationary
Meteorites struck Siberia - 1908
BETA TAURID meteoros (daytime)

The JUNE 11th meteor shower, the SAGITTARIIDS, appear 4 days before and 4 days after this date. Their radiant is out of 20 hours 16 minutes Right Ascension and -35° Declination. Their appearance in magnitude averages 4th and are white in color. Their numbers amount to between 5 and 10 hourly, being of long, slow streams. More study is needed to determine their true identities. The following shower I have included to confuse any who like to study meteorics and/or meteor showers.

Two days later we may observe the THETA OPHIUCHID meteor shower, which appear 8 days around the 13th of June. These 5th magnitude meteoros are white in color and average between 5 and 10 hourly, just as the previous shower mentioned herewith. The radiant of these, not-so-well-known meteoros are out of 20 hours 16 minutes Right Ascension and -27° radiant. These two showers would certainly prove a challenge as they are close to each other and could prove to be a problem in determining which are which. The only true clue is the difference in their magnitudes and the little difference in the Declination. GOOD LUCK!



OBSERVING HINT

Don't fret over objects and wonders you'll never see. The fun is in finding those objects we can see and observing how each is unique in some way. Viewing is getting on friendly terms with another feature of the heavens. Augmented with reading up on that topic/object and you've got a dynamite combination.

The world's first amateur telescope maker may have been Galileo Galilei of Italy. Early in the 1600's he learned of the exploits of the lens makers of Belgium. One enterprising lens maker had found that a pair of lenses in combination would give magnified images of distant objects. Galileo asked for and received a package of old spectacle lenses.

Galileo was intrigued with what could be done with pairs of lenses but decided he needed a bigger lens. With scanty instructions from the lens makers and using rudimentary materials he was able to make a lens that suited him better. He assembled his lens and a double concave eyepiece lens into a piece of tubing and made a simple tripod mounting. With this first telescope in the world he showed that Jupiter had four moons and Venus had phases.

News of Galileo's existing work soon reached England and the instrument experts became enthusiastic telescope makers. They soon were producing double convex lenses of good quality. But they were critical and were not satisfied with the performance of their finished telescopes. They complained of "blurring". The image could not be brought into sharp focus.

A possible solution to the blurring problem was found when one of the workers noticed that the blurring was reduced as the focal length of the objective was increased. This discovery led to a sort of Focal Length Derby. Objectives of ever increasing focal lengths were turned out by wild eyed opticians. Focal lengths of 100 FEET were common and some lenses approached 200 FEET in focal length.

The mounting and setting up of a telescope with an objective lens having a focal length greater than the length of a city house lot had to resemble a comic opera. A huge wooden derrick supported a block and tackle for raising and lowering the front end for limited altitude adjustment. The lenses were mounted at the ends of a spar of the necessary length. A short piece of tubing at each end protected the lenses from direct stray light. The eyepiece end was supported by a horizontal bar mounted between a pair of low tripods. Moving the eyepiece end of the scope provided a limited adjustment in azimuth. The objectives were small producing dim images. Most objects were observed in passing. I can visualize that the highlight of an observing session was watching the moon's features as they charged across the field.

It was the great English optician, John Dolland, who saved astronomy from the blurring problem and the horrors of long focal length objective lenses with big f ratios. He identified the problem as spherical aberration. Rays passing through individual concentric rings of a convex lens surface will come to a focus at different distances from the lens surface and so rays from the whole lens cannot be focused in any one plane. He showed that the aberration could be eliminated by mounting a negative lens behind the positive lens. It was later found that the idea of John's son Peter, for eliminating axial chromatic aberration described in a previous note could be incorporated in the same improvement so that both spherical and axial chromatic aberrations could be eliminated all with only spherical lens surfaces.

In 1837 the renowned French mathematician, Descartes, published a treatise entitled, "The History of Spherical Aberration." He analysed the problem and solutions thus far advanced. He gave a mathematical description of a simple lens that would completely solve the problem. The lens makers of the day were intrigued by the design. But the technology of the day was unequal to the task of generating the complicated non-spherical curves. The solutions given by the Dollands have stood the test of two centuries. With the advent of the computer age and the development of computer controlled lens grinding machines the day may be near when Descartes' acute vision of yesteryear become our tangible reality of today.

Ed Lindberg

5 YEARS AGO - We held our annual dinner meeting in Moot Hall at Buffalo State in 1988. Our guest speaker was Trudy Brown from Rochester, who spoke on "The Stars for Great Gran-Dad". Ron Mauer of the Elmira-Corning club spoke on "Mars" at our June meeting.

Fred Price contributed an article to the SPECTRUM on "The Lunar Ring Formation Catharina" and Leslie Martin wrote on "Planetary Temperature". An article by Paul F. Warms addressed the issue of recording in a log while observing. Al Kolodziejczak gave advice to new members and Edith Geiger wrote a profile on Dave Sepulveda.

10 YEARS AGO - Dr. Meisel from Geneseo spoke on "Asteroids" in May 1903. The meeting was held at Buffalo State in the days before we had dinner meetings. In June Al Kolodziejczak spoke on "Quasars".

Larry Carlino wrote an article about "Observing with Nebula Filters", which were fairly new back then. Before using this information you should check with Larry for an update. Claudia Bielski, the BAA's Membership Chairman, was the subject of Edith's profile. There were observation reports from Shaun Hardy, Michael Idem and Carl Milazzo, and the Study Section was still functioning with Ken Kimble heading it up. John Riggs, Observatory Director, thanked Miro Catipovic for re-aluminizing the 12.5-inch mirror of the Beaver Meadow telescope and noted Rowland Rupp's eyepiece dew resistor was in use. The death of Bruce Cook, SPECTRUM editor from 1962 to 1967, was announced.

15 YEARS AGO - In May 1978 we had a "panel of six BAA experts". They were: Jack Mack, Ernst Both, Edith Geiger, Ed Lindberg, Darwin Christy and Tom Dessert. In June we just held the business meeting; no speaker was scheduled.

A list of past presidents of the BAA and its predecessor, the AIMO, starting in 1946 is given in the SPECTRUM. Darwin Christy reported on the "Skies from the Honey-House, 1977"—that's Darwin's own observatory in his backyard. An article on "Periodic Variable Stars" was anonymously submitted to the SPECTRUM.

25 YEARS AGO - Rochester's Ralph Dakin spoke on his trip to Peru to witness an eclipse. The actual date of the eclipse was not given. Sylvia Mosure from the Lockport Astronomical Society talked about the "Mythology of the Constellations" at the June meeting.

Walter Whyman wrote an article in the May 1968 SPECTRUM in which he speculated on the nature of energy transport in the universe. Darwin Christy commented on how the local weather affected observing, much as he was to do ten years later (see above). He concluded there were only 66 good nights and 96 hazy ones for the entire year. He suggested you could catch up on your sleep the other 213 nights. Ed Lindberg reported on improvements made to the Newstead Observatory telescope—the same 12.5-inch we now have at Beaver Meadow. Ed, Ernie Okonski and Thad Toporczyk installed rings on the telescope tube so the eyepiece could be rotated to a convenient viewing position. Ernie also made end caps to keep moisture out of the telescope tube.

Rowland A. Rupp

WHO IS THE B. A. A. ?

The history of the B.A.A. goes back to the 1930's, involving people, places and events. Our formal existence is based on a group of documents kept in "the grey metal box," our official archives. These are the following:

CORPORATE

≡ Certificate of Incorporation [typed] 01-26-60
 Filing receipt, NY, Form 259 01-27-60
 Cover letter, Hodgson, Russ, Andrews, Woods & Goodyear 02-05-60
 |
 Waiver of Notice of Meeting of Incorporators 03-02-60
 Proposed minutes of the first meeting of incorporators 03-02-60
 Waiver of notice of the first meeting of the board of directors 03-02-60
 Proposed minutes of the first meeting of the board of directors 03-02-60
 Cover letter, Hodgson,&c 03-02-60
 ≡ Certificate of Type of Not-for-Profit Corporation, Type B, Section 113 & 201 [typed] 08-20-73
 Filing receipt, NY, Form R 662-518M 09-05-73
 Cover letter, Hodgson,&c 09-20-73

TAX STATUS

≡ Certificate (card), Employer Identification Number: 23 7448421, IRS, Form SS-4, Part 4, and stamped: "Non-Profit Organization Identification Number" - - -
 Application for Employer Identification Number, Form SS-4, Part 1 04-27-75
 ≡ Letter of determination of tax exempt status, 501(c)(3), IRS, Form L-178 05-21-75
 Letter of verification (of above), IRS, Form BKN 3-389 03-30-76
 Application for Recognition of Exemption, IRS, Form 1023 [18 pages] 04-27-75
 Attachments [22 pages] |
 [Return(s) of Organization Exempt From Income Tax, IRS, Form 990] 11-08-91
 ≡ Certificate (card), Exempt Organization, number: EX 203735, NY, Form ST-119 10-07-92
 Application for an Exempt Organization Certificate, NY, Form ST-119.2 09-10-92
 Attachments |

AGREEMENTS

≡ Agreement (with) Cornell Aeronautical Laboratory, Inc., (for observatory) 11-17-60
 ≡ Agreement (with) Buffalo Audubon Society, Inc., (for observatory) 03-09-73
 ≡ Correspondence establishing Section / Affiliate status with Buffalo Museum of Science / Buffalo Society of Natural Sciences [not extant] (Jan. '47)

INSURANCE: Erie and Niagara Ins. Assoc. # 51 11 5092 DB, for 3 years 11-23-90

BANKING: Marine Midland Bank, N.A., Orchard Park Branch |
 Ck: 867-18054-4 09-02-83
 Sav: 867-62947-9 05-09-84

Steve Kramer

 SPY and TELL

Larry Carlino has a new Celestron C5+. It has a DC unit with built-in electronic drive, runs 50 hours with a 9V alkaline battery, and is portable. This is Larry's third Celestron C5.

Ernst Both has completed a new mycology book, Boletes of North America; a Compendium, and is now at work on another book, The Monograph of Boletes of North America.

Bill Halbert sang one of the major roles in Verdi's opera, Otello, performed at Shea's Buffalo Center by the Greater Buffalo Opera Company on April 16 and 18.

Dave Sepulveda reports that 2½ year old Brianna has started "knock-knock" jokes, and son, Adam now 7, was in a short skit on a program for PARP (Parents as Reading Partners) where he introduced the book, Peter Rabbit. He was dressed as Peter Rabbit for the event. Dave has volunteered to work for the World University Games in some official capacity.

In the March-April "Spy and Tell," you may recall that Joe and Beverly Orzechowski went to Orlando for the christening of a nephew. Besides the christening, they were to enjoy several days vacation in the balmy south after leaving the wintry climes of Buffalo. Seems that it did not turn out the way they had expected. Joe was ill part of the time, but there was a bright side; they had a Chrysler Convertible at their disposal which they did enjoy greatly.

John Buonomo works at Nationwide Warehouse on Walden Avenue in Cheektowaga. He was sent here from Boston by his company two years ago. His work takes 90% of his time. Besides astronomy, he is interested in music, playing guitar and piano keyboard.

Joan Eschner, who teaches in the East Elementary School in West Seneca, was the second runner-up in the New York State Presidential Award for excellence in teaching math. She received the award at a conference in October '92, in Rochester, which we are very happy to report at this time. She also has a new computer which she says is all "jazzed-up."

Gene Witkowski, after going through two cameras, decided to take a short cut instead of spending for one camera after another. He called representatives from major surveillance (security) camera companies and asked if a much better camera would be coming out soon. Panasonic disclosed that a high resolution camera with twice the light sensitivity would be on the market by the end of April or early in May. Gene hopes to be able to keep this camera for many years instead of just a few as he has been doing.

 Edith L. Geiger**B.A.A. GRAMS**

Astronomy anagrams. Use clue to find astronomy term or (in)famous BAA member. Hidden term will be one or two words. Answers will be found in the next issue of the B.A.A. SPECTRUM.

1) ONES I BOSS

A telescope brand name you'll be getting used to.

2) LONGER LIMIT

His next stop could be WNED or WQED!

3) AWARE BE MOVED

An expansion will almost double its size.

4) SHINY WET CENT

Measure our new scope and this is what it would read.

5) SUN POSTER

Eliminates the weight on a large newtonian.

BN 5/93

Answers to Mar-Apr issue: 1) Darwin Christy 2) space shuttle
 3) Comet Halley 4) Ring nebula 5) newtonian

William S. Smith

Our energetic president was born in Kenmore where he attended De Witt Clinton Elementary School which was later turned into a church. He was only absent four days during those six years. He remembers one of his teachers who broadened his education by teaching the students the fine art of bubble gum chewing, an art which Bill continues to enjoy. He went to Herbert Hoover Junior High where he became a member of the National Junior Honor Society, and also maintained a perfect attendance record while in 8th and 9th grades.

GLOBULAR CLUSTER OBSERVATIONS

There is a wide variety in diameter, concentration class and internal details to be seen in the globulars to provide us with a wealth of viewing enjoyment.

BINOCULAR VIEWS: From a reasonably dark site I've seen all the Messier globulars in steadily mounted 16x80 binos (16 power with 80mm diameter front lenses). My 8x40's have shown 18 Messiers including reasonably dim Messiers as M56 and M71 but I have not tried for all of them. In my 8x40's M13 looks like a soft glow, M10 & M12 like small fuzzy discs and M9, M14 and M92 about star-like. In my 16x80's M13 is a large, easily visible glow with a pronounced core area, M10 a hazy spot with a bright core, M12 a hazy spot, M9 a small bright spot with a brighter center, M14 is a nebulous spot and M92 a small misty glow. For 16x80 binos I'd rate as easy: M's 2, 3, 4, 5, 13, 15, 22. Moderate: 80, 9, 10, 12, 19, 28, 30, 53, 56, 62, 71, 69, 92. Hard: 14, 54, 55, 70, 79; and Difficult: 68, 72, 75, 107. I feel the easy to hard globulars should be visible, or location identified, in 8x40 binos.

TELESCOPIC VIEWS: The best way to see details as resolution, star strings and halo and core oddities. See the "What to note" and "Selected globulars".

MISTAKEN OBJECTS: The open cluster NGC 2158 near M35 in Gemini was once thought to be a glob. In a 4-6" scope it looks like a class 12. NGC 6256 was originally classed as a glob but now its nature is uncertain but seems to be a heavily obscured, reddened 80000 pc distant object. NGCs 6658 and 6642 were once classified as open clusters. How to these 4 objects appear to you.

WHAT TO NOTE: Taking notes of what you see may seem like a pain but it actually helps you see more details. There is something about writing it down that makes you do a more thorough job. Globulars consist of the an annular ring of outlier stars (outer halo); more visible inner halo; brighter, condensed core and sometimes a much brighter, compact, highly compressed nucleus. For *each* (outer halo, inner halo, core, nucleus) denote its:

Overall impressions: at low and high power. Always look at an object at different magnifications; changing eyepieces also gives your eyes a break.

Shape: round, 10%, 20%, 30+% oval. This takes some practice but you will note differences.

Halo: General look of the halo: is it cottony, hazy or smooth

Resolution: well resolved, very, partially, slightly, few or not resolved - note the power: ex. partially resolved @ 110x but well resolved at 210x

Graininess: near resolution of unseen stars: granular, partly, weakly granular or no granularity - also look for a layer of graininess "below" any resolved stars

Concentration: How does the brightness of the globular change: not very, slowly, moderately, quickly or suddenly from edge to the nucleus.

Size: direct measurement or relative size of each part (ex. the core is 30% of the overall diameter with starlike nucleus)

Edge shape of the outer halo: even, irregular, rough or ragged. Any "flat spots" on the circular perimeter.

Concentricity: is the core centered or not relative to the halo; is the nucleus centered or not to the core.

Note oddities: strings of stars, dark spots on the core or halo, star clumps in the halo, dark lanes in the outliers or core

SELECTED GLOBULARS: While not a complete list I feel the objects listed below are the best within their categories. Globes that show resolution (little, some or a lot) also show graininess but I didn't repeat them. These lists were compiled from notes I took while viewing through a 10" generally on excellent nights. What you see will vary depending on instrument size, sky conditions, viewing power and experience. They are *ordered by the date* they are overheard at 9pm starting in January. Messier objects are denoted by the 'M'; NGCs by 'NGC'. Remember these are 10" views.

Best globulars to view: NGC 4147, M's 68, 3 (well resolved), 5, 4 (superb), 13, 12, 62 (shape), 10, 22, 92, NGC 6366, M's 70, 55, 71, 2, NGC 288

Objects that show resolution: M's 79, 68, 53, 5, 80, 4, 13, 12, NGC 6235, M's 10, 92, NGCs 6325, 6366, M's 28 (some), 69, 22, 56, 55, 72 (some), 15, 2, NGC 288

Objects that show granulation: NGCs 2298, 2419, M4, NGC 5466, M107, NGCs 6284, 6293, 6304, 6356, 6355, 6366, 6535 (some), 6544, 6558, 6642, M's 54, 75, 30

Objects that show strings of stars: NGC 4147, M's 3, 5, 4, 13, 12, 10, 62, 71, 30

Objects that show details in the core or halo: NGCs 2419, 6144, M's 13, 19, 92, 9, NGCs 6342, 6355, 6426, 6522, 6539, 6712, M's 71, 75, NGC 7006

Objects that show a nucleus: NGCs 6284, 6558, M's 69, 15, 2, NGC 1049

Objects that show an oval shape: NGC 4147, M's 3, 5, 12, 62, 19 (very), NGCs 6342, 6355 (core), M's 22, 56, NGC 288

Objects I've not yet attempted to see: (all NGCs) 1851, 2298, 5053, 5466, 5634, 5694, 5824, 5897, 5986, 6139, 6256, 6380, 6441, 6723

Very difficult to just suspected as being seen (usually dim, extended and weakly concentrated): IC 1276, NGCs 6749, 6941, 7492, 1049

Globulars to compare for concentration class differences. These are near each other in the sky (16-20 hr R.A.) and of similar overall brightness.

Class 1 = M75 3 = M54 5 = M70 7 = NGC 6287 or M10 9 = NGC 6712 or M12 11 = NGC 6553 or M55

Compare ones near each other: M15 and M2; M13 and M92; M22 and M4; M53, M3 and NGC5053; M80, M4 and NGC6144; M19 and NGC6293; M9 and NGC 6342; NGCs 6522 and 6528; NGCs 6544 and 6553; and M22 and NGC6642. The best trio that show structural differences, even in 8x40 binos, M22, M28 and M55.

This winter and spring you can practice on the 15 globulars visible between 5 and 15 hr RA, NGC 1851 through M5, and be well prepared for the summer and fall bonanza. I hope this article will act as a catalyst to promote observing these celestial traffic jams!

GLOBULAR CLUSTERS FROM NGC 2000.0

Only those north of -40 degree declination

Globular	Right Ascension	Declination	Catalog			Globular	Right Ascension	Declination	Catalog		
			Size min of arc	Catalog Magnitude	Conc. Class				Size min of arc	Catalog Magnitude	Conc. Class
N 288	0 52.8	-26 35	13.8	8.1	10	N6380	17 35.4	-39 04	3.9	11.1	—
N1049	2 39.7	-34 17	0.8	12.6	5	M 14	17 37.6	- 3 15	11.7	7.6	—
N1851	5 14.1	-40 03	11	7.3	2	N6401	17 38.6	-23 55	5.6	9.5	8
M 79	5 24.5	-24 33	8.7	8	5	N6426	17 44.9	+ 3 00	3.2	11.2	9
N2298	6 49.0	-36 00	6.8	9.4	6	N6440	17 48.9	-20 22	5.4	9.7	5
N2419	7 38.1	+38 53	4.1	10.4	2	N6441	17 50.2	-37 03	7.8	7.4	3
N4147	12 10.1	+18 33	4	10.3	6	N6453	17 50.9	-34 36	3.5	9.9	4
M 68	12 39.5	-26 45	12	8.2	10	N6517	18 01.8	- 8 58	4.3	10.3	4
M 53	13 12.9	+18 10	12.6	7.7	5	N6522	18 03.6	-30 02	5.6	8.6	6
N5053	13 16.4	+17 42	10.5	9.8	11	N6535	18 03.8	- 0 18	3.6	10.6	11
M 3	13 42.2	+28 23	16.2	6.4	6	N6528	18 04.8	-30 03	3.7	9.5	5
N5466	14 05.5	+28 32	11	9.1	12	N6539	18 04.8	- 7 35	6.9	9.6	10
N5634	14 29.6	- 5 59	4.9	9.6	4	N6544	18 07.3	-25 00	8.9	8.3	—
N5694	14 39.6	-26 32	3.6	10.2	7	N6553	18 09.3	-25 54	8.1	8.3	11
N5824	15 04.0	-33 04	6.2	9	1	N6558	18 10.3	-31 46	3.7	9.8	—
N5897	15 17.4	-21 01	12.6	8.6	11	I1276	18 10.7	- 7 12	7.1	10.3	12
M 5	15 18.6	+ 2 05	17.4	5.8	5	N6569	18 13.6	-31 50	5.8	8.7	8
N5986	15 46.1	-37 47	9.8	7.1	7	N6624	18 23.7	-30 22	5.9	8.3	6
M 80	16 17.0	-22 59	8.9	7.2	2	M 28	18 24.5	-24 52	11.2	6.9	4
M 4	16 23.6	-26 32	26.3	5.9	9	N6638	18 30.9	-25 30	5	9.2	6
N6144	16 27.3	-26 02	9.3	9.1	11	M 69	18 31.4	-32 21	7.1	7.7	5
N6139	16 27.7	-38 51	5.5	9.2	2	N6642	18 31.9	-23 29	4.5	8.8	—
M 107	16 32.5	-13 03	10	8.1	10	N6652	18 35.8	-32 59	3.5	8.9	6
M 13	16 41.7	+36 28	16.6	5.9	5	M 22	18 36.4	-23 54	24	5.1	7
N6229	16 47.0	+47 32	4.5	9.4	4	M 70	18 43.2	-32 18	7.8	8.1	5
M 12	16 47.2	- 1 57	14.5	6.6	9	N6712	18 53.1	- 8 42	7.2	8.2	9
N6235	16 53.4	-22 11	5	10.2	10	M 54	18 55.1	-30 29	9.1	7.7	3
M 10	16 57.1	- 4 06	15.1	6.6	7	N6717	18 55.1	-22 42	3.9	9.2	8
N6256	16 59.5	-37 07	6.6	11.3	—	N6723	18 59.6	-36 38	11	7.3	3
M 62	17 01.2	-30 07	14.1	6.6	4	N6749	19 05.1	+ 1 47	6.3	11.1	7
M 19	17 02.6	-26 16	13.5	7.2	8	N6760	19 11.2	+ 1 02	6.6	9.1	9
N6284	17 04.5	-24 46	5.6	9	9	M 56	19 16.6	+30 11	7.1	8.3	10
N6287	17 05.2	-22 42	5.1	9.2	7	M 55	19 40.0	-30 58	19	7	11
N6293	17 10.2	-26 35	7.9	8.2	4	M 71	19 53.8	+18 47	7.2	8.3	—
N6304	17 14.5	-29 28	6.8	8.4	6	M 75	20 06.1	-21 55	6	8.6	1
N6316	17 16.6	-28 08	4.9	9	3	N6934	20 34.2	+ 7 24	5.9	8.9	8
M 92	17 17.1	+43 08	11.2	6.5	4	N6941	20 36.3	- 4 38		13p	—
N6325	17 18.0	-23 46	4.3	10.7	4	M 72	20 53.5	-12 32	5.9	9.4	9
M 9	17 19.2	-18 31	9.3	7.9	8	N7006	21 01.5	+16 11	2.8	10.6	1
N6342	17 21.2	-19 35	3	9.9	4	M 15	21 30.0	+12 10	12.3	6.4	4
N6356	17 23.6	-17 49	7.2	8.4	2	M 2	21 33.5	- 0 49	12.9	6.5	2
N6355	17 24.0	-26 21	5	9.6	—	M 30	21 40.4	-23 11	11	7.5	5
N6366	17 27.7	- 5 05	8.3	10	11	N7492	23 08.4	-15 37	6.2	11.5	12

Concentration class (1-12): 1 = very concentrated (tight, bright core at low power) 12 = least (more diffuse at low power)
 Easier to spot while sweeping Easier to miss while sweeping

