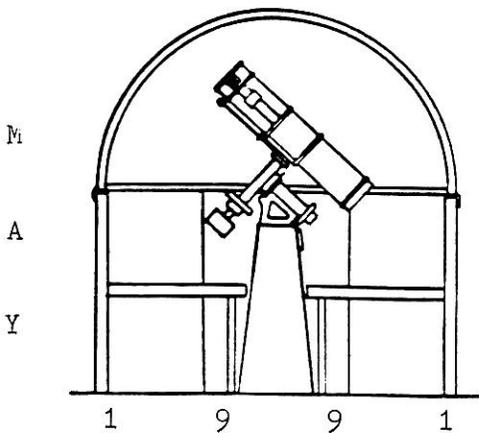


THE SPECTRUM

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MEETING NOTICES

MAY- The May 10th meeting will be our 6th Annual Dinner Meeting. We will meet at the Lord Amherst at 5000 Main St., Amherst, NY near the (290) Thruway Exit. Tickets are \$ 13.00, make check payable to the BAA and send to Steve Kramer, 80 Donna Lea Blvd., Williamsville, NY 14221. A cash bar will be from 7:00 to 7:30; Dinner at 7:30; followed by our guest speaker, Dr. Jack Mack a member of the BAA and is the present Museum Representative. His talk will be on the "Hubble Space Telescope."

Nominations for Board Members at Large, also is on the agenda. If you wish to run for the position or know someone you would like to be on the Board, now is the time to voice your opinion by letting one of the nominating committee know. They are Marylou Bebak and Doris Koestler.

JUNE- The June 14th meeting will be held at the Buffalo State College on Elmwood Ave. in the New Science Building. The meeting will begin at 7:30 PM EDT! Our speaker for the evening will be our own Ken Biggie who will present the Dow Slide Collection. Mr. Dow passed away these past five months and his slide collection should prove to be very interesting.

The June meeting is also our annual meeting with reports from the officers. Election for the members of the Board is also on the agenda. This will be followed by refreshments and a social hour.

DEADLINE

The deadline for the July-August (SUMMER) issue of the "SPECTRUM" is JUNE 14th 1991 !!!!

The 1991 Spring Meeting of the Niagara Frontier Council of Amateur Astronomical Associations will be held on Saturday, May 4th. The meeting hosts will be the Kingston Ontario Society. The Kingston group did not feel able to put on a program of papers, so they are making the meeting an informal one with no business meeting or paper session.

The meeting will feature a tour of the Holleford Meteorite Crater. Attendees will assemble at a parking lot located at the intersection of Highway 401 & 38 at NOON. Car pools will be formed and the caravan will leave for the crater at about 1:00 PM. We are advised to wear boots as the crater is located in a pasture.

After the tour, the group will assemble at the Holiday Inn in downtown Kingston. There will be a Happy Hour and later a banquet. After the banquet, Dr. Martin Duncan will present a lecture on the topic, "Chaos in the Solar System."

For further details, including a map, see the flyer available at our membership desk. (I am sorry that no business meeting could be included. The paper session is the central purpose of the NFCAA. The clubs need the information exchange, perhaps another meeting can be set up for sometime this coming spring or summer.)



Ed Lindberg

BAA ANNALS

5 YEARS AGO - As usual there were no formal meetings in the summer, but then, summer is the time for star parties. In 1986 hosts for parties were: Ken and Diane Biggie, Brian Fallon, Jack and Jayne Mack, Jack Empson, Dan and Melissa Marcus and Tristan and Debbie Dilapo. Tristan's parties were held at Club Coco in those days and were great fun. We observed from the roof, and I for one found the skyline and activities of Allentown more interesting than the light-polluted sky. There were observation reports in the SPECTRUM by Michael Idem and Carl Milazzo, as well as a profile on Dan Marcus written by Edith Geiger. Darwin Christy contributed an article on the Oort Cloud of comets.

10 YEARS AGO - Star parties aren't the only events during the summer months. In 1981 the SPECTRUM mentioned a number of special summer activities: public night at the Lockport Astronomy Society's Remick Observatory, Stellafane in Vermont, the Syracuse club's Seminar as well as our own public nights. Hosts for 1981 star parties were: Miro Catipovik, Larry Carlino, Steve Desmond, the Biggies and Larry Hazel. A weekend at Mees Observatory in Rochester was also planned.

The second half of Ken Biggie's article on building Beaver Meadow Observatory appeared in the SPECTRUM. Comets were the subject of Carl Milazzo's article "Celestial Icebergs". Rowland Rupp wrote an essay on "Observations on Observing", highlighting different motivations for amateur observing.

15 YEARS AGO - New officers for the 1976 to 1978 term were announced in the SPECTRUM, they were: President—Fred Price, Vice-President—Ken Biggie, Secretary—Rowland Rupp, Treasurer—Tom Dessert. Only two star parties were planned— one at Bill Deazley's, the other at Tom Dessert's. Star nights were to be held at our new Beaver Meadow Observatory on the other weekends.

I have no copies of the SPECTRUM for the summers of 1971 or 1966. If anyone has a spare copy for either of those dates (assuming they were published), please let me have it for the archives.



Rowland A. Rupp

During its thirty year history the Instrument Section has seen many active periods. There have also been times when not much was happening and there didn't seem to be any future for the group. The same can apply to other subsections of a club as well as to the club as a whole. It is depressing when a group seems to be falling apart.

What is needed is a definite project for the group to plan and work on. When the telescope making classes were in full swing there were many jobs to be done. There were unfinished mirrors to test and diagnose and recommend procedures for finishing. There were secondaries to test and mount. Completed telescope assemblies had to be collimated and mountings had to be planned and constructed. The Newstead observatory project kept numerous members busy for several years. After a while came a slow period with a lot of maintenance problems. Then we moved the observatory to Beaver Meadow. There was renewed interest and enthusiasm again. All we seem to need is a project that stimulates the imagination.

Telescope making has changed quite a bit in recent years. Some advanced telescope makers, sensing the need for finished mirrors and telescopes, have turned to manufacturing. They furnish acceptable completed mirrors as well as complete telescopes to individuals who do not want to undertake mirror making but can make the mounting. Then there are those observers who willingly buy complete telescopes. The price may seem high but they figure that they can work a month at their higher skill and buy a telescope rather than work for a year or longer doing a job for which they have little skill.

Telescope making has truly changed. Now there are fewer TM's. This is because there are fine optical parts and equipment available to anyone who cares to make the necessary financial investment. But there are a few enthusiasts who learned the craft with the help of a book. They made their own beginner's telescope and then went on to bigger and better instruments. The largest known home made telescope in the area is a 30-inch Newtonian made by Marshall Martz of Frewsburg near Jamestown. It is in active use by the Frewsburg club. There are quite a few scopes of larger aperture in Western New York, many completed by on dedicated worker.

About two years ago the BAA was bitten by the aperture bug. We discussed the problems associated with enlarging our observatory and acquired a larger telescope - perhaps of 24-inch aperture or even larger. The club has members who can help with various phases of the project and there are possibilities for financial help. We need to get back into our exploratory sessions again. The project may be just what is needed for the Instrument Section and for the whole club.

Ed Lindberg



OBSERVATORY REPORT #457-3104*

Well how many Messier Objects have you seen this spring? One, two, thirty, how about 95!! in one night. You could have, if you had gone to Bill and Carol's Messier Marathon star party. Tom Nigrelli had his 10", Bill had an 8" and a 10", Tom Bemus from the Jamestown club had his 8" plus an astroscan. Joe Cavaluzzi was enjoying bagging them with his 3" refractor, and Dave Bull was practicing astrophotography with his 8". The night was exceptionally sharp, no wind, and a balmy mid 20 degrees. Needless to say we all enjoyed the hunt. The ones we missed were due to twilight interference, and our not realizing which ones to do first and last!! Well next year maybe we will bag them all! Jupiter also proved to be an exceptional sight. The night was ended with an excellent pancake and waffle breakfast cooked by Carol's Dad. Boy did you miss out on a meal!

PUBLIC NIGHTS: Public Nights have now started, and as usual I need **HELP!** Policy is still the same, 2 people rain or shine for public nights!! So bring a friend, and enjoy the Nature Preserve before opening

up the Observatory.

STAR PARTIES!!!!!! YES WE ARE HAVING THEM!!! See Dan Marcus for openings! 773-5015. Yes you can have one at the Observatory if you wish. For those unfamiliar with our star parties, we hold them all summer long at various member's homes. All members and their families are invited. Some events are bring a dish to pass picnics, others are just for the evening. But all are bring a scope, computer, eyepieces, filters, and any other "TOY" you can use on the stars! These are great for trying out new equipment, and we all would love to try yours! How else can you try a nagler with a field flattener on an astroscan. I've heard it is impressive, so bring all your toys and enjoy yourself. We really encourage you to bring your equipment no matter how small or large it is, because there is always someone who can show you a new trick. I suggest that when you book a star party, you book it for one night only (rain or shine), as it gets kind of confusing if you schedule a rain date. Besides if you do plan a rain date, you are apt to have two parties, especially if the weather is iffy.



Daniel R. Marcus

OBSERVATIONS

This column has had its ups-and-downs, and I believe it should be reinstated. We have members who do a lot of observing and those observations would enhance the newsletter very much with information other members may not know about and would, perhaps, enjoy them. Who should I pick on for the next issue of the SPECTRUM???

From the newsletter of the Mohawk Valley Astronomical Society's "TELESCOPIC TOPICS" is the following observing note by Jim Rawnick-----

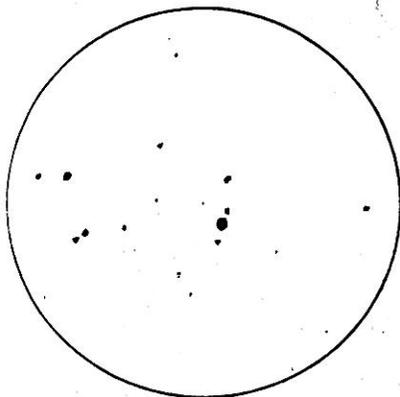
A most interesting object to observe in the winter sky is the star Sigma Orionis. It can be easily located as the fourth-magnitude star about a degree southwest of the easternmost star in the Belt of Orion. On a dark, clear night, Sigma is visible to the naked eye.

When observed through a telescope, Sigma transforms itself into a delightful multiple star system of up to ten members. On February 3, 1991, Mike Garcia, Dick Somer and I were using the fine 11" f/15 Maksutov scope in the College Observatory. We had inspected Jupiter and what remains of Mars when Dick suggested that we have a look at Sigma Orionis. It was a fascinating sight, and I decided to make a sketch.

The magnitude of Sigma itself is 3.73, and the companions range from 6 to 10. Although we saw no color other than white and blue-white, Admiral Smyth in the nineteenth century saw plenty. He reports in his 'Bedford catalogue' to have seen "bright white", "ash-colour", "bluish", "grape red", "dusky", "white", and "purple-grey". Now that was seeing! The Admiral

urges "the explorer" to examine this "double-quadruple" star, "as this is a good object for trying the light and definition of a telescope." His directions are characteristic of his style: "This group may be readily fished up, as it forms the southern vertex of a triangle with the two last stars in the Belt...and it is rather less than a degree from Zeta in the direction of Rigel."

Maybe with more practice, we will be able to develop the Admiral's ability to see color. Sigma Orionis is an



object we will return to at every opportunity. I urge you to "fish it up" out of the celestial sea before Orion leaves our sky with the coming of Spring. (An observing opportunity to remember next year. ed) GOOD LUCK!

On the night of March 9, 1991, while observing Jupiter, I watched the disappearance of Io behind Jupiter's limb, the eclipse of Callisto by Jupiter's shadow and its reappearance 20 minutes later, the transit shadow of the moon Europa and the Red Spot appearing almost simultaneously on the eastern limb. All these observations were made within one hours time from 8:00 to 9:00 PM EST using a 4-inch refractor.

Also to note! Even though Mars has lost its appeal, the north polar cap is still easily visible along with dusky shadings.

Frank Plennert

OBSERVING REPORT: MESSIER MARATHON by Bill Smith

We hoped for the best of conditions .. and got them on Saturday March 17, a new moon night! Clear all night, steady conditions; no wind yet cool (17F was the low temp) was what the observers had to put up with while object after object marched by our eyepieces. The intrepid and their scopes included Joe Cavaluzzi with an 80mm Meade refractor; Dave, Amy, Jeffrey Bull and pup with an 8" Meade SCT; Tom Nigrelli with his 10" f4.8 dobsonian; Tom Bemus from the Marshall Martz club with 8" f/4.5 dob and Astroscan and Dan & Melissa Marcus and myself with 8" f/4 and 10" f/5.6 scopes.

THE SKY WAS GETTING MESSIER AND MESSIER

All told 95 of a possible 105 Messier objects were found! About 15 additional NGC objects were also located.

The intent beyond a good time and astronomical communion was to stimulate enthusiasm and imagination, hone observing skills and locating methods and greet the morning sun with eyes made more perceptive by knowledge and experience. I believe we extended our abilities, exploited our scopes and ourselves further and helped each other in tackling the challenges of new observation with confidence and success.

In darkening twilight, we looked for M31, M32 and M33 first low in the northwest and then tried for the fainter and lower M77 and M74. We should have changed the search order as M74 was hopelessly low and while M77 was about 7 degrees off the horizon and although we were on top of it using field star identification it was not seen.

Dave was trying to do some long awaited astrophotography and would view objects between shots. Joe was honing his observing and searching skills with his 80mm and managed to find 14 new objects by himself. That's quite an accomplishment considering the tiny finders that come with small scopes. I was really impressed with the clarity of images through that refractor.

Tom Bemus was quite adept using the small Astroscan to pick up hard to find objects. Its very low power makes it act like its own finder. We moved his 8" and Joe's 80mm up the horse pasture for the early morning Sagittarius objects. We lingered a bit too long on some objects and sunrise snuck up on us and we missed M's 2, 73, 72, 75, 55, 54 and 70. The 10 degree eastern horizon from the pasture would made it just about impossible to pick these up anyway.

Tom's superb 10" had an 80mm finder and Telrad which made finding objects almost automatic. This scope had superb optics, very lightweight components and was the easiest handling dobsonian I've seen. If anyone is considering making a dob or interested in trying different eyepieces then don't delay - get a hold of Tom!

Details could easily be seen in objects as galaxies M51, 64, 101 and 104; gas nebulas 42, 78, 17 and 27; and clusters 13, 3, 4 and 22 which were unusually stunning.

I went out 4 nights later. The crescent moon was about 35 degrees off the horizon and even galaxies 90 degrees away

were very much diluted due to moonlight. It was as if my mirror coating was stolen. Never underestimate the hindering effect of even slight moonlight on extended objects.

GROUP DYNAMICS

While this observing project could have been done individually, by doing it with a group I think everyone enjoyed it more and got more out of it. Group parties like this act as an incentive to extend the boundaries of one's observation and give some idea to the scale, number and diversity of objects. Let's try it again soon!

ROSETTE NEBULA: Beaver Meadow 3 February 1991
RA 6h 26.6m Dec -04d 45'

With limiting visual magnitude better than fifth magnitude, the Rosette Nebula in Monoceros was seen with the Beaver Meadow Observatory's 12-inch, using a Brandon 32mm eyepiece and UHC nebula filter. Without the filter, no evidence of the nebula was evident, even with averted vision. But with the UHC the nebula easily presented itself as thin cirrus-like clouds surrounding the star cluster NGC 2244.

The Rosette was about four times wider than the eyepiece field which necessitated moving the telescope around the star cluster to view the entire nebula. One source lists the diameter as 90' by 90'. Several sections of the nebula were brighter than the others and I guess looked like a rose. To me it looked more like layered and overlapped clouds. I tried looking for it later from my home in Buffalo with a C8 and the UHC filter but I couldn't find it. The sky at the time was quite bright and limiting magnitude was a hopeful +4. The cluster is thought to be less than 500,000 years old.

Light pressure on dust grains blew the central cavity relatively clear of gas and dust. The nebula is one of the most massive, some 11,000 solar masses, and some 4,500 to 5,200 Light Years away and about 93 LY's in diameter.

The brightest star in the cluster, 12 Monoceros, is some 50 solar masses and 1,000,000 times the solar luminosity.

CALLISTO eclipsed by JUPITER'S SHADOW: Buffalo 22 Feb 1991

The eclipse of Callisto by Jupiter's shadow started at 2h 50m UT but I didn't detect any obvious change in brightness for at least a minute. A few minutes later, the satellite's brightness had been cut in half and increasingly averted vision had to be used to keep track of it. At about 2h 54m UT, the satellite had disappeared totally in the C8.

JUPITER'S RED SPOT: Buffalo February

The Red Spot should maybe be renamed the Pink Ellipse. On the opportunities the Red Spot was seen facing earth this past month, its center was very light in color, almost off white. The surrounding boundary was to me actually pinkish in color. Definitely not the Eye of Jupiter so impressive in past years, and definitely embarrassing. You need to know where to look for it by using the table in Sky & Telescope because any seeing disturbances will definitely blend it into the rest of the cloud bands.

If you have a nebula filter, try it! The view is a bit psychedelic with the belts quite dark.

NGC 2392: Buffalo 2 March 1991
RA 07h 19.2m Dec 21d 55'

A very bright planetary nebula with easily seen central star. Takes magnification well and in the C8 at 125x seemed to hint at some type of structure. Sky was bright and hazy with limited visual magnitude about +4.25 in this direction. The central star is quite hot, 40,000 degrees Kelvin and an O8 dwarf.

This nebula is also called the Eskimo or Clown Face Nebula though the low contrast sky this night failed to reveal any real design even with a Deep Sky filter.

The fact that the corrector was found frosted over a bit later definitely didn't help. I'll have to get back to my "Corrector Watch" program where everytime I switch to another object, I remember to look down the dewcap and check the corrector for dew and frost. (Its never seemed to dew over when it knows its being watched).

Dave Fliss.

When did 'Spy & Tell' begin?

As far as I can find, it must have began on September 1966 entitled, "Where's Charley?" Who was the first author? It was not signed, but I presume that our present author, Edith Geiger, was the culprit - YES???

It starts out:- During the summer months many of the members lose contact with each other for various reasons. This reporter was able to find out a few things about some individuals and decided to let us all know about their activities.

Art & Margaret Rabe spent a few weeks in an off beat Bohemian Lodge at Lake Placid.... Bruce Cook and mother spent the summer at Lake Chautauqua.... Mr. & Mrs. Ed Lindberg visited Keene, N.H. also presented a few lectures at various places including Camp Sprucelands.... Ed Stoklosa claims the sightings of a flying saucer near his home in Boston.... Norm Weiss has been touring, lecturing and making T.V. appearances on UFO's--he appeared on WNED-TV Channel 17.... Lillian Von Gerichten visited the Pacific coast this summer.... The Ernst Both's went to Ocean City, N.J. to be the first to view the local sunrise.... Howard Clarke has registered at Western Reserve as an Astronomy Major.... Gil Gagne is attending Cornell University for his PhD.... John Chilcott is studying law.... Paul Redding has been renting rooms to the underworld.... Dr. Chapman decided to study Pisces first hand at the Niagara Falls Aquarium instead of attending Newstead Starnight.... Orrin & Darwin Christy have been gathering messages from the Milky Way with their recently completed Radio Telescope.... Walter Semerau has switched from Solar Studies to Lunar Observations.... Heidi Both has been horse hunting.... Dr. Chapman also has been managing the Cornell baseball team.... The Edith Geiger family has been hunting and collecting diamonds at the Herkimer Diamond farm.... During the fourth of July weekend Dick Zigmunt tried to "borrow" the Zeiss projector from the New York Hayden Planetarium hoping he could "find a place for it" at Camp Sprucelands.... Stephen Towle has been lecturing to the Golden Age Organizations.... Ron Clippinger also visited New England.... Dr. Price was seen soliciting membership for the BAA--I wonder if this was for the little BAA or the big BAA? Oh, by the way, where's Charley???

SPY and TELL

Conrad Stolarski left the area on March 16th to work in San Francisco as a senior system analyst for Delmo Victor - Defense Contractor, doing Radon Sensors for combat air-planes. At our March meeting Conrad received a Certificate of Recognition for Outstanding Service to the BAA. He will be greatly missed.

Marilou Bebak has accepted a position teaching Regents Biology at Nardin Academy. She will also teach an astronomy elective.

Gene Witkowski has given 8½ gallons of whole blood to the Red Cross, and has given his 9th gallon of platelets for chemotherapy patients. He gives every four weeks with his latest visit being his 72nd. We take our hats off to Gene.

Ken Biggie and a gentleman friend took a three day mini vacation to Ocean City, Maryland, where they took a 7 mile walk; 3 miles on the board walk and 4 miles on the beach, with aching muscles as a result. Ken enjoyed picking up shells, including those of horseshoe crabs. They also went to Assateague Island between Maryland and Virginia at the National Seashore. Assateague is noted for its wild horses

and other wildlife.

Update on the wee folk: Ryan Sigurdson will be 9 months old in May and has been sitting up for a couple months. Brianna Sepulveda will be 8 months old in May and started on solid food a few months ago.

Dave Sepulveda organized a display for the Sports Car Club of America at the Buffalo Convention Center.

Jill Betts, a senior at Frontier Central, who is an astronomy intern at the museum, was named a Congressional Scholar, and spent a week in March in Washington, D.C. visiting Congress.

Every third Thursday of the month, the Tonawanda Lodge of the Masonic Temple serves dinners to its members. Darwin Christy, who as you know, is a master cook, prepares the dinners along with another gentleman. They also prepare a grand dinner for the Past Masters banquet at the Temple. On March 8th, Darwin was busy as chef for this event so he was unable to be at our meeting.

Darwin has been reelected as a church trustee at the Salem United Church of Christ in Tonawanda for the next three years. He will also be an usher every third Sunday.

At the same church, Orrin Christy listed, in calligraphy, the names for the In Memoriam frontispiece in the church hymnal.

Former member, Steve Desmond, who has been chief photographer for the Bee Group Newspapers, is now with the Batavia Daily News as one of three photographers on the staff.

Ken Kimble has a new position with Northstar Design as a project engineer. He designs machines for various companies, including Chevy and Harrison Radiator. In case you don't know, Ken is a very fine artist who renders beautiful pen and ink sketches. Cheryl Kimble is a nurse at Schools 38 and 11 in Buffalo. She is a beginner in astronomy and Ken is amazed at her phenomenal eyesight. She appears to see with the naked eye, objects that the rest of us need a telescope to see. For further information, see Ken.

Jack, Jayne, Alice and Jackie Mack are looking forward to horseback riding when they go to England this summer to visit Jayne's sister. By the way, the Macks have a most unusual tea table in their living room. The top has what one might call, invisible glass. You have to see it to believe it. It is so unusual that no one is permitted to use it. For further enlightenment, contact Jack.

Edith L. Geiger

ASTRONOMICAL HAPPENINGS

SOLAR: The Sun will be leaving Aries on May 10th and enter Taurus, from which it will leave and enter Gemini on June 19th. It will remain there until July 19th. On June 21st, the Sun will cross the equatorial belt bringing the summer months to bare at about 4:20 PM.

LUNAR: The phases of the Moon will be New Moon on May 13th & June 12th; First Quarter Moon on May 20th & June 18th; Full (FLOWER) Moon on May 28th & Full (STRAWBERRY) Moon on June 26th; and Last Quarter Moon on May 6th & June 5th.

LUNAR CONJUNCTIONS: Uranus - May 4th & 31st and June 27th; Neptune - May 4th & 31st and June 27th; Saturn - May 6th and June 2nd & 29th; Mercury - May 12th; Venus - May 17th and June 15th; Mars - May 18th and June 15th; Jupiter - May 19th and June 15th.

PLANETARY CONJUNCTIONS: Mars & Jupiter - June 14th; Venus & Jupiter - June 17th; Venus & Mars - June 23rd.

MINOR PLANETS: Juno stationary - May 23rd; Ceres stationary - June 10th.

PLANETARY EVENTS: Pluto at opposition - May 9th; Mercury at greatest elongation (26° west) - May 12th; Saturn stationary - May 17th; Venus at greatest elongation (45° east) - April 13th; Mercury in superior conjunction - April 17th.

LUNAR ECLIPSE: A penumbral eclipse of the Moon will occur on June 26th. It will be visible throughout North America. It will enter the penumbra about 8:45 PM EST; mid-eclipse occurring at 10:15 PM EST; and final contact, leaving the penumbra about 11:45 PM EST.

METEOR SHOWERS: MAY:

Phi Bootids - 1st

Omega Scorpiids - 3rd

Eta Aquarids - 4th ****

O Cetiids - 15th (daytime)

Zeta Herculis - 17th

Eta Pegasids - 30th

JUNE:

Tau Herculis - 3rd

Chi Scorpiids - 5th

Librids - 8th

Arietids - 8th (daytime)

Zeta Perseids - 9th (daytime)

Alpha Scorpiids - 9th

June Aquarids - 10th

Sagittariids - 11th

Theta Ophiuchids - 13th

Lyrids - 15th

Ophiuchids - 20th **

Vulpeculids - 25th

Corvids - 26th

Bootids - 28th

Draconids - 28th ****

Beta Taurids - 30th (daytime)

REGIOMONTANUS

Johann Muller was a German astronomer who used the name of Regiomontanus as an allusion to the place of his birth, Konigsberg (King's Mountain), Franconia. He was born June 6, 1436 and died in Rome July 6, 1476 at the young age of forty. Some say he died of the plague but others claim that son of George of Trebizond poisoned him out of revenge for having corrected errors in the translations made by George of Trebizond, of Ptolemy's 'Almagest' of 1496.

After receiving a classical education at Leipzig, he placed himself under Professor Purbachius (Georg von Purbach), who was professor of mathematics at Vienna. Under him, he became one of the first astronomers in his age group. He and Purbachius accompanied Cardinal Bessarion to Rome in 1461 where Beza gave him further instruction in Greek literature. He completed a new abridgment in Latin of the 'Almagest' of Ptolemy (1471) and made many corrections of former translations of George of Trebizond. He built an observatory at Nuremberg in 1471 as well as establish a press.

After three years he returned to Rome at the request of Pope Sixtus IV employing him in the reformation of the calendar and rewarded his services by raising him to the Bishopric of Ratisbon in 1475. Here he died.

Regiomontanus was the first German to apply himself to the cultivation of the neglected science of Algebra. Also, he made great improvements in trigonometry, introducing the use of tangents. His refutation of a supposed discovery of the quadrature of the circle and numerous writings on various subjects of natural philosophy display extensive learning and great acuteness.

His astronomical observations from 1471 to death ('Ephemerides') are very accurate. Among his other works are 'Kalendarium' (about 1474) and after death 'De Reformatione Kalendarii' (1489)- 'De Cometæ Magnitudine Longitudinæ' (1531)- 'De Triangulis Omnimodis' (1533)- and 'Tabulae Directinum Projectionumque in Navigatione multum utiles' (1505) were published.

APERTURE ARROGANCE

by Eric Greene

Reading the various message bases online on the Society BBS and on other astronomy bulletin boards around the country, I have noticed a trend - a feeling - that astronomy can not be done with "small" telescopes. "Aperture fever" has become prevalent across the land fueled, in part, by the widely available, inexpensive Dobsonian reflectors.

A counter theme that is developing is that astronomy can not be done without recourse to the finest optics money can buy. Civilized battles rage over the advantage of using large aperture fluorite apochromatic refractors over massive Dobsonians where 20 inches of aperture denotes a medium sized instrument. The common denominator here is expense, in many cases far beyond what can be considered economically feasible for many hobbyists.

I have seen people leave messages on the bulletin board or call me about attending observing sessions and speak apologetically about "only having a 60mm Tasco" or "just a small telescope from Sears;" victims of what we might call "aperture arrogance."

Certainly there is nothing to sneer at when looking at a magnificent Astro-Physics Starfire 7 inch refractor on a beautifully machined Byers mount or one of the new generation of huge Dobsonians seen in every issue of *Sky & Telescope*. Ad copywriters add to the feelings of inferiority with their glowing prose describing the wonderful details of faint objects to be seen through one of these telescopes. Such telescopes reside in our dreams of "one of these days!" while we continue to make mortgage payments and try to keep food on the table. We pull out that small telescope, shake our heads sadly and forego the observing pleasures that do await its modest dimensions.

Even after saving up the pennies for a couple of years in order to buy that dream telescope - in many cases one of the 8" Schmidt-Cassegrains - we are then subject to a similar situation when we hear people talk condescendingly about the "inferiority of mass produced optics" and the "optical degradation of oversized secondary mirrors." We feel it necessary to apologize to ourselves, if no one else, about only having a catadioptric and how we are planning on upgrading "one of these days."

What absolute, unmitigated hogwash! It has always been my feeling that the best telescope in the world is the one you have at any particular time. You can't see a thing through the telescopes found in the advertisements, but you certainly can open up the wonders of the heavens with that "only a Tasco" sitting in the closet.

One of the most interesting rules of observational astronomy has always been

"it takes much less aperture to see an object than it takes to discover it." The foundation of the rule is that an eye that knows what it is looking for can see something with much less aperture than an eye that does not. Training the eye to see what is there costs nothing but time and a well trained eye can make up for a lack in telescope size. I see this demonstrated at every star party we host. Some observers can spot those faint objects that others, even with bigger telescopes, can not pick out at all. Sure, that 60mm refractor is not going to find Stephan's Quintet, but there are thousands of other, brighter objects found in the sky and the training you give yourself with a small telescope will never be lost and will help you greatly as you move up to bigger instruments.

Don't apologize for that small telescope - revel in its ease of use and portability! Sure it gives dim views of many objects, but the fact is that you can actually see many of the wonders of the night sky. Much of the problem with these scopes is the fact that the eyepieces provided with the telescope are woefully inadequate. High quality oculars for Japanese scopes are widely available and very modest in price. Rather than spending thousands of dollars for a bigger scope, a few hundred dollars invested in a couple of new eyepieces might open up observing vistas thought impossible with the small, high power optics usually supplied with these instruments.

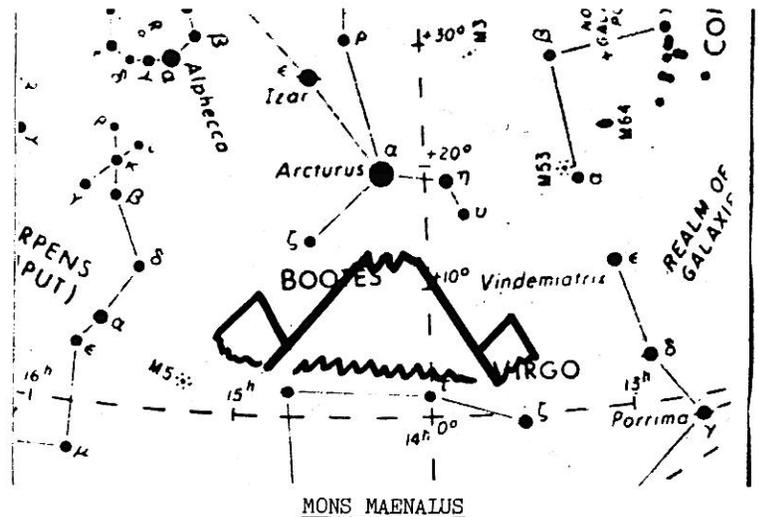
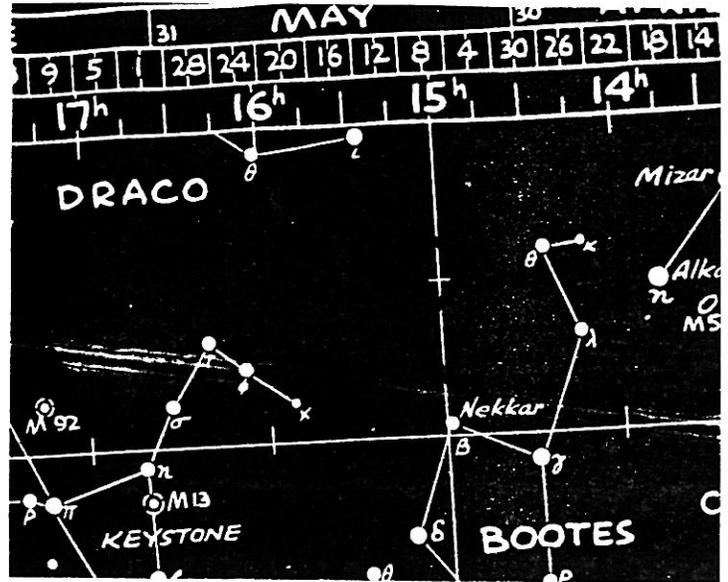
The most important thing, though, is to get out there and use the telescope. Learn its strong and weak points and don't be afraid to take some tools to it in order to improve its performance. Find a wobbly tripod? Keep the legs completely collapsed and observe from a chair rather than extending the legs to allow stand-up observing. Give some thought about what can be done to make the mount more stable and use low power eyepieces. Can't track objects because of the alt-az mount? Consider building a simple equatorial mount out of pipe or wood. It's not difficult and will make using the telescope at higher power much easier. Can't find objects in the first place? Throw away that finder and put a Telrad on the telescope and spend a few dollars for some good star charts. Then take the time to learn the sky. Come out to our observing sessions and let others show you how to effectively use the aperture you have rather than just wishing for a bigger scope.

There is an entire universe out there awaiting your time and efforts. No matter what your optical instrumentation - naked eye, binoculars or small telescope - there are more interesting objects to view than most people have time to see in their lifetimes.

the instrument with which he and his nephew, Michel le Francais, used in observing the stars which were subsequently incorporated into Michel's "Histoire Celeste Francais."

In Stieler's "Planisphere" it was given the name Mauer Quadrant, but has since been eliminated from all texts and is not recognized by modern astronomers.

The 'Quadrantids', a major meteor shower, originated from a point in the sky where once it had been placed. This shower is very short in duration but many meteors can be seen in that very short period of time.



MONS MAENALUS, the Mother Mountain, is another ancient constellation formed by Hevelius and published in his "Firmamentum Sobiescianum." It lies at the foot of Bootes where it is said he stands there with sickle and staff out stretched towards the Sun.

A possible explanation of its origin is written by Hewitt in his "Essays on the Ruling Races of Prehistoric Times": The Sun-God thence climbed up the mother-mountain of the Kushika race as the constellation Hercules, who is depicted in the old traditional pictorial astronomy as climbing painfully up the hill to reach the constellation of the Tortoise, now called Lyra, and thus attain the polar star Vega, which was the polar star from 10,000 to 8,000 B.C. May not this modern companion constellation, Mons Maenalus, be from a recollection of this early Hindu conception of our Hercules transferring to the adjacent Bootes???

ANCIENT CONSTELLATIONS

QUADRANS MURALIS

QUADRANS MURALIS, the Mural Quadrant, is an ancient constellation resting between the right foot of Hercules, by the left hand of Bootes and next to the constellation Draco. It was formed by La Lande in 1795 as a souvenir of

For those who have been interested in the foregoing article by R. D. Manners, the conclusion follows with some added information and clarifications. The table of meteors is laid out by number using Roman Numerals which are in conjunction with the coordinates (α) in degrees of Right Ascension found in column 3. The second column gives the name of the shower but not by order as to the date which they occur. That is given in the last column under remarks. The declination (δ) in the third column denotes in which celestial hemisphere it can be found, above or below the celestial equator. Column 4 mentions how many may be found in any given hour of observing them. The last column, remarks, gives information pertaining to the shower such as their speed, length, color etc. Not all are dated, unfortunately, but most do have the date of occurrence.

Final Notes & Addenda

No.	Shower	α	δ	#	RMK
COLXIII.	δ Aquarids ...	339°5'	-12°0'	28	A very fine shower at end of July. Deserves special notice like the Lyrids, Orionids, and other displays of that type.
COLXIV.	δ Cepheids ...	339°6'	+59°8'	10	Suggestively near COLVII., but seems different.
CCLXXV.	β Pegaids ...	341°6'	+30°4'	11	Different from COLIX.
CCLXXVI.	α Andromedids ...	342°3'	+43°3'	16	Not far E. of CCLV., but apparently distinct.
CCLXXVII.	α Pegaids ...	344°0'	+15°3'	17	Radiant, apparently continuous from June to October.
CCLXXVIII.	β Piscids ...	345°8'	+0°1'	21	A splendidly definite and long-enduring shower on the equator.
CCLXXIX.	ζ Toucanids ...	350°0'	-62°0'	1	July-August.
CCLXXX.	λ Andromedids ...	350°3'	+51°7'	24	Well pronounced at the August meteoric epoch.
CCLXXXI.	λ Andromedids ...	352°5'	+39°5'	22	Meteors very swift.
CCLXXXII.	ϕ Pegaids ...	352°5'	+16°9'	8	Well seen by Corder, max. 1876 September 21.
CCLXXXIII.	λ Piscids ...	352°8'	+4°3'	12	Quite distinct from, though near, COLXXVIII.
CCLXXXIV.	Pegaids (78) ...	353°3'	+25°6'	8	Well defined. Distinct from CCLXXXII.
CCLXXXV.	θ Phonicids ...	354°0'	-46°0'	1	July.
CCLXXXVI.	α Cepheids ...	356°1'	+68°3'	13	Well defined and often seen in July and August.
CCLXXXVII.	γ Cepheids ...	356°2'	+77°8'	12	Never observed at Bristol, but there appears to be excellent evidence of its existence.
CCLXXXVIII.	β Cassiopeids ...	358°7'	+60°5'	6	Very well marked in September 1887.

Notes and Addenda.

January 29. Zerkow observed an abundant shower of meteors on the morning of this date 1868. The chief radiants appeared to be in *Corona* and *Ursa*. Further observations are required at this period.

February 7 and 10-16. February 7 and 10 are dates noted for the prevalence of fireballs. During the period February 10-16 there appear to have been many meteors from near *Auriga*.

March 1-4. Remarkable for its fireballs. Is the principal shower at 166°+5°! Two brilliant β *Geminids* were seen on 1899 March 1.

April 11-12. Fireballs numerous. They appear to be due to several showers in the *Lynx* (106°+46° and 121°+41°) and fore part of *Ursa Major*.

April 15-25. Very exact observations of the place of the *Lyrid* radiant for each night of this period are desirable. Does the radiant move eastwards, similarly to the *Perseids*!

April 30-May 7. The radiant and date of maximum of the γ *Aquarids* need re-determination.

May 11-18. Many *Coronids* are sometimes visible during this period.

June 6-7. Fireballs unusually prevalent. Fine meteors have been frequently observed from a radiant near a *Scorpii* (ANTARES) in June.

July 10-20. Further observations directed towards the region of *Cassiopeia* and *Andromeda* would discover the earliest indication of the great *Perseid* display. It certainly appears to be in evidence on July 11 and 12, but the materials are scanty. Observers may find it useful to remember that in July the R.A. of the *Perseid* radiant corresponds very nearly with the day of the month.

July 25-30. Apart from the early *Perseids*, there is a rich pair of radiants at this epoch near δ *Aquarii* and a *Piscis Australis* (FOMALHAUT).

August 4-16. The occurrence of a very active shower of brilliant θ *Cygnids* was witnessed in 1893. It seems desirable to look specially for its reappearance so that its period may be ascertained.

August 21-25. Many bright meteors, moving slowly and leaving trains, were recorded in 1879 from a radiant at α *Draconis*. This shower may have represented a return of that observed in 1848, when between August 23 and 29 "a great number of meteors were seen in *Ursa Major*, *Ursa Minor*, and *Draco*."

September 1-2. A notable epoch for large meteors. A shower of *Cygnids* from 306°+54° seems to form the leading display.

September 6-15. Apparently a special epoch for apparitions of fireballs. The ϵ *Perseids* afford a conspicuous display at this time of the year, and there are many *Aurigid*s.

September 24-25. These dates are exceptionally prolific in fireballs, and several of the most active radiants lie in *Pegasus* and *Pisces*. There are also well-defined showers in the region of *Hercules*, *Draco*, and *Cygnus*.

September-October-November. In the autumn months a large number of minor radiants are clustered in the region of *Aries* and *Taurus*, and in some cases their centres lie so near together that it is difficult to distinguish them individually. A thorough review of these systems, based on fresh and numerous observations of precision, would afford results of considerable interest. In October and the early part of November very fine meteors are often directed from *Aries*, and in the latter month the *Taurid* streams produce quite an unusual number of fireballs.

October 8-29. Does the radiant point of the *Orionid* shower exhibit any change of position during the three weeks it continues visible? Observations at Bristol entirely negative the idea of displacement.

November 2. Many *Taurids* in 1886 from 55°+9°. On November 19-28 the chief *Taurid* radiant is at 63°+22°.

December 1-15. Accurate observations of the place of the *Geminid* radiant on successive nights during this period would be valuable as showing whether or not it retains a fixed position. In 1885 Dec. 1-10 there were slight traces of displacement.

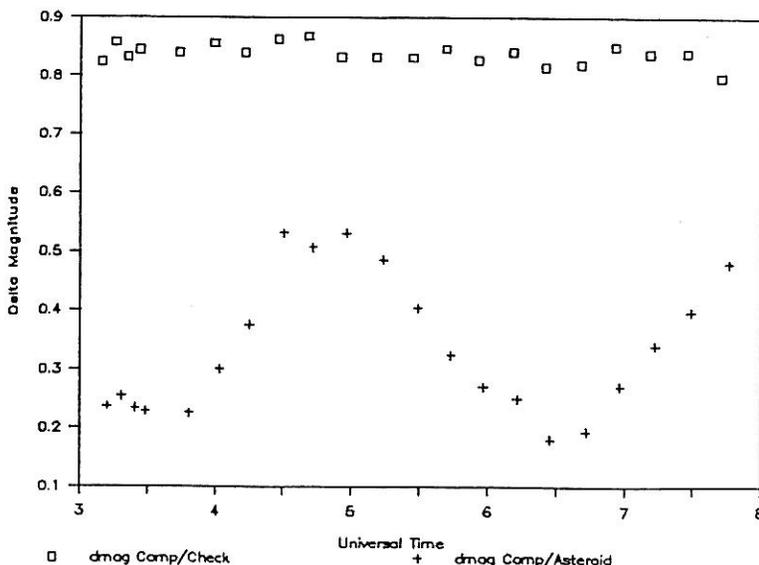


OBSERVATION

From the "STARLITE", the newsletter of the Peoria Astronomical Society's Spring Issue #105 comes this observation.

In the last STARLITE, it was announced that a photo-electric photometry group was being organized. Since that time, there has been significant progress as well as a few mistakes. Our most significant success came on February 3, 1991, when we observed the asteroid 15 Eunomia. The 1991 Ephemerides Of Minor Planets lists the period as 6.08 hours and the amplitude of the light curve as .4 magnitudes. We observed the asteroid for about 4.5 hours or about 3/4 of its period. The light curve we got shows the amplitude over our period of observation to be .37 magnitudes and 1/2 the period to be about 3.04 hours. This is in very close agreement with the published values. Another success was made by Jerry Gunn. He has written a computer program that reads the photometer data directly into a computer by utilizing the printer port. The program records the universal time, the name or number of the object, the number of counts that the photometer measured, the filter used, the diaphragm size and the gate time used for the observation. In addition to these, the observing sequence can be set to run any way you want it and the photometer readings are averaged over any number of integrations that you wish. The program outputs a .PRN file that is importable into Lotus 123. This allows the data to be reduced by using the spreadsheet program. In fact, this going to allow us to reduce the data automatically right at the observatory by using standard observing sequences and having a spreadsheet prepared for each observing sequence. We are working on those spreadsheets. Now, if we can just figure a way to automatically find the asteroids.

LIGHT CURVE OF 15 EUNOMIA
Taken on Feb. 3, 1991



TIME FLIES

From the May-June 1976 issue of the SPECTRUM" comes this '15 years ago.'

Fifteen years ago on May 5, America sent its first man into space, Astronaut Alan B. Shepard, Jr., in his Mercury spacecraft, Freedom 7. At 9:34 a.m. EST, on May 5, 1961, a 78,000 pound thrust Redstone lifted off from Pad 5 at Cape Canaveral, Fla., carrying the Mercury spacecraft aloft. The 2,700 pound capsule landed downrange in the Atlantic Ocean 15 minutes and 22 seconds later, after reaching a peak altitude of 116.5 miles and a top velocity of 5,180 miles per hour.

Astronaut Shepard experienced a peak stress of 6g during booster acceleration and less than 12g on reentry. During the flight, Shepard underwent five minutes and four seconds of weightlessness. Within two minutes after his capsule splashed down in the Atlantic, northeast of Grand Bahama Island, Shepard was hauled into a Marine Corps helicopter and was on board the aircraft carrier USS Lake Champlain after another six minutes. Six destroyers lay along the path of this first American manned flight and 10 search-and-chase aircraft were in the air. In addition to laying the groundwork for future manned flights, it was the first maiden flight of a revolutionary manned vehicle was open to worldwide public view. Some 45 million

Americans watched the event on television and the flight was also viewed throughout the world.

Although the flight was unsophisticated when compared to the 30 manned missions which were to follow, it was a key mission for the National Aeronautics and Space Administration. It was an important first step in a program which over the years has provided jobs for hundreds of thousands of American and foreign workers; has brought sights and sounds from around the world via communications satellites; has expanded our knowledge of the universe through space science and lunar and planetary satellites; and altered the way we live through Earth observation satellites.

The success of the Freedom 7 flight also intensified public interest in the space program. Less than three weeks later, on May 25, 1961, President John F. Kennedy in a special message to Congress on "urgent national needs" set as a national goal "landing a man on the Moon and returning him safely to Earth." The goal was met and thousands of technical innovations are the payoff from our years in space. The direct benefits to us on Earth include a broad spectrum ranging from prospecting for oil with land-resource satellites to medical diagnoses by computer, based on technology gained in the space program.

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* THE "SPECTRUM" *

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