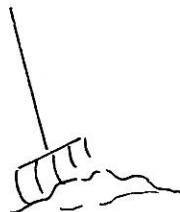




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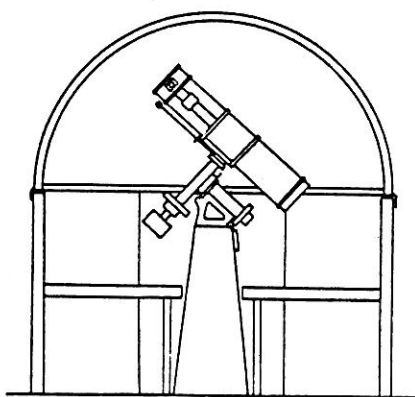
SPECTRUM



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BUFFALO ASTRONOMICAL ASSOCIATION, INC.

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"SPECTRUM" DEADLINE

The deadline for the MARCH-APRIL issue of the "SPECTRUM" is FEBRUARY 8th 1991 !!

MEETING NOTICES

JANUARY - Our first meeting of the New Year will be on January 11, 1991 in the Auditorium at Buffalo State College beginning at 7:30 PM EST. Our speaker for the evening will be Dr. David Meisel from the State University of New York at Geneseo. Dr. Meisel has been the head of the American Society for many years. He has presented papers to the BAA on such topics as the Moon, Meteors, Mosquitoes as well as Comets. His talks have always proved very interesting and this evening we should be treated to another one as interesting. Let's welcome Dr. David Meisel...

Following the meeting, we will have refreshments!!!!

FEBRUARY - Our February 8, 1991 meeting will also be held at Buffalo State College beginning at 7:30 PM EST. Our speaker will be Tom Dessert on the subject, "Astrophotography for the Amateur." Tom has been an avid astrophotographer, our first Observatory Director, a former BAA Vice President and a member of the BAA College of Fellows. Tom has also presented papers to our club in the past. Let's welcome Tom.... Refreshment will follow the meeting!!!!



SUPPORT YOUR CLUB BY ATTENDING CLUB FUNCTIONS !

BINARY STAR OBSERVERS

If you're interested in binary stars you may wish to join the Association of Binary Star Observers. The purpose of the association is to (1) provide amateurs with information on filar micrometers and diffraction grating micrometers; (2) provide the opportunity to communicate with other amateur double star observers; (3) collate the measurements of members and forward them to the appropriate organizations and professional astronomers; and (4) keep members informed through a monthly newsletter. Annual dues for this new organization are expected to be \$10. For information write to:

Association of Binary Star Observers,
306 Reynolds Drive
Saugus, Mass. 01906

If you want to call for information try (617) 231-3466, or during working hours (617) 389-3000. Ask for Ronald Tanguay.

P.S. A couple of years ago the late Bob Mayer built a filar micrometer. I never knew for sure if he intended it for me or for the BAA. On the supposition it would be of more use to the club, I declined it. Where is it now?

Rowland A. Rupp



MEMBERSHIP DIRECTORY

Mark January 15, 1991, on your calendar. On that date we will be "going to press" with the 1990/91 membership directory. If you will not be at the January general meeting, and you need to "update" the information in the directory, please give me a call at 716-675-2906. We are making every attempt to publish a comprehensive listing that includes interests, telescopes owned, computers, etc. With your help we can make the upcoming edition complete.

Bruce Newman
Membership Chairman

REPRINTS

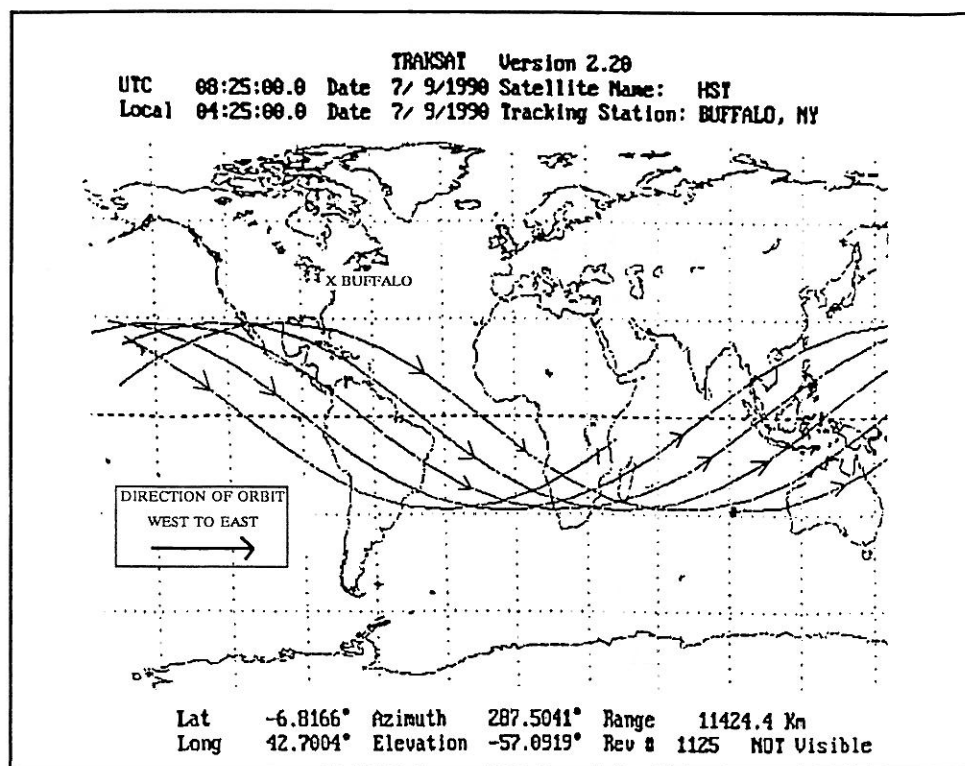
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ASTRONOMICAL HAPPENINGS

SOLAR: The Sun will be passing from Sagittarius into Capricornus on January 20th and then from Capricornus into Aquarius on February 17th and remain there into March. An annular eclipse of the Sun will occur on January 15th which will be seen throughout southeast Asia, Australia and New Zealand. On January 2nd, the Earth will be at perihelion with the Sun at a distance of about 91.4 million miles. Conjunctions with the Sun are Neptune on January 4th and Saturn on January 18th. At opposition will be Jupiter on January 28th.

LUNAR: The phases of the Moon will be Last Quarter Moon on January 7th & February 6th; New Moon on January 15th & February 14th; First Quarter Moon on January 23rd & February 21st; Full (Wolf) Moon on January 30th & Full (Snow)

HUBBLE BARELY VISIBLE FROM WNY LOCATIONS



Satellite tracking of the Hubble Space Telescope using Traksat 2.2

Consider yourself fortunate to get a glimpse of the Hubble from a WNY location. Based upon satellite tracking data from Traksat Version 2.2, the furthest north that the satellite's orbit comes is northern Florida. The maximum altitude that the satellite reaches here in WNY is less than 13° above the southern horizon. At that point the Hubble is approximately 1,100 miles down range at an altitude of 380 miles. For all the satellites that pass overhead during your observing sessions, the Hubble is NOT one of them!

Bruce Newman
July 10, 1990

Moon on February 28th.

LUNAR ECLIPSE: A penumbral eclipse of the Moon will begin at about 10:58 PM EST on January 29th and end at near 2:59 AM EST on January 30th. The eclipse will be visible throughout North America. Mid-eclipse should be at about 1:00 AM EST, January 30th.

LUNAR CONJUNCTIONS: Jupiter on January 2nd & 30th; Antares on January 11th; Mercury on January 13th; Venus on January 17th; Uranus on February 10th; Neptune on February 11th; Saturn on February 12th; Venus on February 16th; Mars on February 22nd; Jupiter on February 26th.

LUNAR OCCULTATION: Antares on February 8th.

PLANETARY CONJUNCTIONS: Venus & Saturn on January 1st; Mercury & Uranus on January 23rd; Mercury & Neptune on January 26th; Mercury & Saturn on February 5th.

PLANETARY EVENTS: Mars stationary on January 1st; Mercury stationary on January 3rd; Mercury at greatest elongation (24 degrees west) on January 14th; Pluto stationary on February 25th.

METEOR SHOWERS: January 3rd - Quadrantids
16th - Delta Cancrids
17th - Kappa Cygnids
17th - Coma Bereniciids
February 9th - Aurigids
26th - Delta Leonids

Tom Nigrelli completed his first 10" Newtonian, and the first light was marvelous. He is also building a 20" which he will finish in due time.

Ed Lindberg is a ham radio operator and every Sunday he continues to speak in Esperanto (international language) with his various friends around the world in such places as Brazil, Germany, France, Alabama, Maryland, Cincinnati, etc., etc., etc. Olga is still having a slight problem in her knee, but is fine otherwise.

Vernon Siegel, like Ed Lindberg, has an extra class Amateur Radio license, and is also a Volunteer Examiner who gives tests to amateurs desiring to upgrade their licenses.

Melissa Marcus volunteered for the museum's Turtle event. She read turtle stories to children and Dan found little turtle tracks in the sky.

Cathy Sepulveda went to the hospital on October 31st to have her gallbladder removed, and was back home on November 2nd. Cathy's Mom came in from Cape Cod to help out. Cathy, baby, and Dave are all doing well.

Frank Plennert has been observing Mars with his homemade 6" f/13 reflector. He and Fred Price are making sketches of this opposition.

Bill Smith is getting back into astrophotography. He now has a small mount that he can carry around without breaking his back.

"Antikythera" update: Steve Kramer has had a letter published in the British Horological journal and another in the Antiquarian journal. These letters were in response to articles in the above magazines by Alan Bromley of Australia, who is also interested in the subject. Stay tuned for further developments.

Conrad Stolarski took an astronomy holiday in Arizona from November 13-26 for the express purpose of viewing the skies with his 10" scope. In Tucson he made contact with a member of the Amateur Astronomical Association of Tucson, who invited him to their star party at Buenos Aires Nature Preserve, southwest of Tucson and 8 miles north of the Mexican border. There were clouds, so the attendance was low. Another member had an 8" refractor on a Springfield mount. The sky cleared around 10 o'clock and Conrad saw views of Mars with that scope that were better than any he had ever seen before. Another member had an 18" f/6 Dobsonian through which Conrad's observations of Jupiter, and deep sky objects were spectacular. He teamed up with another member, Tim Gill, and went to the Empire Ranch, 45 miles southeast of Tucson, which is the regular observing site for the association. It has no observatory, but they are planning to build one having a 30" mirror. Conrad spent Monday through Friday observing with Tim at Empire Ranch. He was very impressed with the great hospitality shown by the members of their organization. If any of our members would like to visit their club, he knows they would be more than welcome. On Thanksgiving Day, Conrad went to Kitt Peak, and a solar astronomer admitted him to the observatory where he saw a prime focus image of the sun which had two major sunspot groups. Conrad had originally planned to view the skies from Tucson to the Grand Canyon, but he had so much fun and was treated so royally in Tucson and its environs that he spent his whole vacation there. He plans to go back and finish his trip to the Grand Canyon at some future date.

Edith L. Geiger

BAA ANNALS

5 YEARS AGO - Our first meeting of 1986 was held at the Museum of Science. The topic was "Telescope Making", given by the BAA's leaders in that field: Bob Mayer, Ed Lindberg, Miro Catipovik, Matt Kantor and Carl Milazzo. The SPECTRUM carried an impressive list of BAA members, compiled by Carl Milazzo, who were building or planning to build telescopes. For February our speaker was Dr. Zoram Pazameta of UB's Astronomy Department, who spoke on the night skies as seen from his homeland, New Zealand.

Michael Iuen was an extremely active BAA member five years ago, as is attested by the interesting and detailed Observation Report he wrote for the SPECTRUM. If you want to know which stars are the navigational stars used by mariners, a list of them is given in that issue of the SPECTRUM.

10 YEARS AGO - Our speaker for January 1981 was not identified, but for February we had our own Ernst Both speaking on "Galaxies". That SPECTRUM had many interesting features. Al Kolodziejczak was President then, and he wrote a thought-provoking article on what the BAA might do in the future. He suggested enhancing the observatory, providing mini-courses in astronomy for members and building up a library. Other items were a biography of Carl Milazzo by Edith Geiger, a note on Mercury by Jim Machowski, and an imaginary trip to Alpha Centauri entitled "Journey to a Distant Pea".

15 YEARS AGO - "Grand Tour of the Universe" was Ernst Both's topic for the January 1976 meeting. Incidentally Ernst was SPECTRUM editor and a member of the Board then as well as speaker. For February we heard from Dr. Antoinette Paterson, Professor of Philosophy at Buffalo State. Her topic was "Social and Political Dimensions of Astronomical Theories." I wonder how we handled that.

Tom Dessert reported on the sequence of events that led to building Beaver Meadow Observatory, acknowledging the many members who contributed significantly to that effort. They were: Ken Biggie, Bill Chambers, Bill and Elaine Deazley, Tom and Marty Dessert, Mike and Nick Dlugosz, Marybeth Gauthier, Rick Janas, Steve Jaworski, Carl Kalweit, Bob Kirchgessner, Bob Mayer, Carl and Joe Milazzo, Rowland Rupp, David Steinagle, Warren Steinberg, and Walt Whyman. We raised \$6,077.56 to do the job. That was in 1976, when a dollar was worth fifty cents, not a quarter like it is now.

25 YEARS AGO - Members of the Instrument Section, led by Ed Lindberg, put on the January 1966 program. They told about the club's telescope and observatory, which were then located at Newstead. Darwin and Orrin Christy spoke about establishing their "Honey House Observatory" at the February meeting, a follow-up to the previous session.

Rowland A. Rupp

David F. Bull

Dave was born in Cortland, N.Y., and had a happy life as a country boy. He went to Homer Elementary School, and during those years became interested in the rocks he found in the area, and started collecting them along with fossils. It was to develop into a lifetime of enjoyment in geology. In junior high he continued working on his rock collection, and also found that a 6" Newtonian in the Science Department sparked his interest in astronomy.

In high school, Dave became involved in extracurricular activities. He received a Varsity Letter for track and cross country. At the end of his senior year he was given the first George Butts Award. George Butts was head of the Physical Education Department, and the award of \$50 was given to the student who showed athletic ability and scholastic achievement.

Dave continued his education at Auburn Community College. He had thought of becoming a geologist. Then, while speaking with the Director of the Evening Classes, he noticed a telescope off from the lab. He received permission to move the 6" Newtonian with an equatorial mount, and a 6" spotting scope to view the sky. Seeing Saturn with its rings and our amazing moon, was a thrilling experience for Dave.

One evening, while studying for an exam, he needed a break, and took a walk under dark skies to a nearby lake. As he looked up, he saw a star with a tail, which puzzled him as he knew stars didn't have tails. The next day found

him in the school library with a then recent copy of Sky & Telescope, and lo and behold, he learned that he had seen Comet Bennett. This inspired him to go out and purchase a 50mm zoom refractor with powers of 15mm to 20mm to 50mm, which was fine for viewing the moon and planets.

Dave was involved in running the closed circuit television program in the new tech building on the campus, and became interested in public communication, television, and radio. After receiving his Associate degree from Auburn Community College in math and science, he worked for a year or so, and then found a position in the maintenance department at the College of Forestry at Syracuse University. This allowed him to finish his college education at Syracuse University with a B.S. in Public Communication, with a major in television and radio.

After graduation, he received a full time position in film producing with Sherwin Greenberg Productions, in Buffalo, where he has been employed for thirteen years. He is studio manager and is responsible for overseeing the use of studio equipment. If the company is on location, Dave is also the manager, responsible for the setups. The company films commercials for many businesses including Tops, Dunlop Tires, and many from New York, Ohio, and San Francisco. Dave has found it to be a great experience working with some well-known personages. In Los Angeles he was responsible for the video tape and lighting for Orson Wells in his industrial tape for Dunlop Tires, and for Shirley Jones for the Department of Motor Vehicles PSA, for child safety seats. He also worked with Artie Johnson, formerly with the TV Laugh In show, for a sales promotion film by the Buffalo News.

During Dave's years with the company, he met and married Amy, the youngest daughter of Mr. Greenberg. They have an adopted son, Jeffrey, who is now six years old. Amy has helped Dave to get back into his former interests, especially in astronomy.

In '79-'80 he started a subscription to Astronomy magazine and purchased some binoculars which he took out to view the dark skies of Clarence. He knew that Halley's Comet would be coming along in a few years, so he was getting in a little practice before the event.

In 1987, when Jeffrey was about three years old, Dave took him to the museum and they went up to the Kellogg Observatory. Dave met Dan Marcus and Marilou Bebak and talked to them about his interest in astronomy. They were very gracious and told him about the BAA, and that he could receive literature about it on the main floor. This prompted Dave to purchase a 3" Newtonian at a flea market. He fixed it with a box over it so he could also safely look at the sun. He joined the BAA and now has two telescopes; an 8" Meade Schmidt-Cassegrain, and a 4" Meade Schmidt-Cassegrain. He uses the 4" when he travels as it is handy for photography. His present interests in astronomy include: nebulae, deep sky observing, clusters, lunar observing, and photography. He also collects space and astronomy stamps.

His involvement in geology continues as he collects rocks, minerals and fossils, and attends rock and gem shows. He has found fossils in a stream on Bill Smith's property south of Jamestown, and in a creek at Tristan DiLapo's in North Boston. Last year Dave, Amy, and Jeffrey went to Lancaster, Pa., and enjoyed the countryside, the inhabitants, and a visit to the Train Museum. While in Lancaster, Dave found an outcropping of quartz and fossils.

David has set up a science center in his den where his collections of rocks, minerals, fossils, and shells are kept. Jeffrey and his friends are allowed to pick them up, look at them, and carefully put them back. Dave has introduced Jeffrey to library books on dinosaurs, trilobites and other fossils. He enjoys the time spent with his son.

He has another hobby; that of playing folk guitar. He finds enjoyment in the music which expresses the feelings about the experiences in the daily lives of common folk.

Dave is a fine, warm human being with a deep appreciation of the splendor of the heavens above and of all that the earth offers beneath his feet. Hard work, persever-

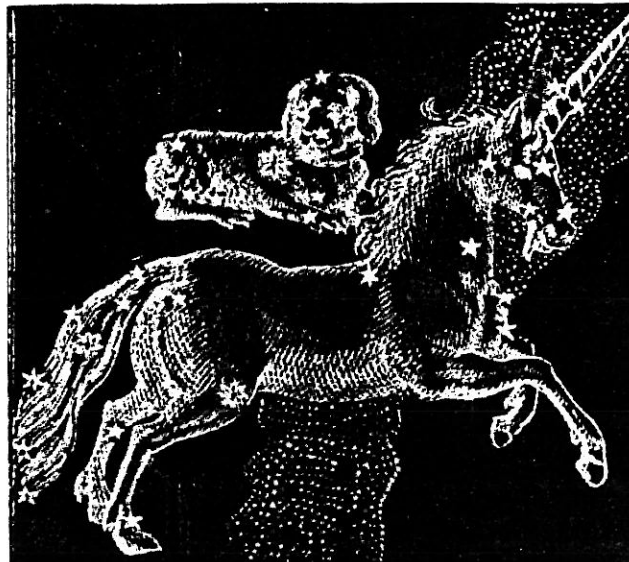
ance, and patience, contribute to his success in his profession. He has a bright future ahead of him and we wish him well.

Edith L. Geiger

MONOCEROS

MONOCEROS, the Unicorn is a rather recent constellation discovered by Bartsch (Bertschuis or Bartschuis), but Olbers and Ideler both claim it was invented as early as 1564. Monoceros is supposed to have been found on an ancient Persian sphere which apparently has been lost. It has been said to be a species of unknown but a creature in the vicinity of the present Monoceros depicting a horse like object sporting a single horn protruding from the center of its head. It is claimed that when the animal is persued, it jumps from great heights, landing on its horn which breaks the fall and the animal is uninjured.

Monoceros can be found within the boundaries of Canis Minor, Gemini, Orion, Lepus, Canis Major, Pyxis & Hydra.



CANIS MAJOR

All others he excels; no fairer light
Ascends the skies, none set so clear and bright.
- Manilius

CANIS MAJOR, the Greater Dog comes from the earliest time but no actual time has been given. The main part of the Dog is Sirius, "The Dog of Orion."

Fierce on her front the blasting Dog-star glowed.
- On the French Revolution
by Samuel Taylor Coleridge

One blazes through the brief bright summer's length,
Lavishing life-heat from a flaming car.
- Later Life
by Christina G. Rossetti

The Temple of Isis at Denderah was built by the Egyptians in honor of the star Sirius. They held Sirius in high regard for the service the star had rendered for them as it warned them of the rising of the River Nile from its appearance in the east. This enabled them to pan for the inundation.

Canis Major, taking a back seat 'so-to-speak', to the star Sirius, which has always been known as the Dog-Star, which name may have been given it for the reason the star's appearance served as a warning to the high rising Nile. It would seem to be like the dog's bark which would warn its master of ensuing dangers.

The term "Dog Days" is associated with Sirius, those days which derive their name from the fact that in ancient times Sirius was overhead at the season of the year in the daytime. Its rays were supposed to ignite with the sun's

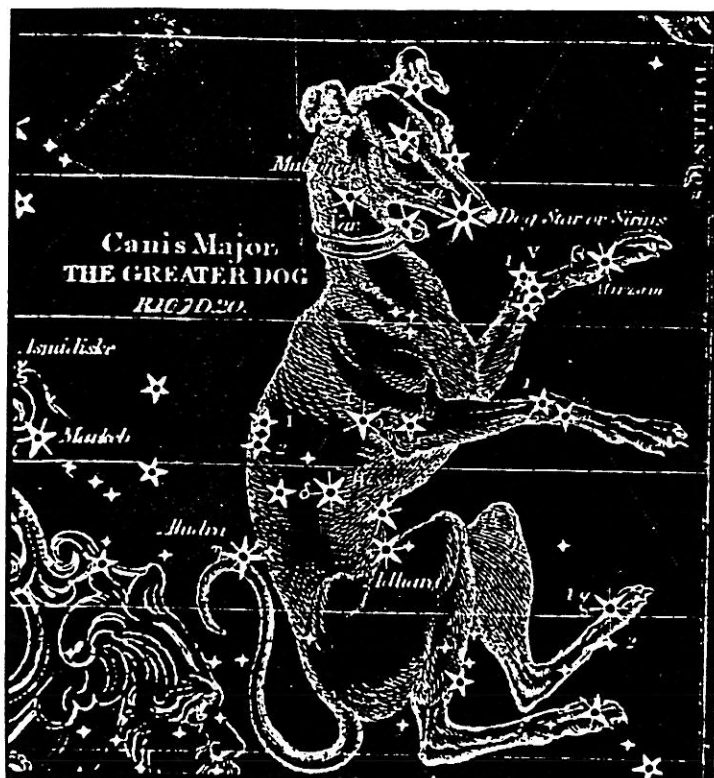
rays, the idea of it creating more heat than they would radiate together, this was thought to account for the unusual heat in summer.

A legend from the ancients concerning Sirius tells that a dog named Aurora was given to Cephalos, which supposedly surpassed all other dogs in fleetness. Cephalos then thought he would prove this fact and satisfy himself by racing his dog with a fox. The two creatures for a time were on even terms and this pleased Jupiter so much that he placed the dog in the sky as a reward.

From the earliest times, Canis Major, had been known as the Dog of Orion. This, Aratos alluded in the Prognostica, and thus wrote of it in the Phainomena in connection with the Hare.

The constant Scorcher comes as in pursuit,
... and rises with it and its setting spies.

Canis Major is located next to Monoceros, Lepus,
Columba and Puppis.



CANIS MINOR

The Dog's-precursor, too, shines bright beneath
the Twins.

Brown's 'Aratos'

CANIS MINOR, the Lesser Dog is also a proud dog of Orion. One of the two hunting dogs, Canis Minor, is so named to distinguish it from the larger and more densely populated constellation of Canis Major. The smaller group of stars has been identified with a dog by many diverse ancient civilizations.

This Lesser Dog also has the Eye with a star, Procyon. The Greeks knew of this constellation by a comparative title, 'Prokyon,' as rising before his companion Dog, and referred mainly to the Little Dog Star.

Horace wrote of it;

"Jam Procyon furit,"

which Mr. Gladstone rendered;

The heavens are hot with Procyon's ray.

Canis Minor can be found surrounded by Cancer, Gemini,
Monoceros and Hydra.



What Time Is It?

We can all agree that telling time is pretty important in our society. Being interested in astronomy, we are also aware that telling time isn't quite as straight-forward as one might think. For instance, we know there's sidereal time, which has something to do with the Earth's true rotational rate and is measured against the stars. We also know that sidereal time and the time measured by civil clocks differ greatly, but somehow catch up with one another annually.

It's fairly evident why the civil day and the sidereal day are different in length. We use the sun as a standard for the civil day; we awaken, go about our business and sleep in accordance with the diurnal cycle. Since the Earth revolves around the sun at a rate of approximately one degree per day, the sun's position with respect to the distant stars changes correspondingly. It takes a little less than four extra minutes for the Earth to rotate that extra degree, making the sidereal day almost four minutes shorter than the solar day. If you multiply four minutes a day by the number of days in a year, you will find that there is one more sidereal day than there are civil, or solar, days; this also explains why the two clocks coincide once a year.

The solar day is broken into hours, minutes and seconds, to which the ticking rate of our terrestrial clocks is adjusted. If the sun is due south, or at upper transit, at a particular time one day, one would expect to find it in precisely the same place twenty-four hours later. Not so! The sun sometimes fails to keep up with our clocks, but makes up for it by getting ahead at other times. The twenty-four hour day we know is really the solar day averaged throughout the year.

The sources of this systematic error are the eccentricity of Earth's orbit and the 23.5 degree tilt of its equator with respect to the ecliptic—the sun's apparent path against the background of stars. Kepler's Second Law says a planet travels faster in its orbit when it is nearer the sun and slower when it is farther. When we are nearest the sun, around the beginning of January, and travel fastest, the additional time required each day for the Earth to rotate the little extra to get the sun back to the meridian adds up. When we are farthest from the sun and cover less orbital ground daily, the sun reaches the meridian sooner and we say the sun is "fast".

The effect of the equatorial inclination is less obvious. Near the spring and fall equinoxes the sun's motion along the ecliptic forms a 23.5 degree angle with respect to the equator. This means that part of the sun's apparent motion is north-south, instead of east-west. Therefore the Earth doesn't need to rotate

quite as much to place the sun on the meridian, and the sun again appears to be "fast". At the solstices all of the sun's motion is along the equator; it moves more in twenty-four hours and so a little longer time is needed for Earth's rotation to compensate. The Equation of Time provides a daily adjustment that corrects for the sun's being "fast" or "slow" as a result of these two effects.

The distinction between solar time and sidereal time isn't as clear as it might be. The impression is that sidereal time is the Earth's true rotation rate with respect to the stars. Not so either! The sidereal day is referenced to successive upper transits of the vernal equinox, the point in the heavens where the celestial equator crosses the ecliptic. When the sun is located in this position spring starts in the Northern Hemisphere. Unfortunately for time-keepers, the Earth has a precessional motion that minutely affects the position of the vernal equinox each day. This correction only amounts to 0.008 seconds of time per day. It is the daily result of the precession of the Earth's polar axis that completes a full cycle in a little less than 26,000 years. The actual period of rotation with respect to the stars is 0.008 seconds longer than the sidereal period. So, "sidereal" doesn't quite mean sidereal after all.

The net result is that there are two measures for the length of the year. (Actually there are more, but they needn't concern us here.) The longer one, the sidereal year based on the stars, is 365.2564 solar days. The shorter one, based on the upper transit of the vernal equinox, is 365.2422 solar days. It is this latter definition, the tropical year, that we use for civil purposes, because being based on the equinox its use makes the seasons start and end on nearly the same day century after century. The difference between the two lengths of the year causes us to adjust periodically the coordinates of star charts to account for the effect of precession.

As one can see, the length of a year is about 365 1/4 days whichever way you look at it and is the cause of our leap year. We can thank Julius Caesar for adding the extra day every four years (as well as for the month of July) to make the seasons fall on their appointed days. However, that doesn't quite work out either because the length of the tropical year, the one that counts for the seasons, is 0.0078 solar days too short. This amounts to about 3/4 of a day per century. By the year 1582 the error had accumulated to ten days and the seasons and holy days were occurring at the wrong times. Pope Gregory XIII authorized a ten-day adjustment that created something of a furor because few people were receptive to what appeared to be a loss of ten days from their lives. He also oversaw the adjustment to the calendar that eliminates leap years for years divisible by 100, unless they are also divisible by 400.

Even that correction had its problems—not technical ones, ecclesiastical ones. The Reformation had just taken place and Protestants weren't going to go along with papist calendars if they had to celebrate Christmas in the middle of summer. But one by one they conformed: the American colonies in 1752, with Greece holding out until 1923. The Greek and Russian Orthodox churches still haven't given in: that's why they celebrate Christmas in January.

Leslie Martin

INSTRUMENT NOTES

The much maligned Hubble Space Telescope is back in the news again. The NASA commission, appointed to study the problems of the ill-fated project, has just issued its final report. The Associated Press ran excerpts from the report in a dispatch dated November 28th.

The report comes down hard on the Perkin Elmer corporation, the firm responsible for producing the 8-foot primary mirror. The firm ignored three negative test reports and did not consult its own technical staff. The

We are saddened by the sudden death of Jane P. Dow on November 14, 1990. She was a woman of outstanding ability in a big business. After the death of her husband (Burton Dow) in 1958, she took over his very successful company in construction-equipment and headed Dow & Co. as owner from 1958 and president until 1966; remaining as board chairman, a post she held for thirty years. In the mid '70s, a generous financial gift to the BAA from Dow & Co. provided for additional and improved programs advancing astronomical education. Jane Dow was a very religious woman who lived by high moral standards. This remarkable, kind, and active lady was an inspiration to her family and her many friends. We are proud that she was a member of the BAA.

Our deepest sympathy goes out to the members of her family; James, longtime member of the BAA, Peter, and Mary.

elg

report mentions a surprising lack of communication between the technical staff and the technicians performing the optical operations. There was a surprising lack of participation by optical experts experienced in the building of large telescopes. The firm relied on a simple test procedure called a NULL TEST to make the final evaluation of the mirror's surface figure. The fact that this test is relatively new should have alerted the firm to the need for independent test evaluation, the report continues. Perkin Elmer "rationalized away" the need for any independent test evaluation because they believed that the null test was the most accurate procedure available. (The firm probably considered the speed of the test and the consequent reduced costs and did not realize that the big telescopes of the world have all been tested by a combination of the Foucault, Ronchi and Hartmann tests. EL)

The report shows what they call a test figure of the primary mirror. They say that the figure shows that the mirror is too flat at the center so that it cannot be focused on any one plane. The test shows that not only is the center too flat but there is a badly turned edge and the figure is badly distorted overall. They say that there is "evidence of spherical aberration" - a masterpiece of understatement. If the test were a Foucault test and a perfect null were shown, the surface would be a spheroid and of course there would be spherical aberration but this could be managed by correcting lenses. Naturally, the surface would be figured to produce a paraboloid before sending the mirror on to final assembly. The figure shown indicates an uncorrected mirror, simply unfinished.

The January issue of Sky & Telescope shows a Hubble picture of Saturn. The computer reconstructed picture "shows more detail than any picture made by earth based telescope." The article also shows the Hubble picture before correction. This display is less of a tribute to the telescope than to the miracle of computer reconstruction. One can only dream what the picture would have looked like if the primary mirror had been corrected to one tenth wave. The original Hubble picture is a graphic illustration of what may happen when there is a corporate takeover of a leading technological firm. Then the product is made of a good enough quality to appease the customer and the manufacturing time and material costs are cut to a minimum to appease the corporate stockholder.

NASA says that they are not planning to bring the telescope back to earth as it would probably not withstand the heat of re-entry. I say that they should not allow such a technological disgrace to live on. We should plan to learn as much as possible from the mistakes of the program. But we owe it to present any future astronomical researchers to put up the finest telescope we are capable of making. We need to find a hi-tech optical firm capable of making large telescope optics and a firm with experience in making large mountings. Then we should give them free rein to build a new and finer Hubble II.

Ed Lindberg

6


YES THE COMBINATION FOR THE OBSERVATORY HAS BEEN CHANGED!!!! What you don't know the new combination?, please see Dan Marcus.

Public Night on October 20 was one of the better public nights of the year, we had over 30 visitors come to see Mars, Saturn, Uranus, Neptune, along with assorted nebula and clusters. November Open House was a wash out, but we had over 10 people come JUST to see the observatory!! IN SPITE of the weather.

The Mars party was clouded out, but we had a great time stuffing ourselves on pizza and wings. We even had a bus load of visitors from ECC come for a slide show. The next Saturday November 17 brought a new moon to clear skies, and 6 members and myself enjoyed the view of Mars, so we held an impromptu Mars party then.


Sun spots! The week of November 11, there was an enormous pair of magnificent spots. Anyone using the solar filter on our 12" would have gotten a fantastic view! You missed it?, too bad please let me know if you wish to get included in the telephone tree.

Photo Sessions: January 19; and February 16, starting at 7:00 pm. As usual these are snow or shine events, but in the event of a real blizzard, check with Dan Marcus 773-5015 to make sure it is going to happen.

 Daniel R. Marcus

KELLOGG OBSERVATORY REPORT

We welcomed over 500 visitors for the Fall Observing Season. NOW---We need help on Sunday March 3rd from 1:00 - 4:00 PM for a Museum Telescope Clinic. Any member of the BAA, wishing to assist, feel free to call Marilou Bebak for more information. 896 5200

 Marilou Bebak

**BILL SMITH
184 CREEK RD.
JAMESTOWN, NEW YORK 14701
DEC 7, 1990**

RE: Newsletter article

THE STARRY MESSENGER (TSM) ASTRONOMY SWAP SHEET FIELD REPORT by Bill Smith

Are you looking for scopes, a finder, eyepiece, filters, mountings, books, binoculars or any other piece of gear? TSM is a swap sheet that provides a valuable service with free listings for sellers and about 150 ads, many with multiple items, for buyers.

IMPRESSIVE SAVINGS

Savings can be impressive compared to new even from the lowest price discounters (Pauli's or Pa. Wholesale Optics). About 2 years ago I got bit hard by the astronomy bug and I wanted to update my gear for visual and short focus photography. I've subscribed (\$18/year) for the past 18 months and some of the deals I got as a percentage of Pauli's price are:

- 2 inch Lumicon Deep Sky filter @ 42% of new
- 11 x 80 finder @ 51%
- 32mm Tele Vue 2" 65 deg eyepc @ 72%
- 6.7mm Meade Ultra wide eyepc @ 75%
- Byers model 58 portable mounting @ 59%

All the gear was well taken care of - you couldn't tell it from new. Terrific deals abound!

The savings on the deep sky filter (the lowest priced item) would pay for 3 and half years of TSM.

NOTE OF CAUTION

A word of caution. IF YOU WANT SOMETHING - CALL THE DAY - THE HOUR - IT COMES IN THE MAIL. I missed out on 15 ads because I called the next day or even 3 hours later. Mail is delivered to our house at 3pm; and only on 2 ads was I the first to call. I think we're lucky in the Northeast as TSM might arrive 1 day before some other areas; this I gleaned from talking to the folks whose ads I called too late.

Thus smaller items that are a good deal or highly desired are gone the day TSM is delivered. More expensive items (\$500+) I believe should be around a few days.

RECENT SELLING CHARGE

TSM is now charging 4% commission on sales. The listing is free until you sell. This may make it a toss up to list stuff to sell in TSM or the wider audience of a Sky and Tel or ASTRONOMY paid want ad.



**STAR PARTY
MESSIER MARATHON
1st CLEAR WEEKEND: MAR 9-10, 16-17, 23-24
BILL SMITH/CAROL LORENC 716-664-0841
184 CREEK RD. JAMESTOWN, NY 14701
CALL FOR MAP & ITINERY**

Yes a winter star party! During late March it is possible to see virtually all the Messier objects in one night.

**THIS IS AN OBSERVING PARTY!
2 to 10 DEGREE HORIZONS IN SEMI-RURAL AREA
CALL FOR LAST MINUTE WEATHER - OVERNIGHT
WARM ACCOMODATIONS
DAY ACTIVITIES: SKIING, HORSE RIDES, RELAXING
and
SOUTHERN TIER TOURING**

To best ensure good skies we reserved three weekends around the new moon. Friday and Saturday nights. Due to the nature of this party last minute calls are encouraged. Call or just drop down. We'll have a weather message on the answering machine. Overnight in-house or camping for the hardy. Meals provided. Bring a dish (AND SCOPE) to pass.



ASTRONOMICAL GLOSSARY

APHELION - a point in the orbit of a planet farthest from the Sun.
APOGEE - a point in the Moon's orbit farthest from Earth.
CONJUNCTION - the apparent meeting of two celestial bodies.
ELONGATION - the angular distance of a planet from the Sun as seen from Earth.
EQUINOX - in the Spring and Fall at a point when the Sun appears to cross the Equator. Also when the times of the day and night are equal in length.
SUPERIOR CONJUNCTION - when the Sun is between the Earth and a planet.
PERIGEE - the point when the Moon in its orbit is nearest the Earth.
OPPOSITION - when the Earth is between the Sun and a planet or at 180 degrees elongation.
PERIHELION - the point where a planet in its orbit is nearest the Sun.
SOLSTICE - the point when the Sun is at its farthest from the Equator either in Winter or Summer.
STATIONARY - at a point when a planet seems to have come to a halt in its orbit.
OCCULTATION - when two celestial bodies pass in direct Syzygy, when the farthest body is completely hidden from view.
ECLIPSE - when the Moon or Sun are occulted by the other as seen from Earth.
DECLINATION - a line stretching from the northern to the southern horizon through the apex.

RIGHT ASCENSION - the coordinate on the celestial sphere analogous to longitude on Earth.
 ANNULAR ECLIPSE - a Solar eclipse where the Moon has an apparent diameter smaller than the Sun allowing the outer limb of the Sun to be seen at totality.
 SOLAR ECLIPSE - when the Moon passes between the Sun and Earth.
 LUNAR ECLIPSE - when the Earth passes between the Sun and Moon.
 NODE - one of two points where the Moon's orbit crosses the Ecliptic.
 TWILIGHT - begins or ends when sixth magnitude stars become visible or disappear as the Sun reaches a point about 18 degrees below the horizon.
 SUN FAST - when the Sun reaches the Zenith before actual time.

Continue from the November-December issue-----

VISUAL METEOR OBSERVATIONS FOR AMATEURS

by

R. D. Manners

For presentation at the 1967 Annual Convention
 Northeast Region of the Astronomical League,
 Buffalo, New York, May 16 - 18, 1967.

APPENDIX

Being a copy of the Summary or Index list of
 Radiant Groups published originally as a part of
 the Memoir by W. F. Denning 'General Catalog of
 the Radiant Points of Meteoric Showers and of
 Fireballs and Shooting Stars Observed at more
 than One Station', and contained in the Memoir
 of the Royal Astronomical Society Vol LIII,
 1896-99, Burlington House, London.

Summary or Index List of the Radiant Groups given in the General Catalogue.

No.	Name.	Mean Centre of Radiation. α δ	No. of R's.	Remarks.
I.	Polarids ...	N. Pole.	19	Some of the radiants of this group are questionable, and probably made up of meteors really belonging to the α and δ Ursa Minorids (LII. and CCXXXI.) and other northern showers.
II.	Piscids (44) ...	2°8' + 0°2'	11	Well defined in August and September.
III.	γ Pegusids ...	3°6' + 13°0'	25	Real centre at 7° + 113°. Tolerably rich shower from the end of July to the end of September.
IV.	β Cetids ...	3°7' - 15°8'	5	Seen only in August and September.
V.	α Andromedids ...	4°4' + 22°0'	16	Several showers appear to be involved.
VI.	κ Andromedids ...	5°9' + 34°1'	32	Often seen between July and November. Its meteors are numerous and very swift at the July-August epoch.
VII.	α Cassiopeids ...	7°1' + 51°9'	44	A long-continued shower, well established by many observations.
VIII.	κ Cassiopeids ...	7°5' + 43°7'	11	Certainly distinct from preceding.
IX.	α Sculptorids ...	10 - 35	1	In October.
X.	μ Andromedids ...	12°5' + 37°3'	12	Possibly confused with VI., but the radiant was very sharply defined at 13° + 38° in 1887 September.
XI.	ε Piscids ...	13°7' + 5°2'	19	A very well defined shower, chiefly active in September and October. Max. 1887 Oct. 11.
XII.	ψ Piscids ...	15°0' + 17°2'	6	Positions in very close agreement.
XIII.	β Andromedids ...	15°7' + 29°7'	13	Meteors swift, with streaks, in July-August. Endures to November. ? = XX.
XIV.	η Cetids ...	16°6' - 14°1'	7	Fireballs in January.
XV.	δ Cassiopeids ...	19°2' + 57°7'	60	Very active shower, frequently recurrent, if not continuous, during a lengthy period. Supplies fireballs in April-May.
XVI.	β Arietids ...	21°6' + 21°9'	14	Probably quite distinct from following.
XVII.	η Arietids ...	22°3' + 15°1'	10	Almost confined to October.
XVIII.	τ Andromedids ...	22°6' + 35°7'	9	Sharply defined, and different from XXV.
XIX.	ε Piscids ...	22°7' + 8°0'	6	Well pronounced in October.
XX.	α Triangulids ...	23°0' + 27°1'	9	Possibly identical with XIII.
XXI.	γ Andromedids ...	23°2' + 43°7'	25	This radiant, enduring apparently from July to November, corresponds in position with that of the Andromedid shower, XXIII.
XXII.	Cassiopeids (50) ...	24°0' + 70°4'	43	Very rich and definite shower of short, quick meteors. R.A. is really in about 28° or 29°.

To be continued-----

8

* THE "SPECTRUM" *

BUFFALO ASTRONOMICAL ASSOCIATION, INC.

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** FIRST CLASS MAIL **