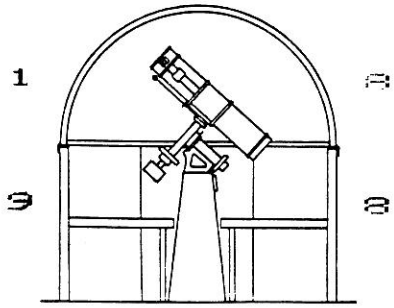
THE SPECTRUM

SUMMER



ISSUE

BUFFALO ASTRONOMICAL ASSOCIATION, Inc.

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SUMMER STAR PARTIES

WHILE SUMMER IS THE SEASON IN WHICH WE DISCONTINUE OUR MONTHLY MEETINGS, WE MORE THAN MAKE UP FOR THEM WITH WEEKLY STAR PARTIES. STAR PARTIES ARE BOTH SOCIAL AND INSTRUCTIVE. WE EAT SNACKS, TAKE PHOTOS, SOCIALIZE AND SOMETIMES TAKE A SWIM. WE ALSO CHECK OUT BINOCULARS, EYEPIECES, TELESCOPES, AND ALL KINDS OF EQUIPMENT. THEY ARE OPPORTUNITIES TO LEARN CONSTELLATIONS, M OBJECTS, AND STAR HOPPING. I CAN THINK OF NO BETTER WAY FOR A BEGINNER TO SAVE YEARS OF TRIAL AND ERROR EFFORTS THAN BY OBSERVING WITH AN EXPERIENCED MEMBER.

SOME WORDS OF ADVICE - DON'T BE SHY, YOU'LL BE MOST WELCOME AT ALL STAR PARTIES, NO MATTER HOW NEW A MEMBER YOU MAY BE. ALSO, BRING YOUR SCOPE, EYEPIECES, CHARTS, ETC. EVEN IF IT RAINS OR IS CLOUDY, WE CAN STILL LEARN ABOUT VARIOUS PIECES OF EQUIPMENT BY DISCUSSING AND ANALYZING EACH OTHER'S COMMERICAL AND CLUB-MADE SCOPES. DON'T FORGET YOUR BINOCULARS. PERHAPS YOU MIGHT BRING A DISH TO PASS AROUND.

PLEASE NOTE THAT MOST OF THE STAR PARTIES ARE EITHER FRIDAY OR SATURDAY, DEPENDING ON THE WEATHER. IF IT IS CLOUDY ON FRIDAY, CALL SO THAT THE HOST CAN RESCHEDULE ON SATURDAY. ALL STAR PARTIES LABELED "RAIN OR SHINE" ARE ON THAT DATE ONLY, NO MATTER WHAT THE WEATHER IS.

JUNE 25TH, RAIN OR SHINE. MIRO AND JOANNE CATIPOVIC. 5161 E. RIVER RD. 695-1131. 2:00 P.M.

THIS STAR PARTY IS ACTUALLY A PICNIC AT MIRO'S BEAUTIFUL COTTAGE ON GRAND ISLAND. MIRO IS A LONG TIME MEMBER WHO HAS CONSTRUCTED A 20" SCHMIDT-CASSEGRAIN, AN INCREDIBILE ACHIEVEMENT. EXPECT A DELIGHTFUL SOCIAL EVENT.

JULY 2ND, RAIN OR SHINE. THE RUPP FAMILY. LIME LAKE, MARTIN LOTS # 316. 839-1842 OR 353-4636.

THE RUPP FAMILY INVITES US ONCE AGAIN TO THEIR LOVELY COTTAGE AT LIME LAKE STARTING AT 1:00 P.M.. THE RUPP'S WILL PROVIDE MEAT AND BEVERAGES AND ASK THAT YOU BRING A DISH TO PASS. THE SKIES ARE BAD FOR OBSERVING, BUT EXPECT GOOD FOOD, CONVERSATION, BOATING, SWIMMING AND HORSESHOES. THIS "STAR" PARTY SHOULD BE LOTS OF FUN.

JULY 9TH, RAIN OR SHINE. MARYILOU BEBAK AND PAT, BILL & DANNY ROGERS. 135 OLD CLINTON ST., COWLESVILLE 937-6277. 1:00 P.M. TO 1:00 A.M.

MARYILOU AND THE ROGERS FAMILY INVITE US FOR A SPLASH HIKE (2:00 P.M.), GOOD CONVERSATION AND SERIOUS OBSERVING. THIS SOUNDS LIKE A DELIGHTFUL DAY. CHIDREN ARE WELCOME.

JULY 15TH OR 16TH, RAIN OR SHINE. LARRY CARLINO. 7118 KENNE RD. RAPIOS. 433-3432.

LARRY HAS ONCE AGAIN INVITED US TO HIS DARK SKIES IN NIAGARA COUNTY. DON'T LET THE ADDRESS FRIGHTEN YOU, ITS JUST A SHORT RIDE UP TRANSIT RD. LARRY IS ONE OF OUR MOST TALENTED OBSERVERS WITH TONS OF EQUIPMENT AND A HUGE (22") DOBSONIAN. EXPECT TO LEARN A LOT AND OBSERVE UNDER GREAT SKIES.

SYRACUSE ASTRONIMCAL SOCIETY'S SUMMER SEMINAR

On July 15, 16 & 17 the Syracuse Astronomical Society will hold its annual Summer Seminar on Darling Hill south of Syracuse near Vesper, NY. (It is a sort of "Stellafane" of central New York. ed.) For more details see Carl Milazzo or Ed Lindberg.

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JULY 23TH, RAIN OR SHINE. THE BIGGIE FAMILY. 37 VILLA MARIA DR., WEST SENECA. 675-8932.

OUR PRESIDENT'S FAMILY ONCE AGAIN WELCOMES US TO AN EVENING OF SWIMMING (7:00 P.M.), OR CONVERSATION AND OBSERVTING (8:00 P.M.) AND PERHAPS A MOVIE.

AUGUST 5TH OR 6TH, DEPENDING ON THE WEATHER. BRIAN FALLON 1198 CENTER RD., WEST SENECA. 674-3009.

BRIAN INVITES US TO HIS DARK SKIES STARTING AT 8:00. EXPECT GOOD OBSERVING.

AUGUST 12TH OR 13TH, DEPENDING ON THE WEATHER.

BEAVER MEADOW OBSERVATION. THIS STAR PARTY IS SCHEDULED FOR NEW MOON DURING THE FAMOUS VERMONT STELLAFANE CONVENTION (ASK MEMBERS ABOUT STELLAFANE). IF YOU'RE IN TOWN THIS PARTY IS A GOOD OPPORTUNITY TO GET TO KNOW AND USE THE CLUB'S OBSERVATORY. PLEASE NOTE THAT THERE IS NO HOST FOR THIS PARTY, SO PERHAPS YOU COULD BRING A DISH OR SOME POP. PLEASE HELP CLEAN UP AFTER THIS EVENT.

AUGUST 19TH OR 20TH, DEPENDING ON THE WEATHER. ADRIENNE AND JERRY MORRIS. 20 FELBER LANE, CHEEKTOWAGA. 684-0315. 8:00 P.M.

ADRIENNE & JERRY INVITE US TO ADRIENNE'S PARENT'S HOME FOR AN EVENING OF GOOD COMPANY AND SERIOUS OBSERVING.

AUGUST 26TH, RAIN OR SHINE. JACK AND JAYNE MACK. 1 HUNTERS LANE, WILLIAMSVILLE. 632-6210. 8:00 P.M.

ONCE AGAIN THE MACK'S INVITE US TO THEIR HOME FOR GOOD CONVERSATION AND COMPANY.

ALPHONSE KOLODZIEJCZAK

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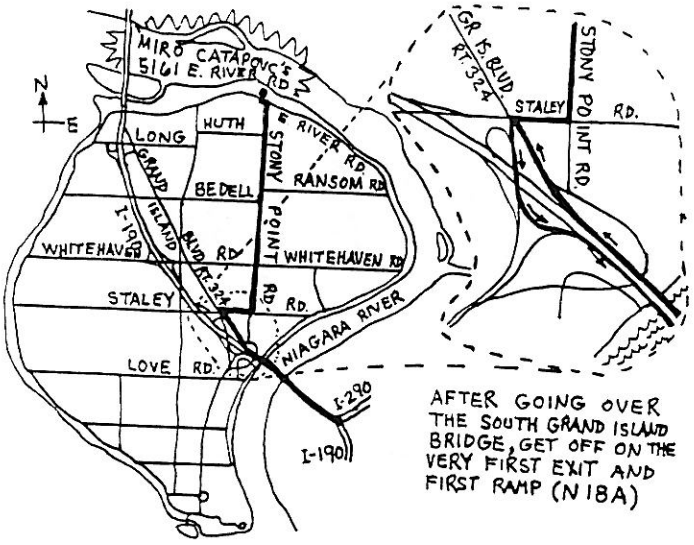

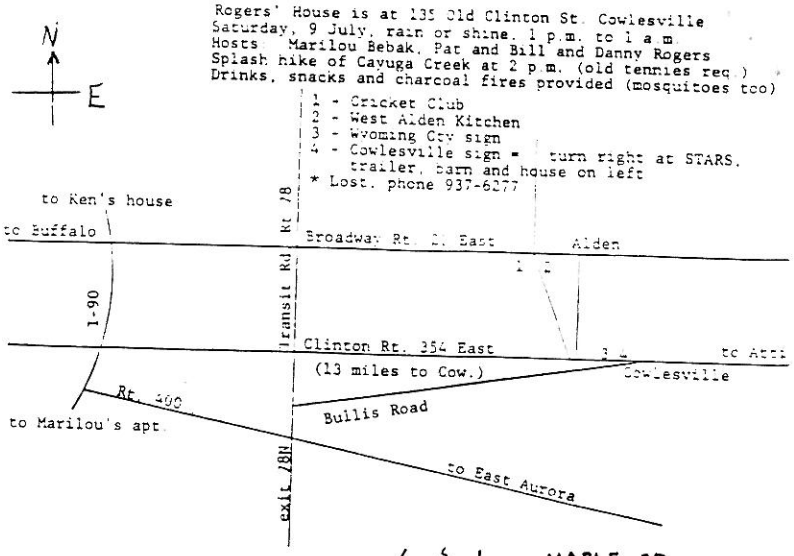

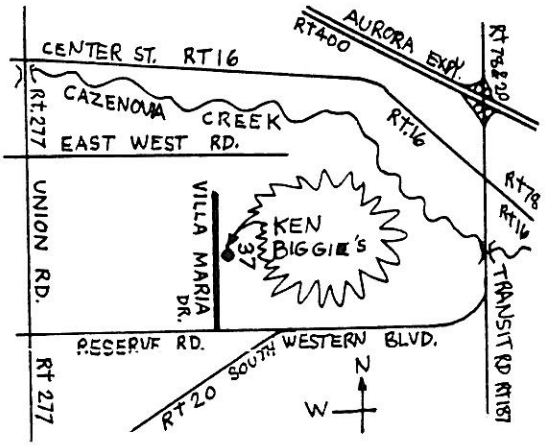

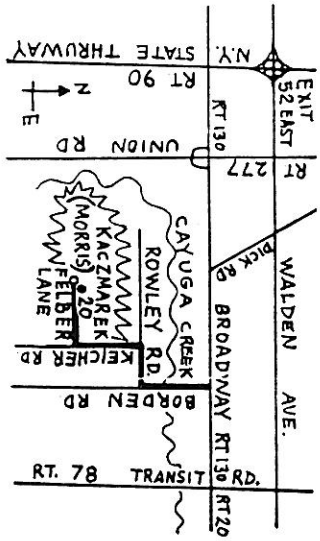

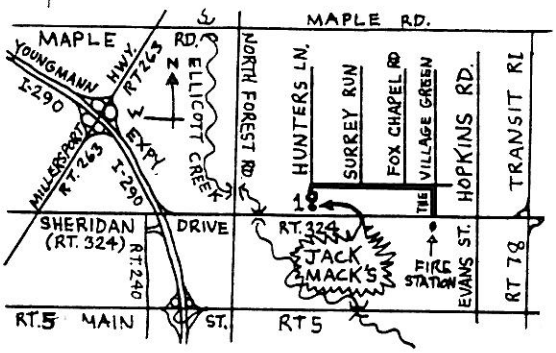

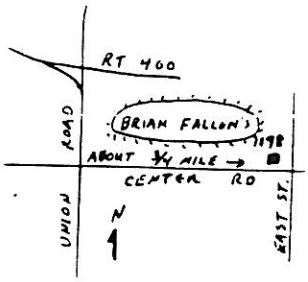

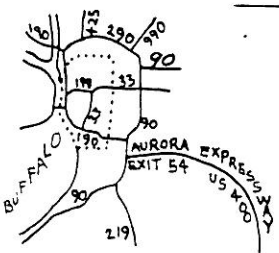

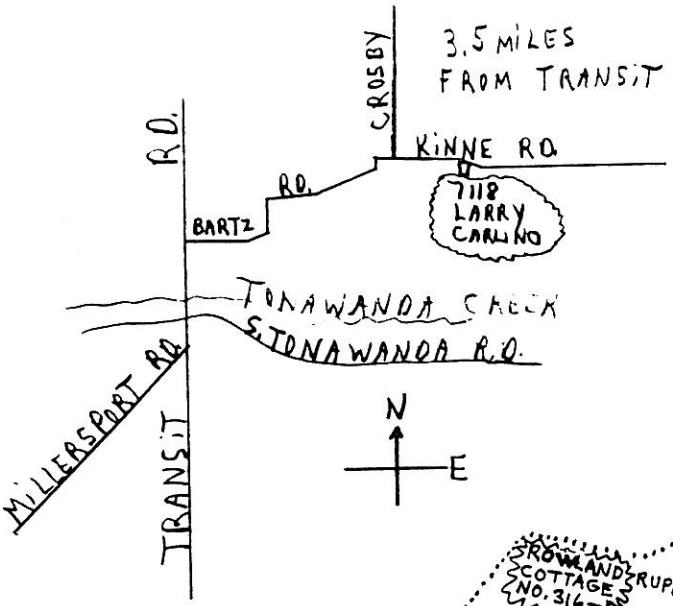

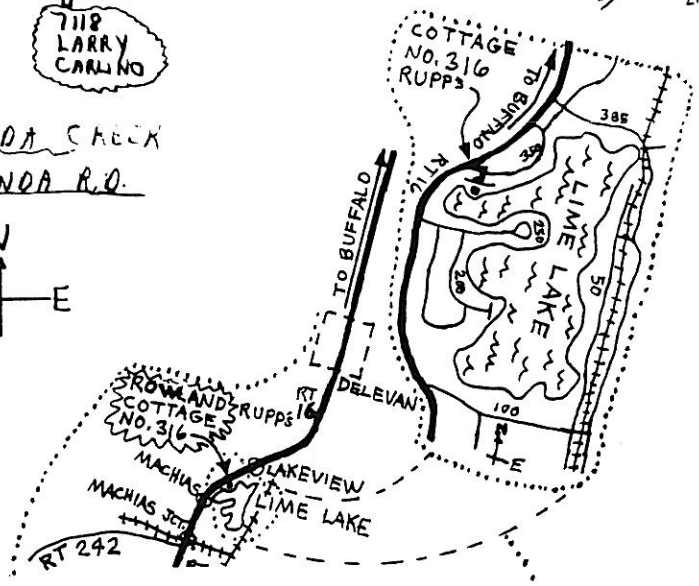

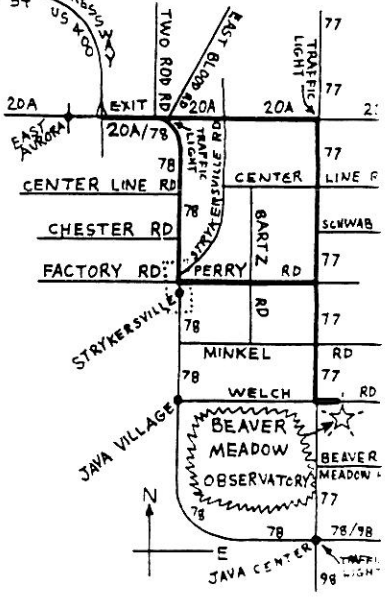

ASTRO-HAPPENINGS

SOLAR- On July 5th, the Earth will be at aphelion (which is farthest from the Sun). For more on the Sun, see "Solar Activity" by Bob Hughes.

LUNAR- Phases for July:- Last Quarter Moon - 6th
New Moon - 13th
First Quarter Moon - 21st
Full (BUCK) Moo - 28th
for August:- Last Quarter Moon - 4th
New Moon - 12th
First Quarter Moon - 20th
Full (STURGEON) Moon - 27th, which will be aprtially eclipsed but seen in the western most part of North America.

A Lunar Occultation will occur on July 16th. The first magnitude star, Regulus, will be occulted by the moon and is to be seen throughout the North American continent. This event should prove to be a memorable experience.

CONJUNCTIONS:-
MARS - July 25th & August 2nd & 29th
JUPITER - July 9th & August 6th
VENUS- July 10th & August 8th
MERCURY - July 11th
SATURN - July 26th & August 22nd
URANUS - July 26th & August 22nd
NEPTUNE - July 26th & August 23rd
ANTARES - July 25th & August 21st

PLANETARY:-
Stationary events:- VENUS - July 4th
PLUTO - July 25th
MARS - August 26th
SATURN - August 30th
MERCURY will be at greatest elongation (20° w.) July 6th and at superior conjunction August 2nd.
VENUS will be at greatest brilliancy July 19th and at greatest elongation (46° w.) August 22nd.

METEOR SHOWERS:- On July 14th the ALPHA CYGNIDS will radiate from R.A. 20h 56m, Dec. +47°. It is an irregular shower of unknown trajectory and hourly count, but they are white and average 3rd magnitude. They can be seen 12 days before and after the maximum on the 14th.

On August 11th the low profile UPSILON PEGASIDS will be seen from R.A. 23h 26m, Dec. +23°. It was first discovered in 1975 appearing for about 16 nights as 4th magnitude, reddish streaks slowly crossing overhead. Upwards of 12 could be seen per hour, but in 1978, they seemed to become more prominent and up to 20 were counted hourly. There is much room for additional observations to be reported.

Additional showers are:- Sagittariids - July 6th
Phoenicids - July 14th
Omicron Draconids - July 16th
Capricornids - July 23rd
Alpha-Beta Perseids - July 27th
Delta Aquarids - July 29th
Alpha Capricornids - July 30th
Piscis Australids - July 30th
Alpha Capricornids - August 1st
Iota Aquarids - August 6th
Perseids ****** - August 11th
Iota Aquarids - August 12th
Kappa Cygnids - August 20th (fire balls)
Omicron Draconids - August 22nd.
Zeta Draconids - August 26th

Darwin Christy

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PLANETARY TEMPERATURES - continued

Fortunately for us, Earth also has a greenhouse effect that raises its average surface temperature to about 290 degrees K (63 degrees F), an increase of around 45 degrees K over the calculated value. Unlike Venus, Earth's greenhouse effect is very subdued, it hasn't run away. We have retained a primarily liquid surface, and water continuously cycles between vapor in the atmosphere and liquid in the ocean.

Temperature variation on Earth is much greater than on Venus because our atmosphere is much less dense. One result is that temperatures are cooler at night than during the day despite Earth's more rapid rotation. Also, because of less efficient heat transport. Earth's equatorial region is significantly warmer than its poles.

The moon has even wider extremes of temperature than the Earth although its distance from the sun is the same. The moon's total lack of an atmosphere and slow rotation produces a temperature variation of 270 degrees K (490 degrees F) between day and night. With no atmosphere, there is no greenhouse effect and no moderation of temperature caused by the transport of heat. The moon's situatuion is much like Mercury's, except being further from the sun reduces its highest temperature, and rotating more rapidly causes the moon's night side to have less time to cool off making its minimum temperature somewhat warmer.

Mars has an atmosphere- a very thin one composed almost entirely of carbon dioxide. Since its major constituent is the same gas that predominates Venus' atmosphere, one might expect similar effects. Nothing could be further from the case. Where Venus has a dense atmosphere that contributes significantly to warming the planet's surface, Mars' atmosphere is exceedingly rare, and the planet is cold. Despite these differences both planets are extremely arid, it is said that the Sahara Desert is a swamp by Martian standards.

At its warmest during a summer day on the equator, the temperature of Mars may reach about 70 degrees F. When Mars is at its coldest, carbon dioxide, along with water, freezes out of the atmosphere to form the polar cap. The temperature on Mars is nearly, but not quite, as cold as that on the night side of the moon. It is moderated because Mars has an atmosphere and because it rotates faster. Together, these properties more than compensate for the planet's greater distance from the sun.

Mars may suffer from a reverse greenhouse effect. Channels on the planet suggest that long ago there was free running water on its surface. Water would enhance the absorption of carbon dioxide by sedimentary rocks, causing the atmosphere to be depleted. A thinner atmosphere would retain less heat, more water vapor would precipitate out of the atmosphere, hence more carbon dioxide would be absorbed. As the process continued the atmosphere became rarer and drier and the planet became colder, resulting in the Martian conditions we see today.

Jupiter emits nearly twice as much energy as it receives from the sun, and this explains its temperature being warmer than predicted. This excess energy is believed to have originated when the planet formed billions of years ago. Jupiter is still cooling and, as a result, slowly contracting.

The temperature shown in the table was measured in Jupiter's upper cloud layer, which is composed of ammonia. Below these clouds are others consisting of different chemicals, including water. These deeper cloud layers are warmer, as one might expect in approaching the core of a planet that generates heat. Since Jupiter, like the other gas giants, does not have a clearly defined surface, a surface temperature is not meaningful. It just gets hotter as one penetrates more deeply into the atmosphere.

Like Jupiter, Saturn radiates more energy than it receives, 2½ times more. The result is that measurements at the top of Saturn's clouds show a warmer temperature than expected when its reflectivity of sunlight is considered.

Cooling of the primordial heat of the planet cannot account for Saturn's excess of energy, as it does for Jupiter. Saturn has far less mass than Jupiter and would have cooled correspondingly more quickly, diminishing its reserve of heat by now. Instead, an ingeneous theory hypothesis that helium droplets form in Saturn's upper atmosphere, that then 'rain' down to lower levels through the hydrogen which is the predominent constituent of the atmosphere. Friction between the two gases supplies the energy that is emitted by the planet.

Corroborating evidence has been obtained by Voyager flybys that reported the hydrogen abundance in Saturn's atmosphere to be 88%. This is significantly more than Jupiter's 82%, and is greater too than the sun's hydrogen ratio Hydrogen is more anudant because helium is depleted. This process has probably been in progress for about two billion years. When Jupiter cools a bit more, it is expected to experience the same phenomenon.

Uranus and Neptune are Jovian planets with similar properties, although both are poorly understood because of their extreme distances from the us. Earth-based measurements show the same temperatures for both at the top of their atmospheres. This is somewhat surprising because Neptune is half again further from the sun than Uranus and receives roughly half the solar energy. The reason is that Neptune radiates more heat than it receives and Uranus does not. The mechanism for this is unknown. The explanations for Jupiter and Saturn do not apply for Neptune. It is a question that requires further study.

Uranus is unique in the solar system since its axis of rotation lies nearly in the plane of orbit. Therefore one pole is exposed to the sun for half the 84 year orbit, and then the other pole has its turn in the feeble sunshine. Nonetheless, temperature on Uranus, measured by Voyager in 1986, is very uniform. The temperatures at both the sunlit and dark poles are about the same, and are also nearly the same as at the equator. Apparently the massive atmosphere provides even distribution of the energy received from the sun.

Little is known about distant Pluto, even its temperature. The 50 degree K given in the table is not offered with confidence. Detailed information about conditions on this remore world must await a new era of planetary exploration.

Leslie Martin

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From DAVID RITTENHOUSE, Eſquire, to JOHN PAGE, Eſquire.
Philadelphia, January 16, 1780.

Dear Sir,

I design to give you my thoughts on Magnetiſm in ſome future letter, at preſent I ſhall confine myſelf to the ſubject of the latter part of yours of the 4th of December laſt.

The extraordinary Meteor you mention was likewiſe viſible here, the air being ſerene and clear. I did not ſee it until the bright ſtreak was become very crooked, it then bore S. 70° W. nearly, from Philadelphia, and comparing this courſe with that obſerved by you, I find it must have fallen on or near the Ouaſiota mountains mentioned in Lewis Evens's map, about 480 miles from Philadelphia and 365 from Williamſburg. And taking its altitude 7,° as observed by you, adding 2¼ degrees for the depreſſion of that place below your horizon, its entire apparent altitude above the spot where it fell was 9°¼, which, on a radius of 365 miles, will be 61 miles perpendicular height. The breadth of the luminous vapour was, I think, in ſome places, when I ſaw it, not leſs than a quarter of a degree; this at 480 miles distance muſt have been at least two miles. It was certainly a grand appearance near the place where it fell, if any human eye was there.

May not theſe ſhooting ſtars be bodies altogether foreign to the earth and its atmoſphere, accidentally meeting with it as they are ſwiftly traverſing the great void of ſpace? And may they not, either electrically or by ſome other means, excite a luminous appearance on entering our atmoſphere? I am inclined to this opinion for the following reaſons: 1ſt. It is not probable that meteors ſhould be generated in the air at the height of 50 or 60 miles, on account of its extreme rareneſs; and many falling ſtars, beſides this, are known with certainty to have been at very great heights. 2dly. Their motions cannot be owing to gravity, for they deſcend in all directions, and but ſeldom perpendicularly to the horizon. Beſides, their velocities are much too great. This meteor would not have fallen by the force of gravity, from the place where it firſt appeared, to the earth, in leſs than two minutes of time; nor in leſs than ten ſeconds, if we ſuppose it impelled by gravity from the remoteſt diſtance. They are nevertheleſs affected by gravity in ſome manner, for I cannot find that any one was ever obſerved to aſcend upwards in its courſe.

It is true that difficulties will likewiſe occur, if we ſuppoſe them to be foreign bodies of ſufficient denſity to preſerve ſuch great degrees of velocity even in paſſing through the atmoſphere, for it may be aſked why do they not frequently ſtrike the earth, buildings, &c.

Perhaps they are generally, if not always, exploded in paſſing through the air, ſomething in the manner that filings of ſteel are exploded in paſſing thorugh the flame of a candle. And at the ſame time that they afford us occaſion to admire the variety and immenſity of the Creator's works, they may perhaps produce ſome important and neceſſary effects in the atmoſphere ſurrounding this globe, for the welfare of man and its other innumerable tribes of inhabitants.

I am, dear ſir, your affectionate friend,
And very humble servant,
DAVID RITTENHOUSE

* * * * * Steve Kramer

From *Transactions of the American Philosophical Society*, Volume II (1786), p. 195.

Obſervations on a Comet lately diſcovered; communicated by David Rittenhouse, Eſquire.
Read Mar. 19, 1784.

On the 21ſt of January laſt, John Lukens, Eſquire, [Surveyor-General of Pennsylvania] informed me that he had diſcovered a comet the preceding evening, and on the evening of the ſame day, aſſiſted by Mr. Lukens and Mr. Prior, I obſerved the apparent place of the comet to be in the 15th degree of Piſces, [345°] with 16° 6' ſouth latitude. By ſubſequent obſervations I found its motion to be north eaſterly, with reſpect to the ecliptic, and that its neareſt approach to us had preceded our firſt obſervation. It paſſed the ecliptic on the 31ſt in the 25° of Piſces, [355°] and February the 17th it was in Piſces 29° [359°] with 13° 10' north latitude. This was the laſt time I ſaw it, clouds and moonlight having ſince prevented.

The light of this comet was ſo very faint that it was impoſſible to obſerve it with accuracy, at leaſt without better inſtruments than I am poſſeſſed of, eſpecially as the comet was always involved in the day light, moonlight or the thick atmoſphere of the horizon. No pains or attention however were wanting, and from the beſt obſervations I could make, I find it paſſed its perihelion about the 20th of January, its diſtance from the ſun being about 7/10 of the ſun's diſtance from us. The place of its aſcending node is in the 25th deg. of Taurus, [55°] and the inclination of its orbit 53°. Its motion is retrograde, that is, contrary to the order of the ſigns. I have ſtill hopes of ſeeing it in the morning, though its diſtance is now ſo great that it can ſcarcely be viſible to the naked eye.

The Catalog of Cometary Orbits by Brian G. Marsden lists Comet 1784 as the only one of the year. Comparing this data with Rittenhouse's (subtracting 2.32° longitude for difference in epoch):

	Marsden	Rittenhouse
observations	16	3 (self)
perihelion	Jan 21.70 at 333.79°	about Jan 20
" distance	.708	7/10
asc. node	56.83°	55°
inclination	51.14°	53°

Its eccentricity is given as 1.0 and so it is non-returning.

* * * * * Steve Kramer

SOLAR REPORT

During May 1988 the Sun's solar activity decreased somewhat compared to previous levels in March and April. However on June 1st a major sunspot group appeared to the Sun's eastern limb. Included in thsi group was the largest single sunspot seen during this latest solar cycle and the largest since April 1984. The solar flux reached its highest level of this cycyle of 163 on June 8th. Sunspot numbers for May 19 to 25 were between 15 and 56 with a mean of 32. Sunspot numbers for May 26 to June 1st were between 60 and 96 with a mean of 83.

Bob Hughes

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OBSERVATORY REPORT

Public nights are the 1st and 3rd Saturdays of each month for the summer. Anyone wishing to volunteer for a public night please call me at 833 2407. Also people are needed to repair the polar axis clutch and to help with other repairs. Please volunteer -- your help is ernestly welcomed. Regretfully I will be resigning my position as Observoatory Director, however I will stay on until a replacement director is named.

Bob Hughes

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INSTRUMENT NOTES

This past month we tested an 8-inch mirror and one of 12½-inches. The large mirror tested "good" while the 8-incher was seen to be "very good".

Each mirror is put through two tests. The first is a Ronchi test, this is followed by a knife edge or Foucault test. The Ronchi test consists of a thin glass plate one inch square ruled with a pattern of 100 parallel lines per inch at 45 degrees to the sides of the square. The lines are mounted vertically. The diagonal ruling gives a little more effective length to the central lines. The image of the lines returning from the mirror produces a diffraction pattern. The screen is positioned to give a pattern of about six lines. The screen is moved slowly from left to right and the shape of a single line observed as it transits the field of view. The line appears to cross the mirror from left tot right. The line should ne banana shaped at the edges being concave right at the left edge and concave at the right edge and appearing like a straight vertical line as it passes the center. Any erratic or irregular changes in the shape of the line indicate an improperly figured area or "zone". The lines taper to sharp points at top and bottom. Any folding is a very sensitive test for "turned edge" that bane of mirror makers.

For the Foucault test the Ronchi screen is replaced by a knife edge. A razor blade is used to dut across the returning beam from the mirror. As the beam is cut off at various places inside and outside of the center of curvature of the surface, various patterns can be seen. The mirror can be seen to be sperical or parabolic in shape with deviations "under" or "over" correction crying out for further figuring. If no aberrations can be seen in these two tests the mirror can be said to be "very good". It is not possible to call a mirror "excellent" based on tests alone. To rate "excellent" a mirror must pass a careful zonal test. This measures any deviation from the desired standard, such as "a tenth wave" or a "twentieth wave" or whatever standard has been established for the end use. For amateur observing and photography a tenth wave mirror would be adequate. A twntieth wave mirror would be "excellent", but there aren't many around.

In the Ronchi test the slit must be precisely sligned with the Ronchi lines. I side step this requirement by using a diffused light source passed through the lower part of the screen and intercepting the returning beam through the upper part of the same set of lines which are very revealing. The Foucault test also has a rigid requirement of alignment. Here I again make the instrument align itself. I use a single razoe edge and allow the returning image of the edge to form the other edge of the slit. This makes a very sharp, clear Foucault pattern, which is also an excellent test for irregularities.

Careful zonal tests were made of the Beaver Meadow 12½ inch mirror. The surface is largely within 1/20 wave but the central and edge areas depart from this standard. They are, however, within the tenth wave and all transitions are smooth. It looks perfect on the above tests but has to be rated somewhere between "very good" and "excellent". But we have had a lot of pleasure from its use so far and it may well serve us faithfully in the future.

Ed Lindberg

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RECORDS of ASTRONOMICAL OBSERVATIONS

The fine article in the May-June issue of the "Spectrum" written by Paul Warms, entitled "Benefits of Recording What You See", prompts me to outline an alternate method of keeping such records. The plan, herein described, evolved during the 26 years I studied the sky in North Miami Beach, Florida. The observations there were made with both a 6" and an 8" Newtonian Reflectors.

After retirement there we purchased a new home, on the rear lawn of which we installed an 18 foot concrete circle to serve as a platform for telescopic observations. In the center of the circle we sank a 6-inch iron pipe in cement 30-inches deep, which served as a dead steady mount for the telescopes.

With 75 miles of city lights, from Homestead on the south and Ft. Lauderdale on the north, the ambient light reflection from the sky posed a serious and incurable handicap. Offsetting this drawback was the fact that the moderate climate of that area permitted comfortable telescopic observations for 12 months around the calendar.

On one side of the concrete circle there was a small desk for writing the details of each observation. Using this desk, I wrote my comments on 8¼x11" school theme paper, using shorthand to conserve time and space. The next day these shorthand notes were typed on 4x6" cards forming a permanent file. Small, metal boxes housed these typed cards, separated into boxes entitled as follows:-

Planetary Observations
Messier Objects
Variable Stars
Stars and Clusters, with separate boxes for Sidereal Times, from 0 to 6, 6 to 12, 12 to 18 and 18 to 24 hours.

After the Earth had encircled the Sun 26 times these boxes became quite full. Since each card was used indefifnitely by adding all subsequent observations to it, it prompted attention to details that might have been overlooked previously.

My present location in York, PA. does not permit a permanent telescope installation. So the scope sits idle in the corner of the Living Room serving as a reminder of those wonderful years of observing I enjoyed in the South.

I still keep my Astro clock running. One for Greenwich Mean Time and one for Sidereal Time. Hence, with the clocks and sky maps, I know what is in the sky at any given moment.

The loss of the use of the telescope robs me of the most enjoyable hobby I ever had. But, as Satchel Page, the old baseball player lamented when he said, "Don't look back, something might be gaining on you."

Donald M. Magor

(Some of the above comments might be a little plainer if I mentioned that I am now 88 years old.)

* * * * *

SPECTRUM DEADLINE FOR THE NEXT ISSUE

Monday, AUGUST 15, 1988

OBSERVATIONS

The 'Siamese Twins' galaxies were seen, also known as NGC 4567 and 4568. They were viewed with my jointly owned 26-inch Dobsonian, on April 9th in the constellation of Virgo. They are each 12th magnitude and 3 x 1 arc minutes in size, with disks of medium surface brightness. They have each a bright nuclei and the edge of each disk is in contact with the other galaxy and they are tipped 45° relative to each other.

The deep red variable star ss Virgo was seen at 7th magnitude, ¼ degree north of the galaxy NGC 4385. It is 12th magnitude with a bright nucleus and a faint envelope 1 arc minute in size.

Comet Liller, 1988A, was 7th magnitude in the constellation of Cassiopeia on April 11th. It had a faint 2 degree long tail, a bright coma and a brilliant star-like nucleus. Three weeks later, the nucleus was not quite as bright and had a small disk. At that time it was 15 degrees from Polaris in Camelopardalis and moving towards the Big Dipper.

A rare type of galaxy was seen, the polar ring type, which is NGC 2685 in Ursa Major. It is also known as the Spindle Galaxy. It has a bright oval hub and a fainter inclined disk of 2 x 1 arc minutes in size and a total magnitude of 12.2.

A Wolf-Rayet nebula was seen, NGC 2359, in Canis Major with a UHC nebula filter. It looked like two bommerangs colliding head-on and in the background is the rich Milky-Way of stars with one bright red one off to the side. The nebula is of medium to low surface brightness and with an overall size of ½ degree. One wing of the boomerang is much longer than the other's and they are all about 3 arc minutes in size. In the very center is a 12th magnitude star and the nebula in that region is of a slightly higher surface brightness.

Two galaxies were seen in the bowl of the Big Dipper that are slightly over one billion lightyears away. They are Baade 7 & 24, which are in the Abell 1377 super cluster of galaxies. They are 15th magnitude and ¼ arc seconds in size. What made it easy to locate, but very difficult to see, is a 6th magnitude star 10 arc minutes away from it.

Two degrees S.S.E. of the Lagoon Nebula, M-8, in Sagittarius is a bright nebula that I stumbled upon with my 5-inch refractor 7 years ago. With the 26-inch Dobsonian, it looked triangular shaped. It is catalogued I.C. 4683 and of 10th magnitude, of medium surface brightness and 6 arc minutes in size, with half a dozen faint stars sprinkled around it.

Copeland's Septet was seen in Leo, which is a cluster of galaxies, of which 7 formed an S-shape, partially resolved into some individuals. It is 4 arc minutes in size and of medium surface brightness, 13th magnitude as a whole, the brightest galaxy in it is NGC 3751 which is 14.9 magnitude.

On April 22nd at 3:07 AM, a Lyrid meteor was seen from Boston, N.Y. in Aquila near Scutum along the galactic equator. It was zero magnitude of a yellow hew, traveling 17 degrees and lasting 1½ seconds.

That same night a nice aurora formed which at times extended as high as Polaris. It included a green arch with pulsating waves and rippling curtains with long violet rays

Also the dwarf galaxy Leo-2 was seen which is much closer than the Andromeda galaxy, M-31. It is of very low surface brightness, 15 x 10 arc minutes in size with a slightly brighter middle. It is 750,000 lightyears away.

A lumpy glob of interacting galaxies was seen in Serpens Caput near Hercules. The six galaxies are NGC 6027A-F which form a mottled surface and is 5 arc minutes in size. It has a wavy edge. The total magnitude is 14 with a medium surface brightness and its contrast is low.

On May 7th I was observing 10 miles N.E. of Ithica, NY saw was a group of three galaxies all in the field of the eyepiece. NGC 5638 is in Virgo and is the brightest at 12.7 magnitude with a small bright nucleus like M-87, but only 1 arc minute in diameter. Almost in contact in NGC 5636 which is a half magnitude fainter with a lower surface brightness. It is irregular shaped and 2 x 1 arc minutes in size. Slightly east of it is UGC 9310 of very low surface brightness and 1 arc minute in size.

A Palomar globular cluster was seen with the 26-inch Dobsonian on May 13th in Ophiuchus. Palomar-15 is 2 x 3 arc minutes in size and of a very low surface brightness. It is 14.2 magnitude. It is even in brightness all across it's surface and has one faint star on it's edge. Palomar-15 is 720 lightyears in diameter and 230,000 L.Y.'s from Earth, making it one of the largest and most distant known in our galaxy.

Later that night a V-shaped planetary nebula was seen with a UHC nebula filter. It is in Lyra, not M-57, but PK 64-15.1 and is in a string of C-shaped background stars. The nebula is mottled and of medium surface brightness, 2 arc minutes in size, totaling 13.5 magnitude.

A green meteor was seen from our club's Beaver Meadow Observatory at 11:33 PM on May 14th. It was -1 magnitude lasting 3 seconds and traveling 27 degrees acros Ursa Major - Lynx - Gemini, before bursting into four pieces.

I have now seen over 1,500 deep sky onjects, 400 new ones this spring which was partly due to the much above normal clear nights. Also was the fact that the great band of galaxies crossed the meridian at that time of the year. It runs from Centaurus, Hydra, Virgo, Coma Berenices, Leo, Canes Venatici, Ursa Major and ends in Draco.

Carl Milazzo

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On April 11th, at approximately 1:20 AM EST, I was on Main Street in Angola heading west toward Rte 5, when a meteor of --- I'm not very good at magnitudes, but I'll say --- twice the brightness of Venus at that time, entered the atmosphere over Lake Erie (apparent to me). It was yellowish, thick and slow and took a half to a full second to make abot a 30 degree long trail through the sky. This was in appproximately the same line as an arrow drawn from Pollux through Castor beginning at Castor, twenty degrees above the horizon and finishing (maybe - trees were in the way) about fifteen degrees above the horizon. No explosions were seen, then again, not a clear view was given, though probably just short of a bolide, technically. Anyway, after all that, it was a very brilliant, pretty object, and it sure scared the 'dickens' out of me !!

David Czuba

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A minus 7th magnitude white meteor was seen at 12:00 AM on June 4th, from Boston, N.Y. It lit up the ground, and traveled 20 degrees from Draco's arching back, then ending near the end of the Big Dipper's handle. It took 2 seconds to travel that distance, and it left a 7 degree glowing train in the sky for 5 seconds.

Dina Adimey

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On a recent visit to New York City, I did not plan on any astronomical observations, figuring tall buildings and city lights would prevent sky-watching. Venus shone brightly between skyscrapers at dusk, but few other stars were visible.

Little did I realize I would be treated to a special view of the stars at the Museum of Modern Art in Manhattan. As the centerpiece of one gallery was Vincent Van Gogh's "Starry Night". Eleven stars and a full moon shine in brilliant yellows and whites over a peaceful village. One can assume there was some atmospheric turbulence, as hazy swirls are intersperced amoung the stars, and the full moon is surrounded by a halo of light, indicative of high cirrus clouds. The moon has just appeared over

the horizon, and the color of the sky and surrounding hills is a deep indigo, typically seen in the hour past sunset. Also striking are the bold, forceful brush strokes, giving the illusion of wind and twinkling stars, in contrast with the quiet hillside village and church below.

Full moons are also seen in three other works of art. Two paintings by Henri Rousseau show full moons complete with darkened maria and brightened highlands. In one painting, the moon illuminates a lush jungle setting by peeking between the trees. In Rousseau's "The Sleeping Gypsy", the moon shines in an otherwise starless desert sky as a peaceful looking lion approaches a gypsy lying on the desert sands. In both paintings the moonlight serves to bring out rich, vibrant colors seen in the jungle and the gypsy's clothing.

The final full moon I saw was in a photograph taken on April 6, 1906 in San Francisco, meant to record the fiery devastation after the San Francisco earthquake. There, high above a burning building as a group of men watch helplessly, a brilliant white circle of light shines upon the scene, documenting a full moon on the night of the earthquake.

After this pleasant surprise at finding so much astronomy in modern art, I plan to watch for more stars in other art museums, including our own Albright--Knox Art Gallery here in Buffalo.

Marilou Bebak

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Buffalo, NY 14212

* * * * *

Spy and Tell

On May 6-8, Carl Milazzo attended the American Association of Variable Star Observers meeting at Cornell University. While there he viewed Venus through the 12" refractor, and saw the 25" reflector on a daytime tour.

On May 17, Carl spoke to the Young Astronauts group, made up of 5th and 6th graders from Doug Smith's class at the Glendale Elementary School in the Sweet Home School District. This was to be an outdoor evening program, but inclement weather forced the group to meet inside. Carl entertained twenty children and three parents with a discussion on observing techniques, constellations, magnitudes, degrees, charts, planispheres, and how to track satellites.

The astronomy article by Terence Dickinson in the April 1st Buffalo News mentioned Carl as a dedicated casual observer and remarked on his astronomical equipment and sightings.

Bill Rogers has become an expert in charge of education for the African exhibit at the museum. How much of Africa do you think is covered by jungle? If you don't know, you can ask Bill, as he has the answer to this question as well as answers to many other questions you may have on Africa.

During July, Fred Price will be playing organ for the services at Ascension Episcopal Church on Linwood Avenue.

Dan Marcus and the astrophotography group met at Beaver Meadow with five members in attendance. Pictures were taken of M5, M101 and M27.

Congratulations and best wishes to John Raymonda and Mildred Rowley who were married on December 12, '87. John plans to become an active BAA member again soon.

On May 6th, Darwin Christy received the Symbolic Lodge Service Award presented by Valley of Buffalo Ancient Accepted Scottish Rite for outstanding service and devotion to the Lodge, the Craft, and the Masonic Fraternity.

An update from the Spy and Tell, May-June issue of the Spectrum: Jack Empson and Dave Sepulveda have each received the official's license to work on race tracks, and on May 28-29 worked their first job in this capacity at Nelson Ledges in Ohio.

Orchard Park High School announced its Academic Achievement list for the third marking period, January 27 through April 14. Christopher Biggie, a freshman, and brother, Kevin, a junior, were on the Honor Roll. The Honor Roll is comprised of students whose average is 90 or above. Kevin was also one of the 49 students in the junior class inducted into the National Honor Society, based on "scholarship, leadership, character and service." Kevin was honored further by being one of 43 students from Erie County chosen to attend the American Legion Boys' State at Siena College in Albany from June 26 to July 2. Participating across the country will be 30,000 high school juniors who will be attending civic workshops. Students were selected from those who showed "the most outstanding qualities of leadership, character, scholarship, and loyalty and service to their school." Congratulations! Chris and Kevin are the sons of Ken and Diane Biggie.

Dan Marcus, Tristan DiLapo, and Carl Milazzo have assembled a 7" refractor as a photographic scope with a 6" reflector guiding scope attached to a German Equatorial mount in a wooden adjustable house. The refractor shows a 5°x7° field of view. The trio have been running tests using 8 minute exposures on stars down to 12th magnitude.

Marilou Bebak enjoyed a twelve day trip in Florida, and while there, visited the Henry Gibson Observatory with its 12" reflector in the West Palm Beach Science Museum. They have an astronomy club of 55 members. Flying over Cape Canaveral at night, Marilou had the thrill of seeing a Titan Rocket Missile launch for the Defense Department. She had an exciting day at the Cape where she found a striking contrast between the Wildlife Sanctuary with its numerous endangered species next to the high technology on the Cape. Marilou saw the plans for the memorial for all the astronauts who have died. It will be of polished granite, bearing their names, with a clock drive that will always follow the sun.

Amateur astronomers, Randi Shivak and his wife, from the Cleveland area, who have built their own solar observatory following Walt Semerau's plans, visited the solar observatory at the museum. Later they went to see Walter, our BAA member known internationally for his work as a solar astronomer, and for making outstanding solar equipment which he used in his home and is now an important part of the museum's solar observatory. The Shivaks have updated their observatory with a computer.

There is a rumor going around concerning one of our distinguished members making phone calls around 10 P.M. asking for "Lovely Joan." We'll have to check further into what appears as scandalous behavior.

Edith L. Geiger

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1988 College of Fellows Award

This year the College of Fellows Award was presented to honor the memory of one who is no longer with us; Robert Stanley Mayer.

With his creative genius, and his dedication to accuracy, he applied his skills and resourcefulness to endless technical problems with which many of our members confronted him in efforts to correct, improve, or make astronomical equipment.

His technical mastery, his high-minded sincerity, and selfless devotion to others, made him a very special human being. Bob Mayer was presented this posthumous award for "outstanding contributions to astronomy in western New York."

GEOCENTRISTS

WHO ARE GEOCENTISTS ??? -- They are people who still think and believe the Earth is motionless and the Sun revolves aronud it.....

JULY CONSTELLATION

CYGNUS, the Swan or Northern Cross, lies mostly within the "Milky Way". This conspicuous constellation in the summer months contains a first magnitude star, "Deneb" which is a member of the 'Summer Triangle', and many legends have related to Cygnus. One such legend says, 'that Cygnus represented Orpheus, who had been changed into a Swan when he died and was then placed near his 'Magic Harp' in the sky which was the Lyre or Lyra.

The Arabs knew it as the 'Flying Eagle' which was also described as the prosaic figure of a 'Hen'. But then, the Greeks just called it some kind of 'Birb' or other. There are other legends, but one last one pertaining to the 'cross' is that it is seen to best advantage in winter. It assumes na upright position on Christmas Eve at 9:00 PM when it stands outlined in the western sky as a starry symbol of the Christian Faith, a sign of promise from the realm beyond.....

CYGNUS is bordered by Draco & Cepheus on the north; by Vulpecula & Pegasus on the south; by Pegasusu & Lacerta on the east; and by Draco & Lyra on the west.

Deep-sky objects include but one galaxy, NGC 5946. Many Open Clusters include NGC's 6811, 6819, 6834, 6866, 6871, 6883, 6910, 6913 (M-29), 6997, 7044, 7062, 7082, 7086, 7092 (M-39), 7127 & 7128; also I.1311, I.1369 & I.4996. Planetary Nebulae are:- NGC's 6826, 6833, 6857, 6881, 6884, 6894, 7008, 7026 & 7048; also I.5117 & R.A. 19h 35m Dec. +30° & R.A. 21h 40m Dec. +39°. Diffuse Nebulae includes NGC's 6888, 6914, 6979, 6980 (Cirrus N), 6992, 6995, 7006 (NA) & 7027; also I.1318, I.5067 (Pelican), I.5068, I.5070, I.5076 & I.5146 (Cocoon).

Double stars are:- 16, 17, 19, 25, 26, 44, 49, 51, 52, 59, 60, 61, 69, 75 (UU), 77, 79, Beta (Albireo), Delta, Epsilon, Eta, Gamma, Lambda, Mu-1, Mu-2, Omega-1, Phi, T, Tau, Theta, UV, V-1334 & V-367. Many variable stars are:- 59, AB, AF, AX, CE, CH, Chi, CN, DT, Omicron-1, Omicron-2, R, RS, RT, RU, RV, RX, SS, SU, T, TT, TW, U, UV, UX, V; also V's- 367, 380, 389, 395, 449, 450, 460, 465, 476, 568, 1425, 1500, 1668; and W, WY, X & Y.

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AUGUST CONSTELLATION

GRUS, the Crane, is the most distinguished of the southern birds, and is one of the groups by Bayer appearing in his catalogue of 1603. The title is, perhaps, appropriate, for Horapollo, the Grammarian of Alexandria in about 400 A.D. It tells us that the Crane was the symbol of a star-observer in Egypt.

From the Old Testament, in the book of Jeremiah, chapter VIII, verse 7, "Yea, the stork in the heaven knoweth her appointed times; and the turtle and the crane and the swallow observe the time of the coming; but my people know not the judgment of the Lord." The was perceived by Caesius who carried his biblical symbols to new constellations. Julius Schiller created "Aaron the High Priest" by combining Grus with Phoenix, but it never entered charts or maps and was therefore lost forever as a constellation.

Grus is bordered by Piscis Australe on the north; Tucana on the south; Phoenix & Sculptor on the east; and by Microscopium & Telescopium of the west.

Deep-sky objects of interest are many galaxies, NGC's 7070, 7097, 7107, 7119, 7144, 7145, 7162, 7166, 7213, 7232 7307, 7410, 7412, 7418, 7421, 7424, 7456, 7462, 7469, 7531 7552, 7582 & 7590; also I.1459, I.5158, I.5186, I.5201, I.5240, I.5267 & I.5273. Five Double Stars are:- Pi-1, Pi-2, Rho-2, Theta & Upsilon; and five Variable stars are: Pi-1, R, RS, S & T.

Darwin Christy

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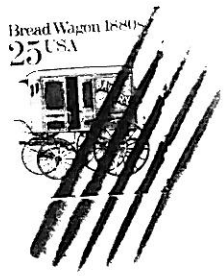

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