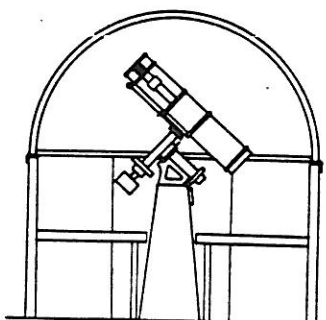


the Spectrum '86

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JANUARY - FEBRUARY
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ASTRONOMER FROM THE PAST

JAMES CRAIG WATSON, an American Astronomer, was born in Fingal, Ontario, Canada, on January 28, 1838. He passed away on November 22, 1880, in Madison, Wisconsin.

He graduated from the University of Michigan in 1857 and was appointed Professor of Astronomy there in 1859. In 1879 he accepted the Chair of Astronomy at the University of Wisconsin.

In 1869 he accompanied an expedition to an eclipse in Iowa and again in 1870 set out to Sicily to another eclipse. He was put in charge of the expedition to Peking, China to observe the transit of Venus in 1874. He discovered 23 asteroids and several comets for which he received the Lalande Medal from the Paris Academy in 1870. In 1867 he was elected to the National Academy of Sciences, to which he bequeathed \$16,000 for a research fund and the Watson Medal, bearing his name.

Among his publications are: Popular Treatise on Comets (1861), Theoretical Astronomy (1868), Tables for Calculation of Simple and Compound Interest and Discount (1879), as well as many others.

Darwin Christy

MORE ON COMET HALLEY

COMPUTED BY JACK EMPSON--

DAY -----(1-31)? 24
YEAR ----(IN ENTIRETY)? 2061
COMET HALLEY

THURSDAY 11 / 24 / 2061 0 HRS (U.T.)

DISTANCE FROM SUN : 1.07 AU
DISTANCE FROM EARTH : .165 AU
ABOUT 15,344,999 MILES

MAGNITUDE .8

RIGHT ASCENSION: 21 HRS. 8.9 MIN.
DECLINATION : 32 DEG. 42.0 MIN.

RISES: 13:02 EASTERN STANDARD TIME
SETS : 20:40 EASTERN STANDARD TIME

(The following is an article by Ellen Hale of the Gannett News Service taken from the Nov. 21 issue of the Utica Observer Dispatch and submitted by John Raymonda.)

IN DAYS GONE BY, COMETS WERE THE 'EVIL STARS'

Mark Twain came in with Halley's comet—he was born during its 1835 appearance—and promised he would go out with it, too. He held to his word, dying in 1910 as Halley made one of its most spectacular showings.

Said Twain: "The Almighty has said, no doubt, 'Now here are those two unaccountable freaks; they came in together, they must go out together.'"

Twain, ill and despaired over the death of his wife and daughter, was yet another coincidental victim of the cosmic courier. Since Halley's visits were first recorded, the comet has been associated with death, war and natural calamities. The word disaster, in fact, derives from the Latin for "evil star."

Not until Sir Edmund Halley decreed that comets were not just surprise visitors to our solar system did his namesake take on a more respectable reputation and become an object of scientific inquiry. Halley, a friend of Sir Isaac Newton, discoverer of the law of gravity, spent 23 years studying comets that appeared in 1456, 1531, and 1607 and the one he himself saw in 1682.

Halley theorized the comets were all one and the same—on 75 and 76-year return engagements—and that it would appear again in 1758. It did, but Halley was not alive to see his prediction come true or to see comets established as official members of our solar system.

Long before Halley or Mark Twain, the comet was considered a harbinger of doom. Its apparition in 1066 heralded the defeat of Saxon King Harold—and his death in the battle of Hastings—in the Norman Conquest by King William the Conqueror. The tragedy (for the English) is displayed in the famous Bayeux Tapestry commissioned by the victor's wife.

In 1456, the comet appeared as an omen for the residents of Constantinople, whose city that year was captured by the Turks in a bloody battle. Halley's was credited with predicting the death of Roman ruler Agrippa, in 11 B.C., with the sack of Jerusalem in 66 A.D. and with Atilla the Hun's defeat in 451 A.D.

A century after Sir Edmund Halley's death, researchers compiled a list of 30 appearances of the comet since 466 B.C. and compared them to recorded history. They found references to Halley in ancient Chinese documents from 240 B.C. The comet's next visit after that was considered "lost" to scholars until last year, when British experts discovered several lines of cuneiform characters referring to the comet's 164 B.C. appearance on old Babylonian clay tablets.

Facts aside, Halley also is alleged to have foretold of many biblical benchmarks, including the death of the philosopher Methuselah in 2616 B.C., of the biblical flood in 2349 B.C. and of the destruction of Sodom and Gomorrah in 1900 B.C.

The scientific credence given this famous visitor by Sir Halley has helped dispel much of comets' evil aura, but even during the last apparition in 1910, some of it persisted. Scientists debated the comet's potential effect on Earth, with some suggesting Halley's tail might mingle noxiously with Earth's atmosphere.

Reported the Boston Herald in a headline: "COMET'S TAIL IS POISON..Astronomers Believe It May Snuff Out Life On Earth."

* * * * *

BOOK REPORT

COMET! The Story Behind Halley's Comet.

by Greg Walz-Chojnacki Reviewed by Fred W. Price.
(Astromedia/Gareth Stevens, 1985)

This little book, one of several spawned by the recent excitement about the return of Halley's Comet, is intended for a juvenile audience and should help youngsters to appreciate the significance of the return of Halley's Comet and comets generally. It is suitable for adults wishing to learn some elementary facts about these mysterious visitors from outer space; I certainly learned something from it. This almost wafer-thin 8 1/4"x11" hardback of 64 pages has over 60 illustrations, many in full color, including photographs, space art, line drawings and charts.

The author is associate editor of Odyssey. Many of the staff of Astromedia Corp. have also had a hand in its creation.

The short Introduction is followed by four chapters on general cometary lore. I was very glad to note here that

the author points out the correct pronunciation of it rhymes with 'valley'. The unpredictability of comets is one cause of the fear they inspired in the ancients, a physical nature and structure of comets, where they come from, cometary orbits and the Oort Cloud Theory are discussed in the first three chapters. Chapter 4 speculates how comets, cometary showers and meteors may affect the Earth. Of course, this includes mention of the 'minor pa' in 1910 when the Earth passed through the tail of Halley's Comet. The Tunguska event—the possible impact of a comet head with Earth, the extinction of the Dinosaurs by the impact of a cometary shower or Asteroid that may have caused widespread climatic changes and ecological disruption and the possibility that 'life' may have been brought to Earth millions of years ago in comets are critically discussed as well as theories about the origin of cometary showers.

The Halley Missions are the subject of chapter 5, the first deal specifically with Halley's Comet. These missions are the U. S. Interational Cometary Explorer (ICE), the two Japanese probes MS-T5 and Planet A, the two Soviet Vegas & the European probe Giotto. These are just the beginning; several others are planned for the future and we are assured that an explosion of information about comets will result from them.

Chapter 6 is about the current return of Halley's Comet. Its brightness and appearance, the best times for viewing and hints about appropriate optical aid dealt with. The author believes that Halley will not be as spectacular as it was in 1910. This chapter is well illustrated with several color star charts showing the comet's position at various times during the entire apparition as seen from both the Northern and Southern Hemispheres.

The last section of the book describes three home projects. The first, entitled 'Build a Comet' (by Mary Algonzin), shows how to make a comet model from cotton wool. When mounted in a box painted inside with black and with a lighted grain of wheat bulb within the 'coma', it gives a realistic simulation of a comet. The next project is about observation of meteors, illustrated by four star charts showing the radiant of the Draconids and Perseids, Orionids and Eta Aquarids (Northern and Southern Hemispheres). The Orionids and Eta Aquarids are associated with Halley's Comet. The parent comet of the Perseids is Swift-Tuttle which should have returned in 1982 but may still be on its way. The Draconids are associated with Comet Giacobini-Zinner which was visible this Fall (1985). Finally, in 'the View of Space' (by Tom Hunt and Francis Reddy), we are shown how to construct a cardboard model of the path of Halley's Comet in relation to the Earth's orbit.

The book concludes with a short index and a shorter glossary.

Much of what is in this book can be found in the issues of 'Sky & Telescope' and 'Astronomy' as well as in elementary textbooks but I suppose it is nice to have it all under one cover for ease of reference. Anyone knowing little or nothing about comets and Halley's Comet in particular could thus acquaint themselves with the basics after an hour or two with this book. It is a handy little guide to the current return of Halley's Comet and will be a nice souvenir of the event. I don't think that the price of \$9.75 is too much for this small but smartly produced and pleasantly written little volume.

* * * * *

1? WANTED ?!

The builder of a five-inch f: 5.0 refractor with alt-azimuth mount would like to recover it. This rich-field telescope was purchased from Mrs. Octavia Black of Camp Sprucelands about ten years ago. Would anyone knowing information regarding the location of this instrument, please contact the editor. (note: This is from a former member of the B.A.A. and wishes to remain anonymous at the present time.)

D.P.C.

* * * * *

Did anyone know the navigational stars???? If not then you will know them after you have read the following list.

OUR CLUB ACTIVITIES IN TELESCOPE MAKING

NAME	DESIGNATION	VIS. MAG.	RIGHT ASCEN.	DECLINATION
Alpheratz *	Alpha Andromedae	2.06	00h 06.3m	28d 52m
Ankaa	Alpha Phoenicis	2.39	00h 24.3m	-42d 31m
Schedar *	Alpha Cassiopeia	2.16	00h 38.2m	56d 19m
Diphda *	Beta Ceti	2.02	00h 41.6m	-18d 12m
Achernar *	Alpha Eridani	0.51	01h 36.2m	-57d 26m
Hamal *	Alpha Areeitis	2.00	02h 04.9m	23d 16m
Acamar *	Theta Eridani	2.92	02h 36.7m	-40d 28m
Menkar *	Alpha Ceti	2.54	03h 00.2m	03d 56m
Mirfak *	Alpha Persei	1.80	03h 21.5m	49d 43m
Aldebaran *	Alpha Tauri	0.86	04h 33.6m	16d 26m
Rigel *	Beta Orionis	0.14	05h 12.6m	-08d 15m
Capella	Alpha Aurigae	0.05	05h 13.7m	45d 58m
Bellatrix *	Gamma Orionis	1.64	05h 23.0m	06d 23m
El Nath *	Beta Tauri	1.65	05h 23.8m	28d 35m
Alnilam *	Epsilon Orionis	1.70	05h 34.2m	-01d 14m
Betelgeuse *	Alpha Orionis	0.71	05h 53.0m	07d 24m
Canopus	Alpha Carinae	-0.73	06h 23.1m	-52d 40m
Sirius	Alpha Canis Majoris	-1.43	06h 43.4m	-16d 40m
Adhara *	Epsilon Canis Majoris	1.48	06h 57.1m	-28d 55m
Procyon	Alpha Canis Minoris	0.37	07h 37.2m	05d 20m
Pollux	Beta Geminorum	1.16	07h 42.9m	28d 07m
Avoir	Epsilon Carinae	1.97	08h 21.7m	-59d 23m
Suhail *	Lambda Velae	2.24	09h 06.5m	-43d 16m
Miaplacidus	Beta Carinae	1.67	09h 12.0m	-69d 33m
Alphard *	Alpha Hydrae	1.98	09h 25.6m	-08d 29m
Regulus	Alpha Leonis	1.36	10h 06.2m	12d 10m
Dubhe *	Alpha Ursae Majoris	1.81	11h 01.3m	61d 58m
Denebola *	Beta Leonis	2.14	11h 47.0m	14d 48m
Gienah *	Gamma Corvi	2.59	12h 13.7m	-17d 19m
Acrux	Alpha Crucis	1.39	12h 24.4m	-62d 53m
Gacrux	Gamma Crucis	1.69	12h 28.9m	-56d 53m
Alioth *	Epsilon Ursae Majoris	1.79	12h 52.3m	56d 11m
Spica	Alpha Virginis	0.91	13h 23.1m	-10d 57m
Alkaid *	Eta Ursae Majoris	1.87	13h 46.0m	49d 31m
Hadar *	Beta Centauri	0.63	14h 01.0m	-60d 11m
Menkent	Theta Centauri	2.04	14h 04.3m	-36d 10m
Arcturus	Alpha Bootis	-0.06	14h 13.8m	19d 23m
Rigil Kentaurus	Alpha Centauri	-0.27	14h 36.9m	-60d 40m
Zubenelgenubi *	Alpha Librae	2.76	14h 48.5m	-15d 50m
Kochab *	Beta Ursae Minoris	2.04	14h 50.8m	74d 19m
Alphecca *	Alpha Coronae Borealis	2.23	15h 33.0m	26d 51m
Antares *	Alpha Scorpii	0.92	16h 26.9m	-26d 21m
Atria	Alpha Trianguli Australi	1.93	16h 44.4m	-68d 57m
Sabik *	Eta Ophiuchi	2.46	17h 08.1m	-15d 41m
Shaula *	Lambda Scorpii	1.60	17h 30.9m	-37d 05m
Rasalhague *	Alpha Ophiuchi	2.09	17h 33.1m	12d 35m
Eltanin *	Gamma Draconis	2.21	17h 55.7m	51d 30m
Kaus Australis	Epsilon Sagittarii	1.81	18h 21.5m	-34d 24m
Vega *	Alpha Lyrae	0.04	18h 35.6m	51d 30m
Nunki	Sigma Sagittarii	2.12	18h 52.8m	-26d 21m
Altair *	Alpha Aquilae	0.77	19h 48.8m	08d 46m
Peacock	Alpha Pavonis	1.95	20h 22.5m	-56d 52m
Deneb *	Alpha Cygni	1.26	20h 40.1m	45d 08m
Enif *	Eta Pegasi	2.31	21h 42.2m	09d 41m
Al Na'ir *	Alpha Gruis	1.76	22h 05.7m	-47d 09m
Fomalhaut *	Alpha Piscis Australini	1.19	22h 55.4m	-29d 50m
Markab *	Alpha Pegasi	2.50	23h 02.8m	14d 59m

(*) Denotes Arabic name.

BAA DIRECTORIES

THE NEW 1985-86 BAA DIRECTORY WILL BE AVAILABLE AT THE FEBRUARY 1986 MEETING. IF YOU HAVE NOTICED AN ERROR OR WISH TO ADD ADDITIONAL INFORMATION ABOUT YOUR INTERESTS, EQUIPMENT, ETC. TO THE PRESENT LISTING, PLEASE CONTACT AL KOLODZIEJCZAK BY THE JANUARY MEETING. ALSO, YOU MUST HAVE PAID YOUR 1985-86 DUES BY THE JANUARY MEETING BE INCLUDED IN THE NEW DIRECTORY.

Some of our club members have created and have been spreading the myth that telescope making by our BAA members is dead. Interest and activity is in fact just as much, if not more than ever before, in the 55 year history of the club. The following are some examples that I have come across in recent years while having conversations with members.

Recently built telescopes are 18 & 22 $\frac{1}{4}$ inch Dobsonians by Larry Carlino, a 20 inch Schmidt-Cassegrain by Miro Catipovic, an 18 inch Dobsonian by Tristan Dilapo, and an 18 inch Alt-azimuth by Mike Idem. Also a 10 inch Dobsonian by Steve Krickovich, a 12 inch Equatorial by Dan Marcus. Bob Mayer is constantly involved with many telescopes of all types and sizes. The largest is a 26 inch Dobsonian as well as a small 3 inch Refractor by Paul Noye.

Now in progress is a 16 inch Schmidt-Cassegrain by Miro Catipovic, a 26 inch Dobsonian by Tristan Dilapo and another by Al Kolodziejczak; also Carl Milazzo and one by Adrienne Morris. A 4 inch Solar Telescope by Ken Kimble, a 4 inch Folded Refractor by Bill Owens and an 8 inch Reflector by Jim Russell.

In the planning stages are an 18" Dobsonian by Jim Dow, another by Brian Fallon and an 8 inch telescope by Bob Hughes. There are likely many others active in building that telescope that I haven't come across as yet. Telescope making is likely to continue to be an important part of astronomy locally for at least the near future because of its many advantages.

Carl Milazzo

(Ed's note; Anyone interested in telescope making should contact either Ed Lindberg or Carl. Perhaps this group could get started again with much interest!!!!)

With a field of view of 2/3 of a degree, telescopically the following Messier objects can be viewed simultaneously. M-17 & M-18, M-31 & M-32, M-42 & M-43, M-59 & M-60, M-65 & M-66, M-81 & M-82, M-84 & M-86, also M-85 & M-96.

*** OBSERVATIONS ***

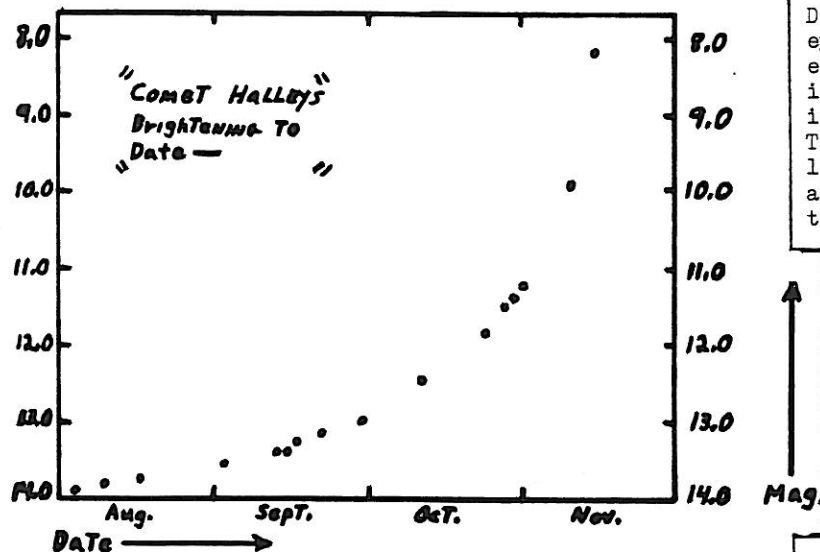
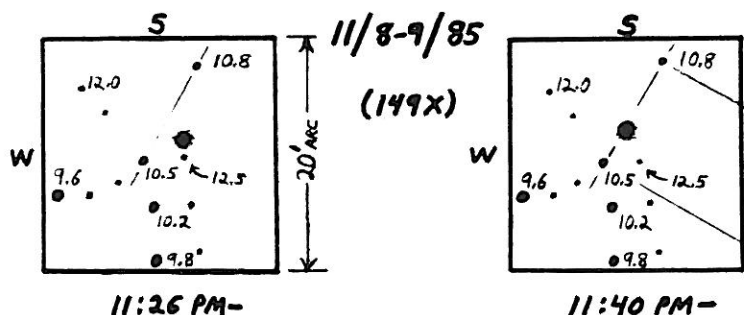
On November 20th at 9:15 PMEDT I did finally observe Comet Halley which was located at R.A. 03h 01m and at Declination +20° 35m. It was about one degree south-south-east of Epsilon Areeitis. This was my first encounter with Comet Halley since late in September when it was passing through the constellation of Orion. In September I used my 12.5 inch telescope to observe it, but this evening I was able to use my 10 x 50 binoculars. It is still, from my observing site, invisible to naked eye observation due to light pollution plus an eight day gibbous moon. No tail was to be seen at this time.

Darwin Christy

October 11-12 I observed the same -7th magnitude meteor as reported by Rowland Rupp in the last issue of the Spectrum. In my case the meteor, as seen from Beaver Meadow, was 20° above the horizon. Combining this with Rowland's observation of 30° altitude and then further assuming similar azimuthal coordinates a burn-out height of very roughly 32 miles can be estimated.

October 28-29 I observed Comet Halley as it glided through the field of M-1, the Crab Nebula. Of the two, the Crab Nebula was easily the larger and brighter at 6' x 4' arc and magnitude 8.7. In comparison the comet looked to be 1.3' x 1.3' arc in apparent extent and only magnitude 11.2. For the same night Sky & Telescope magazine had predicted a magnitude of about 9.0. Thus Halley's Comet remains somewhat below its anticipated brightness.

November 7-8 Halley's Comet is now brightening with increasing rapidity, tonight it is estimated at magnitude 9.8. This is 1.5 magnitudes brighter than just twelve nights before. This represents a mean increase of 0.125 magnitude per night. Comet Halley is now just visible in 10 x 50 mm tripod mounted binoculars! Visually 2.0' x 2.0' arc in visual extent. A bright, compact, nucleus is now present, 0.3' x 0.3' arc in extent, not quite stellar. The outer coma is still very diffuse and ill-defined. Comets motion is very apparent in just 10 minutes time, nearly 0.1' arc per minute. Very easy sight at 149x.



November 14-15 Comet Halley is now brightening at a rapid rate, seemingly almost asymptotic in character. Tonight it looks to be of magnitude 8.2, an easy sight in binoculars. The comet now lies in the same 7° diameter binocular field as does M-45. Even at low power looks to be of 3.0' x 3.0' extent. Strongly condensed to a compact nucleus of approximately 0.3' x 0.3' diameter. The comet's daily motion now exceeds 2°. Movement is detectable in only two minutes. Presently Comet Halley is only 0.8 magnitude below its predicted brightness and quickly catching up!

November 17-18 Halley's Comet has increased in brightness to an amazing degree in just the past few nights. This night it looks to be magnitude 7.0, a very easy finder-scope object and, in fact, just visible to the naked eye under dark country skies! In binoculars easily 6.0' x 6.0' arc in visual extent. An almost stellar 'nucleus' is seen imbedded in a strongly condensed inner coma, 397x. Once again no tail was detected. Clearly Comet Halley has caught up with its brightness predictions.

arc in visual extent. An almost stellar 'nucleus' is seen imbedded in a strongly condensed inner coma, 397x. Once again no tail was detected. Clearly Comet Halley has caught up with its brightness predictions.

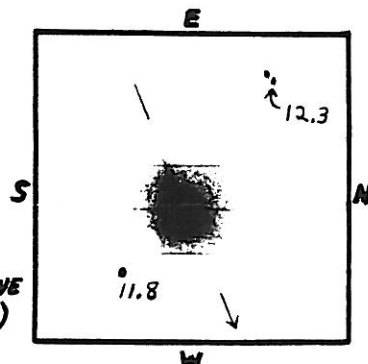
November 20-21 Comet Halley now appears slightly asymmetric in outline, still spherical in shape but the nucleus is somewhat shifted toward the comets western quadrant. The surrounding gas envelope is now 7.0' x 7.0' arc in extent, the nucleus being offset westward by a ratio of 3/4. Although quite drowned-out by moonlight, the comet now looks to be magnitude 6.2! An almost star-like, 0.2' diameter nucleus is present, this nucleus alone is about magnitude 9.9. At 10:32 PMEST the comet lies within the same 1° diameter field as does the naked eye star Epsilon Arietis. Halley's Comets motion is evident at 152x in but only one minutes time.

HALLEY'S COMET
152X...

20'DIA. FIELD

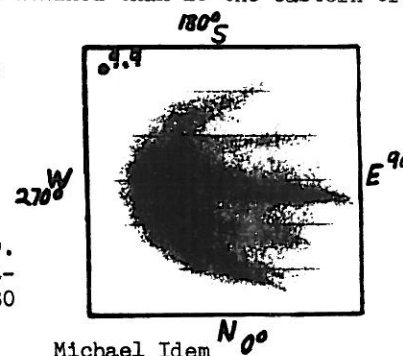
10:32 PM, EST-

(NOTE: FAINT SPINE
PROJECTING EAST)



November 21-22 comets haven't been the only objects of interest this month, tonight I observed the dwarf nov 'SS' Aurigae at maximum light, magnitude 10.8. Just two nights before it was at minimum light, magnitude 15.1. Two nights later a still more erratic dwarf nov 'RX' Andromedae was also found at maximum light. After having idled at magnitude 12.3 through-out October it would appear that this star has once again returned to its wild explosive ways.

December 7-8 Comet Halley has now been visible to the naked eye since the night of November 14-15 but tonight it is easily visible even with direct vision, estimated magnitude is 5.5. Much internal detail is now visible. Most striking is a narrow jet seen projecting eastward from the nucleus. The outer envelope is now decidedly oval in outline and like the jet, has its major axis lying roughly east-west at position angle 80° - 260°. The leading or western portion of the coma is better defined than is the eastern or trailing envelope. The nucleus is now still more off-set toward the west of the surrounding nebular glow, although the actual nucleus is now seen, the central intensity peak is 0.2' x 0.2' arc and shines at magnitude 8.9. At 211x the comet's motion is obvious in but 30 seconds of time.



Michael Idem

My 20th comet observation happened to be Halley's on September 14th in Orion at Beaver Meadow with the 12 inch telescope of our club. It was of a magnitude +14, which is 2 magnitudes below prediction, and it's coma was 15 arc seconds in size. The night before there was an aurora of moderate brightness extending 10 degrees above the northern horizon. At times it formed faint rays reaching as high as 30 degrees.

On October 11th, Halley's Comet was +12 magnitude with core of medium surface brightness and a coma of 1 arc minute in size. Also that night Comet Hartley-Good - 1985 I was seen in binoculars 5 degrees from Jupiter, with a 7.6

magnitude, 7 minutes of arc in size coma of medium surface brightness in Capricornus. This comet will reach a maximum in brightness of 6.5 on December 5th in Hercules near the border of Ophiuchus. Near the comet is the double star HL-47 which consists of a pair of yellow 8th magnitude stars separated by 3.7 arc seconds.

Carl Milazzo

For the first time Halley's Comet was seen with my 10 x 50 binoculars as a fuzzy patch on November 17th. It was 6° west of the Pleiades Star Cluster in Taurus. With my 5 inch f:4.2 refractor it showed a 1/4° coma of 7th magnitude and w with a star like nucleus.

My first naked eye sighting of Halley's Comet was on December 3rd in Pisces as a 1/4° fuzzy patch of magnitude 5.3 and with binoculars its coma appeared 1/2° in size. I also observed it again on December 14th.

Carl Milazzo

?! ? SPY & TELL ?! ?

On his way back from New Jersey in late October, Bob Mayer stopped off at Alfred and toured the observatory complex, and met the director. The observatory has a 10" refractor; 14", 16" and 20" reflectors; a 29" under construction; a 4" solar telescope; a photometer, spectrograph, and a cold camera. There are four domes.

Robert Hughes is secretary of the Niagara Frontier Boat Racing Association, a position he has held for the last year.

He is also a ham radio amateur operator in a conducting network which meets on Thursdays at 8 P.M. on Grand Island. The club is called the Buffalo Amateur Radio Repeater Association (BARRA). The club members listen on a scanner at 146.73 MHz. They receive astronomical information, updates on Halley's Comet, space shuttle news, and solar reports. Bob has given talks before BARRA, and is giving a talk in Batavia on January 17th to the Genesee Amateur Radio Association on astronomy and amateur radio.

Doris Koestler was one of our members who spotted Halley's Comet last fall. She saw it through her 6" reflector on a very clear night while she was out at a trailer campground between Alden and Attica.

Gil Brink appeared on Channel 7, speaking on Halley's Comet.

In November, there was a feature article in the UB campus newspaper which was a combination of comments on Halley's Comet and the 20" telescope given by Miro Catipovic to the university, accompanied by pictures and descriptions.

When Jerry Morris goes on a singing engagement with the Amherst Glee Club, Adrienne skips out during rehearsals to see if there is any astronomy going on in that area. In October, when the glee club went to Kitchener, Ontario, Adrienne visited the observatory belonging to the Kitchener-Waterloo Club. They have a 14" Newtonian out in the country. An interesting feature of the dome is that there are 3/4" to 1" nuts around the observatory rim which allow the whole dome to turn like a giant gear.

When the glee club went to Binghamton in November, Adrienne visited the public Vestal Observatory in a neighboring town where they have two domes, a 12" Cassegrain, a 12" Newtonian and a solar observatory.

Gene Witkowski works with, and is a consultant to, a local inventor, Dick Iseman. Mr. Iseman is working on a bicycle transmission. They look at various designs and generate their own ideas to solve a problem. They are making progress. Mr. Iseman has several inventions to his credit. One, a precision bearing roller skate, Microstar, is on the market.

Mark Schmidt owns his own business, Major Muffler, in Attica, where they do complete mechanical repair work on cars. Congratulations to his wife, Caroline, who just graduated from UB as a pharmacist.

Carl Milazzo has been a speaker on Stellafane, astro-

photography, and telescope making before the following groups: BAA, Rochester Academy of Science, Astronomy Section; Lockport Astronomical Association, RASC-Niagara Centre, and the UB Astronomy Club.

Fred Price went home to "Merry Old England" for the holidays. His mother has not been in good health of late. We hope her condition will improve soon.

On December 1st, an article appeared in the Buffalo News entitled "Comet Frustrates Backyard Astronomers." A picture accompanying the article showed Ken Biggie, Marillo Bekak and Mark Schmidt at our Beaver Meadow Observatory.

Walt Whyman is coming along nicely, showing steady improvement. He is no longer in the hospital, but is in a nursing home. He has been home several times, one was on Thanksgiving. He walks well with a cane and some assistance, and has been for a ride in a car. We wish him continued progress and hope he will be back with us before too long.

Correction: In the November-December issue of the Spectrum, the Spy and Tell column should have stated that it was Adrienne Morris, not Jerry, who went to Beaver Meadow on September 14th to view Halley's Comet with Michael Idem and Carl Milazzo.

Edith L. Geiger

MEETING NOTICES

JANUARY Meeting: Our general meeting will be on Friday the 10th at 7:30 PM (SHARP!) in the Buffalo Museum of Science. The program will be about all and everything involved with "Telescope Making", from choosing the best design to fabricating techniques.

The Following members will be briefly telling their experiences with the many types of telescopes. The speakers are to be Bob Mayer, Ed Lindberg, Miro Catipovic, Matt Kantar and Carl Milazzo.

They will be showing slides, actual examples, working scale models and giving their advice. Some of the things they will be talking about are- how to decide on what kind of a mount; how to make optics; what types of materials to use from wood to aluminum to composites like fiberglass and graphite; what focal length and ratio is best; what kind of aluminized mirror coating to get and from where; focuser finders, secondary mounts and primaries can be gotten. Making refractors, baffeling, remedies for dewing, spiders, clockdrives, types of tubes etc...

FEBRUARY Meeting: Our general meeting will be on Friday the 14th at 7:30 PM (SHARP!) in the Buffalo Museum of Science. The program will be an illustrated talk about the night skies of the Southern Hemisphere from New Zealand.

The speaker is Dr. Zoram Pazameta from the Astronomy Department of the University of Buffalo. He grew up in Christchurch, New Zealand and was an amateur astronomer as well as an active observer. In January he will return to visit friends and family; also to observe the stars in the Southern Hemisphere and the famous Halley's Comet.

MEMBERSHIP DUES

FAMILY - \$ 15.00
REGULAR MEMBER - \$ 10.00
STUDENT - \$ 5.00
SENIOR - \$ 5.00
SUBSCRIPTION ONLY - \$ 4.00

PLEASE MAKE PAYMENT TO CLAUDIA BIELINSKI
5450 CLINTON ST., ELMA, N. Y. 14059 -- OR TO
JOHN RAYMONDA, 80 A FOXBERRY DR., GETZVILLE,
N. Y. 14068 -- OR TO EITHER OF THEM AT ANY
REGULAR MEETING.

CHANGE OF ADDRESS

CHANGE OF ADDRESS --- If anyone is about to change their address, please contact Claudia Bielinski of such change. This will insure you of getting your "Spectrum" on time or prevent it being returned to the editor.

* * * * *

OBSERVATORY REPORT

A new type of door lock was installed in late December because of a problem of freezing and thawing and the ground shifting the foundation.

Our club's Beaver Meadow Observatory was in the news lately. A $\frac{1}{4}$ page story in the Buffalo News of the Observatory's 12 inch telescope. Gathered around it were Ken Biggie and Marylou Bebak with her binoculars and also Mark Schmidt with his Meade 8 Scope. The Observatory was also mentioned in Terence Dickinson's astronomy column and in the family section of Gusto. Unfortunately the weather has been the worst in history, instead of getting the normal 3 inches of precipitation, we have gotten $9\frac{1}{2}$ inches.

John Yerger gave another talk to a group about Halley's Comet and donated \$25.00 to our club's Beaver Meadow Observatory. And as always, more volunteers are needed to do public nights. Also extra helpers with a portable telescope to show Halley to the public. The more volunteers, the less work for each of those concerned.

Carl Milazzo, Director

* * * * *

ANCIENT CONSTELLATION

"SCEPTUM BRANDENBURGICUM", the Brandenburg Sceptre, became charted in 1688. Gottfried Kirch, the first astronomer of the Prussian Royal Society of Sciences, is said to have been the first to record it. Over a century, thereafter, it was published by Bode who rescued for a time before it went into oblivion. It contained only four stars of 3rd and 4th magnitudes. They were seen standing in a straight line from north to south just below the first bend in the River which is west of Lepus.

The Chinese had given to it three more stars which included Mu, Omega and b Eridani.

Darwin Christy

JANUARY CONSTELLATION

"ORION", the Giant, the Hunter and/or the Warrior is the constellation of the winter months. It is bordered on the north by Taurus and Gemini; on the south by Lepus and Puppis; on the east by Monoceros; and on the west by Taurus and Eridanus. There is not enough room in the newsletter to write all that there could be written about Orion, but the many splendors will follow in short form.

A few Open Clusters include; NGC's 1981, 2141, 2169, 2112, 2175, 2186 & 2194. There are many Diffuse Nebulae including; NGC's 1788, 1973, 1975, 1976 (M-42) The Great Orion Nebula, 1977, 1980, 1982 (M-43), 1999, 2023, 2024, 2064, 2067, 2078 (M-78), 2071 & 2174. I,430, I,431, I,432, I,434, I,435, & I,2162 and----many others which have not been numbered. Planetary Nebulae are: NGC 2022 & J320. One Dark Nebula known as the 'Horse-Head Nebula' lies near the star Zeta Orionis.

Double Stars include 9, 14, 30, 31, 32, 33, 42, 45, 59, 75, Alpha, Beta, Delta, Eta, Iota, Lambda, Mu, Phi, Rho, Tau, Theta-1, Theta-2 & Zeta....Variable Stars are P1, Alpha, BG, CK, Delta, Eta, FU, KX, NU, U, V351, V352, V359, V372 & W.

FEBRUARY CONSTELLATION

"MONOCEROS", the Unicorn which is next to Orion could also be a winter constellation. Also this constellation is one of the newer ones and thus has no interesting legends connected to mythology. It is bordered on the north by Canis Major and Gemini; on the south by Canis Major; on the east by Hydra; and on the west by Orion.

Because the Milky-Way runs through the middle of Monoceros, many objects of interest are found within the boundaries. Open Clusters include NGC's 2215, 2236, 2244, 2251, 2259, 2262, 2264, 2286, 2301, 2302, 2309, 2311, 2323 (M-50) 2324, 2335, 2353, 2506 & Mel-72. Diffuse Nebulae include NGC's 2149, 2170, 2182, 2183, 2185, 2237, 2238, 2239, 2246, 2247, 2282 & 2327; also I,446, I,448, I,466, I, I,2167, I,2169, and I,2177.

Double stars include 2, 15, 24, Beta, Delta, Epsilon, Gamma, Zeta. Variable stars are AX, BT, GI, GY, IM, RR, RT, RV, RX, SU, SV, SX, T, TT, U, V, & X. Other objects of interest are the Conus Nebula at R.A. 06h 40m Dec. $+9^{\circ} 25m$; the Rossetta Nebula at R.A. 06h 30m Dec. $+4^{\circ} 20m$; also Hubble's Variable star (nova) at R.A. 06h 37m Dec. $+8^{\circ} 20m$. Two other Nova are N-1918 and N-1939 ----GOOD OBSERVING----

* * * * *

ASTRONOMICAL HAPPENINGS

SOLAR: The Earth will be at perihelion with the Sun on January 2nd. It is gradually giving us more day-light as it heads North-ward to Summer Solstice.

LUNAR: The phases of the Moon for January and February are
Last Quarter Moon - January 3rd & February 1st

New Moon - January 10th & February 8th

First Quarter Moon - January 17th & February 16th

Full Moon - January 25th (the Wolf Moon)

February 24th 9th Cold Moon)

Lunar-Planetary Conjunctions:

Mars - January 5th & February 3rd

Saturn - January 5th & February 3rd

Mercury - January 8th

Uranus - January 8th & February 4th

Neptune - January 8th & February 5th

Jupiter - January 12th

Planetary Conjunctions:

Mercury & Neptune - January 3rd

Mars & Saturn - January 17th

Cometary:

Halley's Comet at Perihelion - February 10th

Man-Made Fly-Bys:

Voyager II will encounter Uranus - January 24th

METEOR SHOWERS:

Quadrantids - January 3rd *****

Delta Cancrids - January 16th

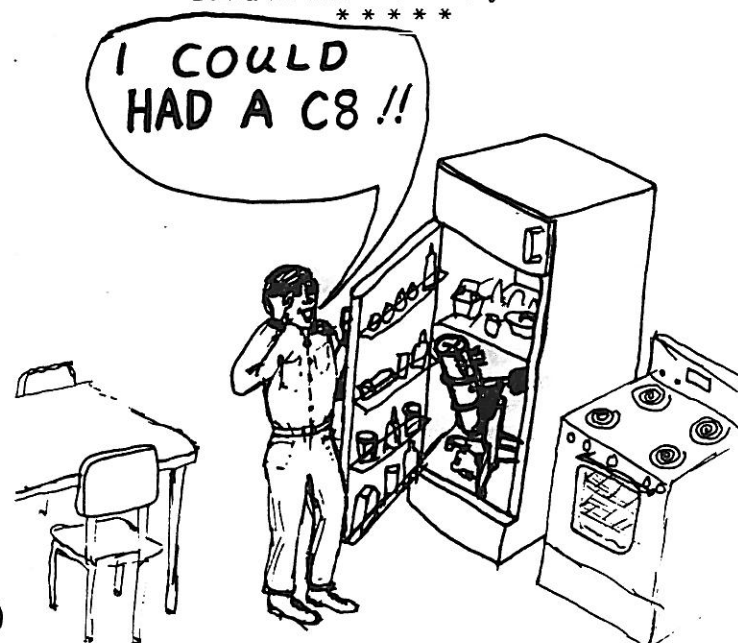
Kappa Cygnids - January 17th **** (Fire-Balls)

Coma Berencids - January 17th

Aurigids - February 9th ****

Delta Leonids - February 26th

* * * * *



CREATED BY JERRY MORRIS AND DRAWN BY CARL MILAZZO

ONCE IN A LIFETIME

Here it comes again--that pitch for a "ONCE IN A LIFETIME OPPORTUNITY". When Halley's Comet seemed to be coming even dimmer than predicted, ignoring the pitch may have seemed like a smart decision. Now that it's brightening--well maybe it's time to reconsider. If you're thinking of going somewhere to see the comet during the best windows--in March and April--consider these possibilities:

1. A Caribbean Cruise, March 15 to 22, sailing as far south as Caracas Venezuela, from which the comet will be better than 30 degrees above the horizon. (Other ports of call include: San Juan, Curacao, Grenada, Martinique, and St. Thomas.) Cruise accommodations include all transportation, meals, etc., and start at \$1165 per person for the 7 day cruise. A SPECIAL FEATURE OF THIS HALLEY'S CRUISE IS THE OPPORTUNITY TO SEE THE WORLD'S LARGEST RADIO TELESCOPE AT ARICEBO, PUERTO RICO. Jim Orgren, from Buffalo State, will serve as ship-board astronomer on this cruise.
2. A bus trip to South Florida, March 28-April 6 (the April window opens April 2; Easter is March 30). The first part of the week (before the Halley window opens) will be spent in the Orlando area, near Disney World and the EPCOT Center. Wednesday will include a visit to the Kennedy Space Center. The latter part of the week will be spent on Key Largo, near one of the best viewing locations in the eastern U.S. for the April Halley window. The cost of this trip is \$310, which includes all transportation and four-in-a-room motel accommodations. Doubles will be available at additional cost. For a three day Disney World pass, add \$50.

For further information on either of these Halley trips, contact Jim Orgren at 878-5005 or leave a message at 878-6731. Evenings between 7 and 9, call 688-4584.

+++ NEW MEMBERS +++

Let us welcome the following new members. It is good to increase our membership, that more people might learn or hand down to the older members their views on subjects pertaining the ASTRONOMY.

NICHOLAS & KAREN CAVARETTA
THOMAS J. LONCTO
DONALD M. MAGOR
JERRY W. SILVERSCHATZ



If you have ever wondered what this logo is that you see on Subaru cars, below is an excerpt from their literature:

Subaru is the Japanese name for the Pleiades cluster in the Taurus Constellation. It is composed of six stars named Alcyone, Celaeno, Electra, Maia, Sterope and Taygeta, after the daughters of Atlas in Greek mythology. These six stars represent the six companies which merged to form Fuji Heavy Industries, Ltd. (The parent company of Subaru) The name Subaru was chosen as the brand name and the six stars as the symbol of our compact family car for the millions.

Steve Kramer

ANNIVERSARY

It was noted that in December 1975 the beginning of the Beaver Meadow Observatory took shape. This past December, therefore, marked the anniversary of the complex. It is also believed that the first real observations were made two months later in February 1976.

MANKIND'S COMET by Guy Ottewell and Fred Schaff: Halley's Comet in the past, the future, and especially the present. If you ordered a copy, it has not arrived. It was expected to be back from the printer on December 16th and to arrive late in the month to those who ordered.

Steve Kramer

RAINDROPS will NOT form in perfectly unpolluted air. We are thankful to have the unwanted POLLUTION aren't we ????

During the Big Bang, there were 27 dimensions to the Universe when it was dense hot and energetic; today it is down to 11 dimensions.

Am told that one hundred million million neutrinos shoot through your body every second... FELL ANYTHING ?

If you hear, "5, 6, 7, 8" on your short wave radio, report it immediately to the U.S. Government. The scientists have broadcast, some time back, "1, 2, 3, 4" into outer space and have been awaiting for some logical reply.....

NFCAAA FALL MEETING

The fall meeting of the NFCAAA was held on Saturday, November 9th at the Skylon Tower in Niagara Falls Ontario, Canada. There were about 75 attendees from 8 area societies.

The director of the National Museum in Ottawa gave us a interesting slide presentation on the museum's exhibits and educational tours and programs. They have several buildings with an extensive series of exhibits of scientific and historical interest.

We enjoyed a pleasant social evening with a very fine Buffet Dinner.

An invitation was received from the Toronto Society to come there for the Spring Meeting. They have it planned for Saturday, May 24th, 1986. This date coincides with the U.S. Memorial Day week-end. They have an interesting afternoon and evening program planned.

Ed Lindberg

MARCH - APRIL 1986
SPECTRUM DEADLINE
FEBRUARY 22ND

SEE IN THE DARK!

It takes about 40 minutes for your eyes, if normal, to adjust fully to the dark. After one minute, they're 10 times more sensitive to images than they were in bright light. After 20 minutes, 6,000 times more sensitive and after 40 minutes, 25,000 times more sensitive. Unfortunately we do not have that dark of sky to try out the theory.

OBSERVING METEORS?

What you will need to observe Meteors are: A good Star Atlas - a piece of plastic sheet - a marking crayon or grease pencil - a small pad - some pencils or pens - a clip board - a tape recorder - a piece of string about two feet long - a flashlight with a red filter - an angular measuring stick - a comfortable lounge and electric blanket and finally a fairly good knowledge of the Heavens.

Why all of these things ???

A good Star Atlas such as Norton's is vital to draw the trajectory of a meteor. A record which you could keep for further meteor watches of this shower. The plastic sheet is used in conjunction with the Atlas. By placing the plastic on the map, you can draw the path the meteor makes without writing directly on the map. What to write with is another item, the marking crayon or grease pencil. Because plastic is not easily written on, these two tools will trace a line on the sheet of plastic. These first tools will allow you to make a permanent record.

A small pad or some paper is always a thing to keep records on of what you saw. The clip board is an easy portable desk to keep the pads on for writing. This also means one must have either a pen or pencil. I prefer a pencil as a pen could freeze up in the winter months. A flash light is now needed for you to see what you are writing. Of course you must have a red filter in it to allow your eyes to stay accustomed to the darkness.

A short piece of string, perhaps two or three feet long, to sort of measure out where the meteor's trajectory was. By stretching it out across the field of stars where it streaked, you can determine more accurately its path. Should you wish to verify the number of degrees it may have traveled, an angular measuring stick would be handy. These can be made easily, although their use could be somewhat cumbersome.

If you own one, a good tape recorder would be ideal. In recording such an event as meteor showers, you simply record on tape verbally, the meteor, its magnitude, angular trajectory, the stars it passed through, the speed and many other aspects of the event. Too, this is one of the best ways to keep a permanent record for future use.

A comfortable lounge or reclining chair is used to lay back for ease to observe meteors. It is a lot better than to use this mode of observing than to stand or even sit up with your neck stretching out of shape. All of this is fine for summer....but in winter we must prepare for the cold. That is why it was mentioned to have an electric blanket. Use a sleeping bag which is warm enough except when the temperature goes down below "ZERO".

Last----the good knowledge of the Heavens. This would enable you, at a glance, the names of the stars passed by, by the meteors; also the constellations and radiant of the meteors. With this--- I say, "Happy hunting & Good Luck!"

Darwin Christy

MEETINGS

WILL BE HELD AT THE
MUSEUM OF SCIENCE
HUMBOLDT PKY, BUFFALO!
JANUARY THROUGH JUNE

If you are a Taurus, your lucky color is BLUE - - or say the 'Star-Gazers'.

ACKNOWLEDGEMENTS

Edith Geiger
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Steve Kramer

* THE SPECTRUM *

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