



the Spectrum

BUFFALO ASTRONOMICAL ASSOCIATION INC.
BUFFALO MUSEUM OF SCIENCE
HUMBOLDT PARKWAY
BUFFALO NEW YORK 14211

Editor: Ernst E. Both

NOVEMBER - DECEMBER 1975

NOVEMBER MEETING: Friday, November 14, 8:00 p.m., Club Room, Buffalo Museum of Science. Our featured guest speaker will be Mr. Kenneth Brown of the Rochester Astronomical Society. His topic will be "Why Not an Armchair Astronomer." This promises to be a little different than some other topics we have explored in the past - we are looking forward to an interesting presentation and welcome with pleasure Mr. BROWN!!!

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DECEMBER MEETING: December 12, 8:00 p.m., same place as above. Reverting to an "old" tradition, we again are looking forward to a double presentation, followed by the annual Christmas Party (Winter Solstice Party, if you prefer) complete with cake, coffee, tea, and socializing. For the first part of the program we have Ed and Olga Lindberg in an illustrated talk on "Astronomical Clocks and Time Pieces," followed by Edith Geiger's ever-popular look at "Lunacy Unlimited" which portrays the (pictorial) lighter side of our B.A.A. Don't miss this star-studded cast and presentation!!! HAPPY HOLIDAYS *****

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METEOR SHOWERS FOR NOVEMBER-DECEMBER, by Darwin Christy

One of the major showers, the Northern Taurids, should be quite spectacular on the morning of November 10 with the quarter moon well down to help observations. The Mu Pegasids on the 11th are followed closely by the favorable shower of the Arietids on the 12th. Soon after come the Bielids and then, on the 16th (when the moon approaches full phase) the famous Leonids (spectacular showers in 1799, 1833, 1866, 1966). November 28th finishes the month with the Andromedids (famous showers of 1872, 1885).

In December get ready for some beauties on the 13th, for the Twins are going to really throw them at us, the Geminids (from near Castor, maximum lasting from December 10 to 13). The near full moon will obliterate the Ursids on the 22nd.

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TOTAL ECLIPSE OF THE MOON: will take place in the early evening hours of Tuesday, November 18, 1975. The already eclipsed moon will rise at sunset (around 5 p.m. EST) (actually totality starts at 5:03 p.m.) with mid-eclipse occurring at 5:23 p.m. The total phase ends 21 minutes later, and the moon will leave the umbra at 7:08 p.m. As usual, the Museum's Kellogg Observatory will be open to the public from 5:30 to 7:00 p.m. on the night of the eclipse. There will be no eclipse of the Moon visible in our area during 1976 - so if you have not seen a lunar eclipse recently, come to the Museum.

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PHILHARMONIC POPS CONCERT: We would again like to participate, as a group, in one of the upcoming Pops concerts to benefit the BAA Observatory at Beaver Meadow. This year's tickets sell for \$ 5.00, and for each ticket sold, our organization will receive \$ 1.25. We are considering the following dates: March 12 (Arthur Fiedler); April 2 (PDQ Bach); April 30 (Rodgers and Hammerstein). More information at the November meeting.

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NEW MEMBERS: We welcome into our ranks Miro Catipouic, Richard G. Miller, and Alfred M. Ricciuti, who joined the BAA in October.

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THE OBSERVER'S HANDBOOK for 1976 will be available at the December meeting (\$ 3.00)

"The Largest Telescope on This Side of the Atlantic" - 1838. By Ernst E. Both

There are a number of books which eventually should be written - among these I would like to see a "History of Amateur Telescope Making in America." Such a book would surely contain more than a passing reference to the "largest telescope on this side of the Atlantic," a reflector of the Herschelian type with an aperture of 12 inches and a focal length of 14 feet, built in 1838 by two students of Yale College, Hamilton L. Smith and Ebenezer Porter Mason (1819-1840). It was indeed, at least for a short time, the largest telescope in use in the United States. In gathering snippets of information from a variety of sources, one can reconstruct a fascinating picture of amateur telescope making some 137 years ago.

Apparently the only reflectors made in America at that time (other than amateur efforts), were those of the Herschelian type (where the image is viewed at the corner of the front end) made and sold by Amasa Holcomb (1787-1875), a self-taught pioneer who started to make reflectors around 1826 and began selling these commercially around 1830. A price list of his reflectors available in 1842 includes these:

4 inch,	5 ft.,	4 eyepieces with powers	40 - 300 X	\$ 100.-
6 "	7½ "	5 "	" "	40 - 600	250.-
8 "	10 "	6 "	" "	60 - 800	400.-
10 "	14 "	6 "	" "	100 - 1000	600.-

We have the following testimony by E.P. Mason of the performance of a 6½-inch Holcomb reflector:

"With the instrument referred to (6½-inch, 7½-ft. Herschelian), xi Librae and zeta Bootis have been often and easily separated, and zeta Cancri well elongated. A rare night early in 1838, showed gamma Virginis and lambda Ophiuchi notched on either side, pi Aquilae was pronounced a very easy star, and Saturn's ring was seen double nearly throughout its visible portion. 36 Andromedae is also within the reach of the instrument ... and since on referring to European observations, we find that few or none of their telescopes of equal focal length are competent to resolve closer test-objects than these, we are thus enabled to decide on the great excellence of Mr. Holcomb's instrument."

But to return to the "largest telescope." Guided by Mudge's "Treatise on Making Speculums for Telescopes" (a book unknown to me; remember the mirrors of those days were still made of speculum metal), Smith and Mason first tried their hands on a six inch reflector. Their experiences are reported by Denison Olmsted (1791-1859), Professor of Natural Philosophy and Astronomy at Yale College:

"They procured the raw materials, obtained a mould, and did their casting in their anthracite stove, protracting their labors to a late hour of the night, after the lessons of the day were completed. Re-melting their first compound and pouring it into the mould, they were so fortunate as to produce an excellent cast. In about a week, by employing every moment of time they could get, and laboring alternately, they succeeded in making their tools, and in grinding down the rough casting. They next procured a hone, cemented it to a block of wood, and turned it to the proper shape to fit the guages, and with this commenced giving their speculum the requisite figure. 'At length (says Mr. Smith) the momentous time arrived for the polishing. With a degree of trouble and caution we often laughed at afterwards, we formed the polisher of pitch, and set it aside to cool. We were obliged to work chiefly by night, as our college studies required our unremitted efforts during the day. After a hasty supper, therefore, we commenced the labor of polishing. The polishing powder used was the red

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~~U E T H U B A N A L L E P A C R R~~

WONDER-WORD Puzzle by Darwin Christy.

How to do the puzzle: The Words are in all directions - vertically, horizontally, diagonally, forwards, and backwards. CIRCLE EACH LETTER of a word found and copy that word on another sheet to keep a record of the words discovered. The letters are used more than once, so do not cross them out. When you have found all the words, you will have a number of letters not yet circled out. Copy these letters down in order and you will discover the theme of the puzzle.

This puzzle contains fifty-seven (57) words which are names of stars; the theme word contains fourteen (14) letters.

For those who do not get the puzzle, the theme word will be revealed at the December meeting and the 57 words will be published in the next issue of the Spectrum. For the first person who can give me the right answer by the November meeting, I will donate ten dollars (\$ 10.00) to the observatory fund. Only five dollars (\$ 5.00) if it is solved by the December meeting. No fair by the January meeting oo.

~~CPKADGBIRDEXNRAS~~
 ZHEMUSCIDA KROINDH
 COOSMTA ~~DE~~ ~~EX~~ ARIA
 DOUEUAT ~~ED~~ ~~CT~~ ~~EH~~ ~~YH~~
 EKERNSTLAOLHCOPRA
 EHUAATELOAGROCDLR
 OSBTRRFPRAOAAAKNA
 KPLNIIDENEERPSANAZ
 UHPANUSGOUNGBRTTI
 RITULE ~~PT~~ ~~AG~~ ~~IY~~ ~~HO~~ ~~AN~~
 C ~~N~~ ~~A~~ ~~T~~ ~~H~~ ~~A~~ ~~C~~ ~~L~~ ~~A~~ ~~N~~ ~~O~~ ~~N~~ ~~E~~ ~~I~~ ~~B~~ ~~A~~
~~A~~ ~~M~~ ~~E~~ ~~S~~ ~~H~~ ~~E~~ ~~C~~ ~~L~~ ~~E~~ ~~T~~ ~~E~~ ~~S~~ ~~T~~ ~~L~~ ~~E~~ ~~N~~
 IAGEMOERIBLAAANI
 HRSALHAGUEHBUBSD

One fascinating story that could be told is the relationship between the telescope maker and /or observer and his/her wife/husband. Have you ever wondered, for example, what a wife is expected to do when her husband spends night after night polishing a mirror in the basement? Well we find a partial answer in the two poems below, submitted by one of the (long-suffering) wives. Two versions of the same thought - the name of the authress is hidden in this series of letters: ~~EEEEEOOOOHHHLLIMMORRSTTT~~ VZZ. Put them in the right order and you get two solutions to the name (such as Divine K. Smith and Mrs. Paul Smith). For the first correct solution I will donate ten dollars (\$ 10.00) to the observatory fund in November. E. Both.

Mother ? Nature

I saw her in Florida
as female hurricane
slaking the waves
to a pitch insane.

Mother & Nature

I saw her once as Donna
In a Florida hurricane
She ran through our cottage
wantonly
frightening us almost insane.

oxide of iron, and so cautious had we been, that we had sent to New York with directions to procure the finest article at any expense, and we were fortunate in obtaining it. I scarcely need say that we afterwards prepared it for ourselves, and finally laid it aside for putty, or the combined oxides of tin and lead. As the figure of the pitch polisher had altered somewhat in casting, we commenced polishing the metal in the centre first. We worked alternately from six to ten o'clock, and although the speculum was in part brilliantly polished, it was still almost one fourth of an inch from the edge. This was carefully watched, often measuring it to see how fast we were gaining upon it. Mason and my brother, while I wrought, were stationed on each side of the polisher, all ready, when it became dry and stuck, to breathe upon it and moisten it.' "

In the summer of 1838 they proceeded with the construction of the 12-inch. Mason describes the telescope as follows: "the telescope ... was of the Herschelian construction, with an aperture of twelve inches and a focal length of fourteen feet ... although much inferior in size and light to some of the gigantic reflectors of the Herschels, it is yet entitled to some distinction as the largest telescope on this side of the Atlantic. ... A tolerably good metal was cast, after several failures, and the speculum was finally polished near the close of the summer. Mr. Smith and Mr. Bradley shared the expenses attending the formation of the mirror and erection of the telescope, and divided the long labour of grinding the speculum, and I united with them in the less tedious task of giving the mirror its final polish and figure ... it has since been frequently and perseveringly repolished by Messrs. Smith and Bradley ... The mode of mounting the telescope was similar to Ramage's, but ruder. The base consisted of three beams, forming a triangle, which revolved on a circular ledge of plank, by means of rollers at the angles, and which was guided truly in its circuit by a cross-piece, through which rose a central bolt, firmly driven into the ground. From the angles of this base rose three beams, meeting at a height of sixteen or seventeen feet from the ground, and a rope passed through a pulley fixed at this height, and sustained the weight of the upper part of the telescope. The lower end, containing the speculum, rested on a small platform at one of the solid angles of the base, and revolved with the frame. The quick motion in altitude was by means of the rope just mentioned, which passed down to a windlass at the base, while a slow motion was gained by an apparatus very similar to that described and figured in Pearson's Astronomy as attached to Ramage's telescope - a combination of ropes within the immediate command of the observer. In azimuth the whole frame could be wheeled about by a single person, and a slower motion was obtained by simply swinging the telescope by the hand, which could be done by the observer, in following a star, with perfect steadiness. At very high altitudes, the system of ropes was not available; but the weight of the upper end of the telescope was then so little that the observer could grasp the tube in its arms, steadying them by contact with the converging beams, and carry on his work nearly as well as before. This method of directing a large telescope is much ruder in description than in practice. A light frame-work of steps, detached from the main frame, served to support the observer in his elevated situation. Against this the tube of the telescope could be steadied at any moderate elevation, by means of a simple contrivance; this, however, was never necessary unless in high winds. The tube was, at first, of wood, but was afterwards replaced by sheet-iron, on account of its superior lightness and portability; it was painted outside and inside, and protected, during bad weather, by oil-cloth, the speculum at such times being taken out."

The telescope was used by Mason in 1839 to make excellent drawings of nebulae, especially M 20 and M 8 (Trifid and Lagoon), M 17 (Horseshoe), and NGC 6992-5 (part of the Cygnus Loop). The telescope was dismantled in August of 1839 and upon graduation of Smith, taken home with him to Ohio City, Ohio, where it was remounted. Mason died of tuberculosis in December of 1840. (to be concluded in the next issue)

FOR SALE: Criterion equatorial mount and portable pier for 10-inch Dynascope or equivalent. Declination slow motion for photography plus Dynatracker control for clock drive. Purchase price new at \$ 1,040.- Asking \$ 695.- Contact Tom Dessert at 652-5530.

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DUES ARE DUE - Contact Warren Steinberg at the next meeting, or mail to: Buffalo Astronomical Association, c/o Buffalo Museum of Science, Buffalo, N.Y. 14211. If dues are not paid, your name will be deleted from the Astronomical League's mailing list and you will then not receive the Reflector, nor the Spectrum, nor the other benefits of membership. So please take care of your dues when they are due-NOW.

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SPY AND TELL: It seems that the continuous grinding noise made by Ed Lindberg's telescope making class at the Museum is getting on the nerves of the security guards. One guard came up and slammed shut the door; for a few seconds after that you could hear a pin drop, then back to work: grind ... grind... grind* ** * Seems that our observatory at Beaver Meadow is rapidly nearing total completion - we'll have a detailed report at the meeting and in the next issue of the Spectrum **** Your editor enjoyed an interesting week at the Lowell Observatory in Flagstaff, Arizona in August - you'll be blessed (??) with a report at the January meeting. * ** * To save some money on the printing of the Spectrum, please find a separate sheet with one of Darwin Christy's puzzles enclosed. The text will explain everything to you - fill it out, put your name on it and either bring it to the meeting or send it to the address appearing at three different places in this issue (a puzzle within a puzzle?). *** Each year we plead with members to let us know what they would like to see in the Spectrum, and to submit short articles for publication. Each year with equal regularity we receive absolutely no reply. *** Ken Biggie has been appointed to the Board of Directors to act as liaison between it and the Buffalo Audubon Society. *** ** **** Also on the extra sheet are two poems by a very charming lady, one against her wishes. **

Buffalo Astronomical Association, Inc.
c/o Buffalo Museum of Science
Humboldt Park
Buffalo, N.Y. 14211



FIRST CLASS
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Edward Lindberg
113 Maple Drive
Bowmansville, NY 14026