

the Spectrum

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

Editor: Ernst E. Both

MARCH - APRIL 1973

MARCH MEETING: For our meeting in March (March 9, 1973, 8:00 p.m. EST, Club Room, Buffalo Museum of Science) we have planned an unusual program, actually a triple "header" as it were. Ernst Both will start with a color-slide show entitled ASTROPHOTOS (?) MOST PEOPLE DON'T BOTHER WITH; he will be followed by Orrin Christy with a short, short movie of an unusual, but astronomical nature. Last, yet most importantly, Gretchen Schork will outline our plans for the Eastern Hills Mall exhibit scheduled for April. It is important that all members who have promised to help Gretchen come to this meeting - if that is impossible, please contact Gretchen as soon as possible (phone 839-3796). WELCOME ALL!!

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APRIL MEETING: Our meeting on April 13 (same time and place as above) will feature our own John Riggs, in a lecture on THE ELEMENTS OF DEEP SKY OBSERVING. John, who is our secretary, is on intimate terms with most deep sky objects. An observer of great industry, skill, and perseverance, he should provide us all with a fine guide to the why's and how's of nebula hunting. DON'T MISS THIS MEETING - we are also going to look at designs for our new observatory building to be constructed at the Audubon Society's BEAVER MEADOW ENVIRONMENTAL EDUCATION CENTER. The membership will have an important opportunity to approve one of several designs. DON'T MISS IT!!

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PRESIDENTIAL MESSAGE

So far in my term as president I have received your support to my great satisfaction. At the March meeting I will appoint a committee to study several designs for our proposed new observatory - this committee will then be charged with presenting several designs at our April meeting. Other committees are hard at work, or will be soon. Among these are: Liaison Committee for Beaver Meadows (chairman, Ernst Both); Finance and Fund Raising (chairman, Robert Kartyas); Eastern Hills Mall Exhibit (chair, Gretchen Schork) - all of these need help from our members. I therefore ask you to support them, wherever you can. If you have ideas for projects or other committees please contact me - I am interested in involving as many members as want to be involved.

As a member of the Lockport Astronomy Association I still would like to see more of the BAA members attend their meetings. These meetings I will continue to announce at our BAA meetings and I solicit support and encourage participation in the Lockport programs.

Finally, it has been brought to my attention that we are overstaying our social hour - according to Museum rules, all meetings must be terminated at 10:30 p.m. The reason for this is one of logistics = the night guard comes on duty at 11:00 p.m. and ~~and simply~~ does not have the time to close up the Museum. He must find it closed in order to properly carry out his schedule. So lets try for 10:30, 10:45 at the latest! I wish you all good astronomical observing - until we meet again. Darwin Christy

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M64 Black Eye S from
in Coma Berenices

* DEEP SKY OBSERVING FOR MARCH AND APRIL * By John Riggs

With the coming of spring, there is only one thought which passes through the minds and hearts of avid deep sky observers, the thought of galaxies. No other season has so much to offer the amateur observer in the way of quantity. Nearly 800 galaxies are plotted on the Skalnate Pleso Atlas of the Heavens, and all should be within the range of moderate amateur equipment (i.e. 8 inches and up). Even if you do not have a telescope this large, a substantial portion of these will be visible with smaller apertures. And this quantity is not without a good deal of quality. Though some of these galaxies may appear as faint uninteresting blobs of light, there are also many fine ones to be seen. The biggest stumbling block in seeing these objects however, is not the lack of sufficient aperture, but rather the darkness of the sky. I first became interested in astronomy from my suburban backyard, and was always disappointed when my 6-inch reflector failed to reveal anything in the places where the maps showed numerous galaxies. When the same places were re-observed with the same telescope, only this time under a dark country sky, the galaxies were easily visible. It only takes a few mercury-vapor street lights to ruin the delicate balance of contrast between galaxy and sky background.

The rising constellation of Leo forms a good practice ground for the inexperienced observer to try his hand before confronting the often confusing groupings of galaxies further to the east. Though Leo does not have the great concentrated mass of galaxies which the Coma-Virgo region contains, it nevertheless has almost 50 of these objects which should be visible to many amateurs. Of these I would like to write about several which I have found to be rather intriguing and worthy of note.

Near the center of the Lion's body, located about mid-way between the two stars 52 and 53 Leonis, lie three galaxies in such close proximity to each other that they can all be seen in one low powered field of view. The brightest of the group should be familiar to most Messier hunters as M 105. The other two galaxies are NGC 3384 and NGC 3389. A 6-inch telescope will show M 105 and NGC 3384 without too much difficulty. Both are small, moderately faint elliptical patches, each containing a bright nucleus. To see NGC 3389, at least an 8-inch will probably be required. My 10-inch reflector at 62 X shows it as a very faint, moderately small, elongated glow. Each of the three galaxies as an individual may not appear to be that spectacular, but when they are seen together as a compact little group, they make an interesting sight.

M 95 and M 96 are not located very far away from the above galaxies, and should not be overlooked by the intrepid explorer. Merely sweep down about one degree to the southwest from M 105 to pick up M 96 and from here, sweep a degree further to the west for M 95. Both objects are easy targets for a 6-inch. M 95 is the fainter of the two, and with the 10-inch, averted vision is necessary to reveal the full extent of the galaxy's lens.

The last object which I would like to draw attention to is something of a favorite of mine, NGC 3521. It lies tucked away off the beaten path in southern Leo, just east of the star 62 Leonis. I came across it while making a tour of the area and was very impressed by it since the galaxy provided a pleasant change from its generally faint and uninspiring neighbors. It appears as a relatively large, moderately bright, elongated ellipse with a very small, but bright nucleus. The galaxy was even bright enough to be visible in the 10X40 finder. Next time you get bored with seeing the same old Messier objects, take a look at NGC 3521, it may surprise you.

* OAO-2 SHUT DOWN AFTER FOUR YEARS * NASA News Release 73-23

NASA's Orbiting Astronomical Observatory-2 (OAO-2) was shut down at 10:40 p.m. EST, February 13, during its 22,000th orbit of Earth, ending one of the most productive careers in the history of space science satellites. Designed to operate for one year, OAO-2 far exceeded the fondest hopes of project officials by operating more than four years. During its long lifetime the observatory made pioneering contributions to the field of ultraviolet astronomy. The shutdown followed failure of the high voltage system of the University of Wisconsin experiment on board the spacecraft, so that it was unable to continue to acquire useful scientific data. Attempts to reactivate the experiment by ground command from the OAO Control Center at the Goddard Space Flight Center, Greenbelt, Md., were unsuccessful.

Launched on December 7, 1968, from the Kennedy Space Center, Fla., the 4,400-pound observatory carried two scientific experiments provided by the University of Wisconsin and the Smithsonian Astrophysical Observatory. The Wisconsin experiment, with Dr. Arthur D. Code as Principal Investigator, viewed 1,930 celestial objects during 14,060 observations. The Smithsonian experiment, directed by Dr. Fred L. Whipple, completed its mission on January 7, 1972, after making more than 8,500 observations. A catalog of objects observed will be published by the Smithsonian Astrophysical Observatory this spring.

OAO-2's major scientific achievements include: * Finding that the intensity of radiation in extragalactic nebulae increases in the far ultraviolet portion of the electromagnetic spectrum due to the presence of hot stars; * Detection of a huge hydrogen cloud a million miles in diameter around comet Tago-Sato-Kosaka - the first observational evidence that such clouds exist; * Discovery that magnesium emissions occur in cool giant and supergiant stars; * Observations that may settle the enigma concerning a group of stars notable for apparently anomalous elemental abundances and for their enormous magnetic fields - more than 10,000 times stronger than that of the Sun; * Observations of Nova Serpentis in 1970 which will throw new light on this phenomenon; * First ultraviolet observations above the atmosphere of a supernova discovered last year in the small galaxy NGC 5253 - the brightest supernova in the past 35 years; * First observation of ultraviolet emissions from the planet Uranus; * New information concerning the structure and composition of the Earth's upper atmosphere.

OAO-2 was also an impressive engineering success, creating, in effect, its own technology where none existed before. It proved that meaningful space astronomical observations could be conducted over long periods of time by automated unmanned spacecraft in practically all regions of the electromagnetic spectrum. The observatory also paved the way for the improved pointing accuracy of OAO-Copernicus, the last operational spacecraft in the series. OAO-Copernicus, launched August 21, 1972, is following in the tradition of OAO-2 with its own impressive results. It is also pioneering the technology needed for NASA's proposed Large Space Telescope (LST).

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* WILLIAM MORLEY BAXTER (1896 - 1971) * By Fred W. Price

Several weeks ago I learned belatedly of the death of William ("Bill") Baxter, formerly Director of the Solar Section of the British Astronomical Association. Our own members will remember him as the author of "The Sun and the Amateur Astronomer," an excellent guide to Solar observing based on his own methods and experience. This book contains many superb sunspot photographs taken by Mr. Baxter with his four inch

refractor and I am fortunate in possessing prints of several of the original negatives which he gave to me himself. I knew Bill Baxter quite well and last saw him in August 1971, apparently in his usual buoyant good health but he died only a few months later. Those of our members who are familiar with Mr. Baxter's book and his solar work will, I am sure, find the following biographical notes of interest.

After his marriage in 1928, Bill and his wife went to live in Acton (London) where they resided ever since. Four years later he was elected a member of the British Astronomical Association and in 1933 purchased the fine equatorially mounted four-inch Cooke refractor which was the principal instrument that he used in all his astronomical work. It was installed in his back garden observatory. He gave the first of many lectures on astronomy in 1941. In 1958 he was admitted to the Solar Section of the British Astronomical Association and the Association's Journal for February 1959 contained the first of several of his splendid sunspot photographs which were to appear in its pages. Later in the same year he was elected Fellow of the Royal Astronomical Society and was appointed Secretary of the B.A.A. in 1961. 1963 saw publication of "The Sun and the Amateur Astronomer" (Lutterworth Press). In the same year Bill acquired a prominence spectroscope constructed by Horace Dall and during a tour of the U.S.A. in 1964 he purchased two all-dielectric filters of four Angström band width. In the same year he became Director of the Solar Section of the B.A.A. By early 1965 he was enabled to commence study of lim prominences with the Dall telescope. In 1967 the B.A.A. awarded him the coveted Merlin Medal and Award for outstanding work in Solar Astronomy.

He had become aware of an increasing demand for a re-issue of his book and so, encouraged by Patrick Moore, he undertook the task of revision which he completed by September 1971. The second edition was published (1973) by the firm of David and Charles of Newton Abbott (South Devon, England). His eighty-seventh and last lecture was given to a local astronomical society in Bristol on October 29th, 1971. Bill is survived by his wife and married daughter Pauline. The illness which was to terminate his life commenced in July of 1971 and the end came peacefully in his sleep at home on December 9th, 1971. Many are the friends and amateur astronomers who will miss him, a fine and kindly gentleman and a skilled solar observer who was never too busy to lend help and guidance to all who asked.

I visited Mrs. Baxter during my recent visit to London and she showed me copies of the second edition of Bill's book. I think that the quality of the sunspot photographs is not quite as good as the reproductions in the first edition. The colored frontispiece of spectra is omitted although referred to in the text. Bill's telescope, newly painted and minus the prominence telescope, is still standing in the observatory but will be donated to the instrument collection of the British Astronomical Association for loan to members. Mrs. Baxter plans to leave the observatory building intact, however. A photograph which I took of Bill in his observatory some years ago is the only one I know of which shows the prominence telescope attached as it was to the main instrument.

During my summer trips to London I used to visit Bill on a fine morning and I would be treated to splendid views of sunspots projected by the "four-inch" and also of solar prominences with the Dall telescope. Those happy meeting on sunny days will be long remembered and sadly missed.

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(** PIONEER 10 SAFELY THROUGH THE ASTEROID BELT ** NASA News Release 73-27

Pioneer 10, on its way to Jupiter for man's first closeup look at that giant

planet, has emerged unscathed from the asteroid belt. The spacecraft has completed a 270-million-mile, seven-month trip through the belt without suffering a damaging hit by high velocity asteroid particles. Scientists now believe the belt offers little hazard to spacecraft, according to the Pioneer 10 Project Scientist, Dr. John Wolfe, of NASA's Ames Research Center, Mountain View, Calif., which manages the project.

Reports of preliminary findings by Pioneer 10 experimenters in Washington, D.C. on February 15, 1973, also suggested that the belt may contain somewhat less material than previously thought - especially in the small particle sizes. The experimenters reported, in addition, findings on gradients going out from the Sun in the solar wind and magnetic field and on solar particles as well as the "interstellar wind."

Pioneer 10 entered the region occupied by most of the asteroids in mid-July when it was about 190 million miles from the Sun, and it is now at the outer edge of the belt, about 340 million miles from the Sun. The spacecraft has covered about 70% of its 620-million-mile flight path to Jupiter, where it will arrive next December. One of the key objectives of the mission is to determine the amount of the smaller dust particles in the asteroid belt. Preliminary findings suggest that the distribution of the dust particles between the Earth's orbit and the far side of the asteroid belt seems to depend on particle size. There may actually be more of the very smallest particles (1/1000 mm diameter) near Earth than in the belt. Somewhat larger particles (1/100 to 1/10 mm diameter) appear to be evenly distributed all the way from Earth's orbit through the far side of the belt with no increase in the belt itself. Still larger particles (1/10 to 1 mm diameter) were found all the way out but were almost three times as frequent in the belt as outside it. Particles larger than 1 mm diameter appear to be very thinly spread - as many scientists expected. Preliminary analyses of Pioneer 10 asteroid telescope observations have not identified any particles larger than 1 mm, though further analysis may show some. (The spacecraft did not pass near any of the very large asteroids observable from Earth). One explanation, among several, for the absence of small particles in the belt is that solar radiation may reduce orbital speed of such particles. Then solar gravity would cause them to spiral inward toward the Sun. Larger particles with more mass would be less affected and could maintain their orbits.

Pioneer 10 experimenters also reported that as far out as 350 million miles from the Sun solar magnetic field strength, solar wind density, and numbers of solar high energy particles all decline roughly as the square of the distance from the Sun. The gigantic solar storm of August 2, 1972, one of the largest ever observed, showed clearly that, as it moves out, the solar wind tends to slow down while the gases heat up. Among solar high energy particles, experimenters have found the elements sodium and aluminum for the first time. Pioneer 10 is proceeding at a velocity of 33,700 mph.

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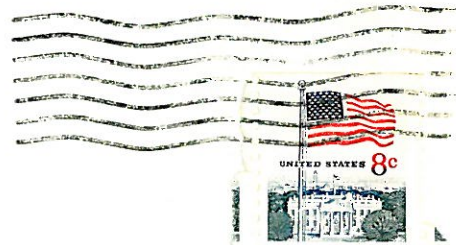
FOR SALE, FOR SALE: Kellner eyepieces, 6/12/20/40 mm = \$ 25.00. If interested, call Carl Kalweit at 884-3850, after 5 p.m. *****

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* SPY AND TELL * During January, Fred Price was in London and met Patrick Moore at a meeting of the British Astronomical Association. Mr. Moore was one of the speakers and showed several of his own color slides of the launching of Apollo 17. He kindly autographed Fred's copy of his "Guide to Mars" and wrote: "To Mr. Price - Best Wishes. A Museum Piece" (we assume he was referring to the book - an earlier edition - and not to Fred). * * * Congratulations to Ron Poling! He received the highest mark in West Seneca Central West in the Regent's Exam. His

score was 279 out of 300. * * * Bill Chambers is busy making a cold housing for his image tube so he can see the fainter stars (of infrared variety) in the summer. * * * Scoop! Remember Irv Goetz's "flying saucer" photo in the recent Astrophotography exhibit? It will appear in the May issue of SCIENTIFIC AMERICAN in an Eastman Kodak ad. By the way, Irv is related, by marriage, to the nephew of George Willis Ritchey of telescope fame. * * * Some people collect stamps, some collect mushrooms - but Darwin Christy is an enthusiastic collector of micro-meteorites which he is photographing through a microscope he has put together! * * Bill Gehrke has a new 3/4-inch RFT. * * * OBSERVING DATES AT NEWSTEAD = March 10, March 24, March 30/31; April 21, April 27/28. If interested, call John Riggs at 875-7965. * * * To the question, "What is a meteor?", a student at the Univ. of California in 1947 answered: "A meteor is the flash of light/ made by a falling meteorite/ when rushing through the air in flight/ and usually is seen at night/ (I hope to heaven this answer is right!)" - inspired by this, Darwin Christy wrote: "A shooting star way up in the air/ from whence you came I know not where/ streaking across the sky/ as quick as the wink of an eye/ going into oblivion someplace out there." Which of course brings to mind this (author?): "Twinkle, twinkle little star/ I don't wonder what you are/ for by spectroscopy's ken/ I know you are hydrogen!" - Oh well! * * * As Tom Dessert is in the sand business, he naturally recommends "Dessert Sand". * * * We hear that Edith Geiger is having all sorts of fun with her 12.5-inch reflector - but you are supposed to turn the tube, not drop it out of the saddle, Edith! (Refractors, anyone?). * * * Walter Semerau is teaching two students from UB (SUNYAB these days) the secrets of solar astronomy. * * * With our days at Newstead coming to an end, Rudy Buecking, Warren Steinberg and Bob Kartyas are bemoaning the fact that they won't be able to pick raspberries out there anymore. What's this??? We thought they want out there to observe??? * * * MANY THANKS TO ALL OF OUR MEMBERS WHO SUBMITTED PHOTOS FOR OUR EXHIBIT. * * * * *

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F I R S T C L A S S