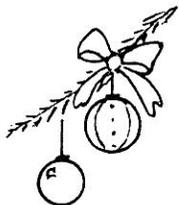




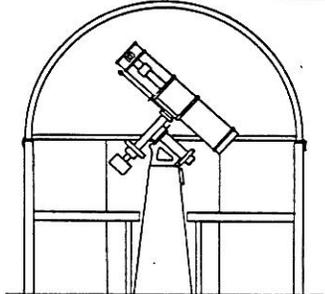
THE



SPECTRUM

NOVEMBER

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DECEMBER

BUFFALO ASTRONOMICAL ASSOCIATION Inc.

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MEETING NOTICES

Friday, November 10, 1989 at 7:30 PM in the New Science Building Auditorium, State University College - This month will feature a technical talk entitled, "The Redshift Controversy. A New Mechanism for Generating Frequency Shifts of Spectral Lines." Lets give a warm B.A.A. welcome to our guest speaker, Dr. Emil Wolf, Professor of Physics and Astronomy from the University of Rochester.
Refreshments will follow!!!

Friday, December 8, 1989 at 7:30 PM in the New Science Building, State University College - The members Photographic Showcase will be the theme of this months meeting. A total of ten photographs, slides or a combination of both may be shown. The showcase is open to anyone who wishes to display photographics that are mounted and labeled and/or slides. This program is planned to enjoy everyones photographics and not as a contest. Contact me before December 1, 1989 if you are interested in displaying your photos. We will again be entertained by Edith Geiger's slide show, followed by a wine and cheese Christmas Party in the Conference Room. Joe Provato will set up the refreshments. Cookie donations are always welcome.



PRESIDENT'S CORNER

On September 14, 1989 and September 28, 1989, I held meetings to discuss the possibility of building a new telescope. There were twelve members in attendance at each meeting. The results were to stay at Beaver Meadow and to build an addition onto the existing observatory. Conrad Stolarski and Dan Marcus have already taken measurements and suggested a diagram for the new addition. The choice for the telescope is a 20" portable open tube Dobsonian, which can be rolled out on concrete pads. At the present time, members are requesting price lists and other information on the possibility of obtaining a grant. We would like more members to help with this project and work together as a part of our organization. If you are not an active observer and feel there is nothing you can contribute to this project, perhaps you can. We need members with mechanical and carpentry skills, pouring concrete, ideas and help with fund raising. It was suggested to add bookshelves to the existing observatory and a small storage area to the new addition. Many of our donated items could be stored there and used by more members on those cloudy nights. The next scheduled meeting will be held on Thursday, October 26, 1989 at 7:30 PM in the Conference Room in the New Science Building, State University.

There will be a Board Meeting on Tuesday, November 7, 1989 at 7:30 PM at my home.



Doris Koestler
President

Editor's Note:- The history of the Buffalo Astronomical Association is only found in the BAA ANNALS submitted by Rowland Rupp. At this point I thought it only fitting that a more detailed report on parts of the BAA should be presented to the members, young and old alike. The first is that of the Newstead Observatory which was located in the township of Newstead. Ed Lindberg was so gracious to submit to my request. This article will be followed in the next issue of the "Spectrum" about the Beaver Meadow Observatory, another bit of history by Ken Biggie. And -- I am very hopeful that I will find someone who has the knowledge and can write the beginning of the Niagara Frontier Council of Amateur Astronomy Associations. Who ever you are, will you please come forward. THANK YOU!!!

Darwin Christy

The NEWSTEAD OBSERVATORY

When I first heard of a Telescope Making Club at the Museum of Science in 1949, I was attracted by the strange sounding hobby. I began attending meetings and joined the club. The club was called the Amateur Telescope Makers and Observers of Buffalo (ATM & Os). They held regular monthly meetings with observational reports and technical talks. During pleasant weather Star Parties were held in city and county parks with up to a dozen home-made telescopes

making classes and made my 6-inch telescope in the Spring of 1950.

It seemed that every year at one of the early fall meetings one of the younger members would timidly proffer the question, "Should we have a club telescope?" And each time the overwhelming majority of telescope makers would smother the question with logic. "Everyone should have the wonderful experience of making his own telescope" and "The club will be stronger if everyone has a telescope of his own." And so the matter would be tabled for yet another year.

During the 1950's new members kept coming in and many of these had no telescopes. Their principal interest was astronomy and they voted to change the name of the club to the present BAA to more accurately represent the changing emphasis. Now the minority had become a majority and their questioning became bolder. No longer would they be put off for a whole year. The increasing intensity of the discussions finally resulted in the setting up of a meeting.

The group met at my home in 1958. The meeting was open to anyone interested in the question of a club telescope. At first there was no thought of an observatory, this was blue sky thinking. We could build a telescope and park it in some member's back yard. Present at the meeting were, among others, Ron Clippinger, Paul Redding and Louie Reinagel. First of all, it was agreed that the type would be a Newtonian we would build as big as our resources would permit. It still remained to settle on a feasible size. The younger members jumped in with both feet. "Let's make a 36-inch telescope. It'll be the biggest in New York State." I hated to be the one to dampen such youthful enthusiasm. But I felt impelled to ask if anyone knew the weight of a 36-inch mirror. No one did so I informed them that that size pyrex disc would weigh over 500 pounds and the necessary mounting would weigh over a ton. And, where would we put it?? The direction of the discussion changed sharply. Now it became a question of how large a telescope was feasible for our group. The size being discussed kept dropping. Finally I made the offer that if they would settle for a 12½-inch size, I would make the mirror. I was surprised by the rapid acceptance of the offer. But practically everyone agreed that this size was probably the most practical for our club, at least for a start.

Now that we had decided on the type and size of the telescope the project seemed to surge ahead. On several fronts. (As I like to think, "Decide on a definite goal and you are half way there") Our star fund raiser, Paul Redding "found" thirty dollars and sent it to Corning for the mirror blank. Two of our members who were machinists in local industry, Frank Fronczak and Thad Toporczyk, offered to make the mechanical parts. Ed Stoklosa offered to let us use his basement to assemble the mount. As other problems arose, they were duly confronted. We needed a precision drive gear. Paul and Ron approached the Oliver Gear Works on Niagara Street and explained the problem. "Can you make the gear for us?" The manager had his secretary write out a check for fifty dollars. "Get out of here, You're saving us money." Paul used the fifty dollars to buy a mirror cell and an eyepiece focusing mount. We needed a diagonal. Walter Semerau gave us a military surplus precision flat. It was a little big, even for a fast telescope but the price was right. And so the problems continued to give ground to our assaults. Paul, with energetic initiative and cajolery, acquired the drive gear from somewhere.

When the mirror blank arrived at my house from Corning, I was confronted with reality. I had a mirror to grind. I had been toying with the idea of machine grinding but now the idea became more appealing. The 21 pound blank was sort of tiring to manipulate by hand. And the idea of building and learning how to use it appealed to me. I began studying the various machine designs in the handbooks. I settled on a simple design using a small workbench and a couple of motors. One motor drove a plywood turntable through a speed reducing train and the other motor drove a crank arm which moved the grinding tool back and forth. The design was simple enough but it took a long time to learn how to set the offset adjustments to give the de-

quick polish for testing. It took over a year to finish the mirror. It is only fair to note that this same machine turned out an 8-inch mirror for the Museum's Spectroheliograph in one month. This is more like a normal time for finishing a mirror by machine.

At some point in our diligent efforts the realization seemed to hit us that we were indeed about to have a club telescope. Of course, we were working to this end right along. But--the ownership of a club telescope was something entirely new in the history of the club. Now we began to think of "where to put it." Meetings were held to discuss site locations. Members went out in groups and individually to scout the area. Unfortunately, the scouting reports were pessimistic. The sites were too far from the city or too far from the nearest road. The logistics of putting up a building and maintaining and protecting it put most of the sites out of reach in a quick survey.

Things were now beginning to happen seemingly faster than we could keep up. Dr. Seville Chapman, a member of the BAA and a member of the board of directors of the Cornell Aeronautical Laboratories had become interested in our efforts and thought he could see where the Lab could help us. He secured the permission to lease to us a piece of land on the Lab's experimental radar site in the township of Newstead, about a mile east of the village of Clarence. Our weary group of explorers and other members of the club made trips out to see the "find" and most were quite pleased. The site had several faults but it had some good points and seemed like a very workable compromise. The site was surrounded by a heavy steel fence with a locked gate. Access was only possible by getting a key from a guard's station at the Lab and the key had to be returned at the end of our use every day. Since there was general approval by the committee and by most of any other interested members, Ron Clippinger and I, at Dr. Chapman's request, went to his office and signed a "contingency Agreement." It was all terribly legal and spelled out what we had to do, what we could and could not do. Anyone getting a key had to be on an approved list, which had been carefully screened to eliminate "undersirable aliens." We felt a little nervous but anyway, here was our first club observatory site. And two of our big problems had been solved - security was excellent and the rental was free.

With our acquisition of land and good reports of progress coming from the telescope makers, our dreams of an observatory were becoming more attainable. We were fortunate in having as a member an individual with a strong interest in building and a talent for drawing. Ron Clippinger designed and drew up plans for an observatory big enough to house a 16-inch telescope, which seemed like the ultimate size to us. He visualized a rotating hemisphere dome with plywood ribs and masonite strips. He provided for a raised observing floor and a warming room. Ron's drawings were very detailed and complete but we were still lucky that we did not have to build the whole structure as it would have been a Herculean task. It was at this critical juncture that Dr. Chapman, seeing that we were climbing a mountain, obtained a promise of help from his stalwarts in the maintenance department. They agreed to build the whole building with the exception of the dome to Ron's drawings. They put in a concrete base slab and a pier for the telescope. An underground conduit was put in to supply electrical power for the telescope drive motor and for such amenities as lights and a hot plate. The gang did a fine job of putting up the building following Ron's excellent drawings. This left pretty much only the dome to our observatory committee.

We were now left with the job of building the dome. Although this may seem like only a small part of the whole building it was a major task with innumerable problems. Ron designed the general plan of the dome and also worked out all the little details of the assembly. He did his best to make the operation go along as smoothly as possible. The lune shaped ribs were designed to be made of plywood so they could be cut on a band saw. One of the group, Louie Reinagel got permission to use the band saw of the Physics Lab at Canisius College. The other operations could be done with available hand tools.

Ron had a stack of large plywood and masonite sheets

stacked in his garage. One summer day in 1960, five of us gathered and loaded the plywood onto a U-Haul trailer that I had rented and I towed the load over the be sawed. There was John Sojka, Paul Redding, Louie Reinagel, Ron and myself. Ron had made careful patterns of the pieces to be cut, so the sawing went off smoothly. Then the finished pieces went back to Ron's and were stored in his garage. The masonite pieces were sawed in the garage. Then holes were drilled in some of the pieces awaiting several work parties to make a dummy assembly of the framework to make sure that everything would fit properly. Half a dozen of us spent several Saturday afternoons in Ron's backyard making a full size mock up of the dome frame. Things did fit together and the diameter of the base agreed with Ron's large drawing. We made a base ring out of double thickness plywood. Under this ring, rollers would be mounted to ride on a same sized stationary ring to be mounted on top of the cylindrically shaped main building. The rings were shaped to true circles by laying them on the lawn. Then a large sweep was made of a strip of wood equal to the desired radius of the ring. A router was fastened to the outer end of the sweep and carefully walked around the ring. Many hands were needed to make this operation work out well. A layer of steel plates was screwed to the upper face of the lower ring for the dome rollers to ride on. Finally the dome frame was completed as it would be in actual service. It made a beautiful sight in Ron's backyard. Ron's mother said that the summer had been fun and she was sorry to see us leave. We were sorry too, to miss the occasional refreshments that Ron's mother and sister brought out.

Now it was on to the final assembly phase of operation Dome. Of course, we had fitted the frame. But now the flat sections had to be put on to make the completed dome. This operation would be lengthy and could not be handled in Ron's garage. Someone had secured permission to use a vacant warehouse owned by the Curtis Corporation on Northland Avenue. This would accomodate the big structure and would give protection from the late fall weather. Many work party evenings were spent there fastening the masonite strips to the frame. Workers there included John Sojka, Ron, Louie and Paul. The dome was built up in two halves so that it would not be too unwieldy to bring out to the site.

Meanwhile the workers from Cornell Lab had completed their part of the job and several workers from our group had been out there putting in aluminum moisture seal and putting on the lower ring which would provide a surface for the rollers. Herman Elson had pulled strings to get the Higgins firm of riggers and erectors to transport the dome out to the site. One cool pleasant day in November 1960 things came together. Curiously, no one had thought to check the clearance of the warehouse door. Everything about the building was so huge that it had sort of been taken for granted that, of course, there would be head room. The big flat bed truck was here and we rolled our big structure out and it cleared the door by inches, no thanks to any super human foresight on our part. Out at the site the big crane picked up one half of the dome at a time and set it in place on the lower ring. We bolted the two halves together and spent quite a bit of time caulking and puttying seams and joints. The dome was in place and the whole observatory looked real handsome. During the following winter work parties were held on pleasant week ends to close in the building to protect the interior from the weather.

Meanwhile, work on the telescope was nearing completion. The drive and slew mechanisms seemed to be working smoothly. Someone had procured a tube. I brought it home and put the mirror into its cell and mounted it in one end of the tube and placed the focusing eyepiece mounting at the other end. Then the diagonal was put in place and the optical train aligned. One of the gang had made a top plate for the pier to permit bolting the mounting in place

One fine spring day everything came together. The crucial day was at hand. We cleared the mounting and an accumulation of wiring and mechanical parts out of Ed Stoklosa's basement, probably much to the relief of the rest of the family. I brought out the tube with the optical parts in it, in a well padded station wagon. Ron supervised the careful placement of the mount on the

pedestal. Then the tube was attached. I don't remember the exact mechanism or who made the necessary parts. But here, as in other phases of our ambitious project, diverse components seemed to fit together, or we made them fit. We ran out of weights for use as the counterweight. We took an empty gallon cider jug with a handle and wired it to the counterweight shaft. Then we added water until we got our temporary balance. The group was raucously accused of emptying the jug internally before hanging it up. The exact facts will probably remain in some secret archive. My own conjecture is that some reportorial type got hold of the story and made a big deal of it.

By now our facility was at least semi-operational. The telescope was used for individual viewing and for star parties. The images were good and there were some enjoyable evenings. But there were many sticky areas. My improvised clock drive was said to be too noisy. (these people never worked in a factory) The dome rotation was achieved by a large nautical looking hand wheel. Walt Whyman brought over a motor and we made a mount for it to be located below the observing floor. I procured some sprockets and chains at a motorcycle repair shop. This drove the dome very well. I made hold-downs for the dome to protect against high winds. But then I had to devise an interlock to prevent turning of the dome if any hold-down was in place. Walt Whyman brought a little stairway for getting up to the observing floor. Then Ernie Okonski brought and mounted a bit of ornamental railing on the observing floor to prevent falls down the stairs. My wife, Olga, put in a big piece of drapery to cover the opening to the observing area so that lights could be used in the warming room.

So, we had a club observatory - after some ten years of first - complaints and vague suggestions, then discussion meetings, then planning and finally a massive group effort. We had climbed the mountain. Many enjoyable hours were spent by different observers because of our efforts. There were some detractors, especially some who had had no part in the effort, who felt that the scope could have been larger. A 12½-inch telescope seems rather small in these days of the thin mirror and the Dobsonian mount. But thirty years ago it seemed like about the largest practical size for a home built scope. Walter Semerau's 12½-inch solar telescope was written up in one of the Buffalo newspapers at the time as "the largest telescope in Western New York." But whether large or not, we finished our difficult project to the level of group use and enjoyment. I hope that our group is remembered for that. Better a small completed project than a giant undertaking that founders and leaves behind only scattered pieces as tokens of wasted effort. For myself, I got very little actual observing at Newstead. On my trips out there I usually found something that had been broken with a tag indicating what had gone wrong. Bit I did get one what I thought was a good moon photo which I hope to print as my souvenir of Newstead.

The final phase of Newstead was sadly ushered in by complaints. "We don't have a dark sky", "It is too much trouble to get the key", "The roof leaks", "Let's get out of here." So-- before most of the "slaves" had gotten more than a few brief looks, the facility was to be moved and all the hours of work would go down the drain. After several hill top "perfect" sites had been scouted, the choice finally came down to the site at the Beaver Meadow Nature Center. So an observatory was built and the telescope moved to Beaver Meadow. When the Lab heard that our observatory was standing idle they called me and requested that I move it. Since there was no point to, nor feasibility in moving it, I opted for tearing it down. I tried to set up a Satyrday and have a group come out, but no one had the fall Saturdays free and this was my only available day. So I went out by myself. I hooked a chain to the dome and to my car. The dome came off easily and collapsed on the ground like a huge egg shell. Most of the wood in the building had sap rotted and was unsalvageable. But I did get a load of 2 by 4's that were partly usable. I piled all the scrap into a pile and made a big bonfire. I felt a little nostalgia. Newstead had come in with whimpering and timid questions. Now it had gone out with complaints and a huge bonfire. We did salvage a telescope. I would call this making a telescope the hard way.

Ed Lindberg



The BAA could use some help. Several months ago Bell Aerospace Textron donated a telescope pedestal with an equatorial head and right ascension drive motor to the BAA. The pedestal has wheels on its tripod, so it's maneuverable. It's pretty substantial looking, about mid-way between my 6-inch and my 12-inch mounts. I would guess it was intended for an eight or ten inch telescope.

What should we do with it? Since it was donated for use at Beaver Meadow, I first thought we should obtain a telescope suitable for it, and use it to supplement the equipment already out there. The mount lacks telescope rings, but that was about all that would have to be made for it.

Dan Marcus had a good suggestion. He suggested we remove the tripod and permanently embed the pedestal outside the observatory with the intention of using the head as a camera mount. If we did this, it would be an excellent instrument for wide angle astrophotography—just camera shots without using a telescope.

However, to get as much use out of it as possible, I think it should be modified at least to take a camera with a fairly long telephoto lens. The complication is that we should add a variable speed drive in right ascension and a motorized declination adjustment. To guide, we should also add a reflector telescope with an illuminated reticle. A four to six inch would probably do and would easily be supported by this mount.

This takes time and money, but above all, skill. If anyone has suggestions about how else we might use this asset, or can offer his time to figure out what needs to be done, please contact me or any other board member with your ideas. We have heard a lot about enhancing our observing capability; here is an opportunity to do something about it.



Rowland A. Rupp

BAA ANNALS

5 YEARS AGO - Our speaker for November 1984 was John Murtaugh, Associate Professor at Buffalo State, who spoke on "Impact Craters on Earth". Slide presentations were the order of the day at our Christmas meeting. Carl Milazzo's was on his trip to Stellafane and Edith Geiger's was her annual "Candid Camera".

Lots of telescope lore appeared in the November-December 1979 issue of THE SPECTRUM. John Riggs wrote on resolving double stars, Carl Millazo wrote on observing dust lanes in galaxies and new kinds of telescopes in general, Michael Idem wrote on seeing—particularly contrasting observations from the suburbs with those at Beaver Meadow. Edith Geiger's Profile was on Michael, one of our most dedicated and thorough observers.

In the last Annals I mentioned the ongoing dispute on astrology in THE SPECTRUM. The August 1989 SKY AND TELESCOPE has an article on questions designed to confound astrologers. Interestingly, Claudia Bielski wrote a rebuttal in this old SPECTRUM on the comments in the previous issue that serves as a strong response to the S&T article. Beware of attacking astrologers! At least, know what you're talking about.

10 YEARS AGO - In November 1979 we heard from Dr. Duane Anderson on "Water and Ice on the Icy Moons of Jupiter". In December we had short topics by Ken Kimble, Paul Schenk and, of course, Edith Geiger.

The SPECTRUM carried a Profile of Dr. Jack Mack. It also contained an entertaining anecdote by Al Kolodziejczak on his trip to Harvard University where he attended a conference on third world statistics. He

15 YEARS AGO - Walter Semerau spoke on "Recent Activity on the Sun" in November 1974. For December we had old films on astronomy—classics made as long as 40 years before. It was a response to the nostalgia wave that was popular in those days.

We were actively planning the future Beaver Meadow Observatory. Bob Mayer was reworking the mount from the old Newstead Observatory, making it suitable for astrophotography. An editorial in the December-January issue (that's right oddly enough, December-January) highlighted our hopes for the new facility, and identified some of the advantages of the location.

20 YEARS AGO - In November Ray Manners spoke on UFOs. In December Ed and Olga Lindberg gave a slide show of European astronomical facilities. Edith Geiger gave her annual Christmas show and we previewed the astrophotography exhibit at the Museum put on by our members.

Ernst Both had an article on the crater Plato with an abundance of historical detail on observations of this favorite lunar feature. In December Dr. Frederick West wrote on the moons of Saturn, long before the Voyagers reported close-up details. Dr. Fred Price presented his sketch of Mare Crisium, a composite of three nights of observing at the Kellogg Observatory at the Museum.

25 YEARS AGO - Ernst Both gave a talk on "Solar Activity" in November 1964. In December Ron Clippinger spoke on "The Problems of Observing" and Edith showed slides of summer star parties. The remainder of these single page SPECTRUMS was devoted to section activities: the instrument section, the study section and the observing section.

Rowland A. Rupp



ASTRONOMICAL HAPPENINGS

SOLAR:- The SUN, continuing its journey southward in November, will travel out of Libra on the 18th, entering Scorpio through the 24th. It will then enter Ophiuchus - December 14th when it will go into Sagittarius and remain there into January. The days are still shortening as the sun's apparent movement is southerly. On December 21st, the Sun will begin its journey northward, having reached that point known as the Winter Solstice. Of course, that means the days will become longer and the nights will become shorter for observing. Think about it!

SOLAR CONJUNCTION:- Pluto - November 7th
Uranus - December 27th

LUNAR:- The Moon's phases for the next two months are First Quarter on November 6th & December 5th; Full (Beaver) on November 13th & (Cold) on December 12th; Last Quarter on November 19th & December 19th; and New on November 28th & December 27th.

LUNAR CONJUNCTIONS:- Antares - November 1st & December 2nd
Venus - November 2nd & December 2nd & 30th
Uranus - November 3rd & 30th
Saturn - November 3rd & December 1st
Neptune - November 3rd & 30th
Vesta - November 4th
Jupiter - November 16th & December 13th
Mars - November 26th & December 25th

PLANETARY CONJUNCTIONS:- Mercury & Uranus on November 7th
Saturn & Neptune on November 12th
Venus & Neptune on November 15th
Venus & Saturn on November 15th
Mercury & Uranus on December 10th
Mercury & Neptune on December 14th
Mercury & Saturn on December 16th
Mars & Antares On December 30th

PLANETARY EVENTS:- Venus at greatest elongation (47 degrees east) - November 8th

Mercury at inferior conjunction - November 10th
 Pallas stationary - November 23rd
 Venus at greatest brilliancy - December 14th
 Ceres at opposition - December 20th
 Mercury at greatest elongation (20 degrees east) - December 23rd
 Jupiter at opposition - December 27th
 Venus stationary - December 27th
 Mercury stationary - December 30th

METEORS:- For November, the Mu Pegasus, an insignificant shower radiates from 22 hours 20 minutes R.A. @ declination +21 degrees, on November 11th centered around 15 days duration. It is a stream of short and fast 4th magnitude streaks, bluish in color and are presumed to have come from a comet of 1819 IV. Other meteors are:- Taurids of the 3rd; Cepheids of the 9th; Taurids of the 10th; Arietids of the 12th; Bellids of the 14th; Leonids of the 16th; Andromedes of the 28th.

For December, the Chi Orionids (Northern & Southern) occurring on the 10th (northern) and the 11th (southern). The northern radiate from 05 hours 36 minutes @ declination +26 degrees. Their duration is 11 days, 4th magnitude with a whitish hue. It would be a good shower to gather more observational data. (Try it!) Do not confuse it with the Southern Orionids which radiate from 05 hours 40 minutes @ declination +16 degrees. The duration of this shower is 7 days producing 4th magnitude bluish-white streaks revealing about 3 to 7 hourly. This, too, needs much observational data. It is cold during these two meteor showers, but a warm jacket will help keep the chills away..... Other meteors in December are:- the Phoenicids of the 5th; Monocerotids of the 10th; Rho Hydrids of the 11th; Geminids of the 13th; and finally the Ursids of the 22nd.



Darwin Christy

Review of: ASTRONOMY'S ASTROPHOTOGRAPHY SERIES

Astronomy is now introducing 11"X14" lithographs of Deep Sky Objects. They have three different series. 1) "The finest Galaxies, color photos taken by large observatories." 2) "Deep Sky Photography, by Jack Newton." 3) "Precision Astrophotography by Kim Zussman."

The Deep Sky Photography series by Jack Newton contains the following color photos:

The Orion Nebula	The Dumbell Nebula
The Hercules Cluster	The Pelican Nebula
The Pleiades	Heart of the Virgo Cluster

Jack Newton obtained these photos using a 20" f5 Newtonian that he designed and built for astrophotography. Utilizing a cold camera and 120 size Konica 3200 film, Jack has produced many outstanding photos. (just thumb through any astronomy magazine) His photo of The Virgo Cluster of Galaxies is excellent!! and Orion is a close second. The rest have excellent colors, but suffer slightly from coma, and collimation type problems. This problem is common to fast optics, the slower ones seem to be more tolerant.

Kim Zussman's Precision Astrophotography series contains the following black and white photos:

The Eagle nebula	NGC 253
Helical nebula	The Horsehead Nebula
Spiral Galaxy NGC 4565	in Coma Berenices
The Trifid Nebula	M66 in Leo
The Crab Nebula	M33
The Bubble Nebula	

Kim does his work with a 11" f10 Schmidt-Cassegrain with a custom mounting. As Kim puts it "I replaced the scope's standard tripod with a massive, rock-solid mounting. This eliminates the shakes and wobbles and helps to keep star

images appearing like perfect dots." Since his exposures vary from 1 to 2½ hours this is an absolute necessity. His use of Technical Pan film with it's high contrast helps pull subtle nebulas from the background light, and the film's fine grain allows for higher resolution than color films. Anyone who has had the "pleasure" of tracking for over an hour can appreciate the quality of these photos. Kim's tracking is excellent, the star images are reasonably uniform across the field, and the focus is excellent to good. Somehow the Trifid does not come across as crisp as it should but the gorgeous views of the Horsehead, and the Eagle Nebula more than compensate for this. Oh yes, if you were to become proficient with guiding at the Beaver Meadow Scope, I would expect your photos to rival Kim's. They might make a good reference to compete with.

The Finest Galaxies series contains the following color photos:

M33	Spiral NGC 2997
Peculiar Galaxy NGC 5128	Spiral NGC 253
Spiral M83	The Andromeda Galaxy

These professional observatory color photos show off the galaxies at their finest. They also make you respect Jack Newton's and Kim Zussman's works even more!! Consider that these gentlemen can perform close to the standards of a large observatory with amateur equipment. It makes you want to go out and start shooting: well how about our October 21 photo session? Of this group of 6, the Andromeda Galaxy stands out the most. Its stars are pinpoints, with well defined arms. This is followed by M83 with red knots of hydrogen in the arms. NGC 253 and the Peculiar Galaxy NGC 5128 are what one would expect from the pros. M33 although showing the hydrogen clouds does not seem as crisp as one would expect.

These lithographs are sized to fit in a standard 11"X14" frame. The lithographs are sold in sets for \$16.95. Prints are not sold separately. They can be obtained by sending the money to Astronomy Order Dept., P.O. Box 1612, Waukesha, WI 53187. Include \$1.50 for postage and handling. Or see the ad in the Oct. 89 or Nov. 89 issues of Astronomy.



Daniel R. Marcus

NOVEMBER CONSTELLATION

... the fleecy star that bears
 Andromeda far off Atlantic seas
 Beyond the horizon.

from Paradise Lost - Milton

ARIES, the Ram or Sheep, is another of the zodiacal constellations. It does not hold the significance of being the "First Point of Aries," although the name is still associated with Aries. Where the Sun crosses the equator on its travel northward, due to precession, the First Point of Aries is now in the constellation Pisces. Aries is also considered to be an ancient constellation dating back well before the year 4500 B.C., where the vernal equinox was marked by the ancients.

Many legends are associated with this constellation of which one refers to the time Zeus, the most powerful God of the times, changed himself into a ram to escape the pursuit of all the giants. Another tells of Phrixus and Helle, the children of Athamas, King of Thessaly, being mistreated by their stepmother. Mercury took pity on them and sent a Ram enshrouded with a golden fleece, enabling them to escape from their wicked mother. As they mounted on the Ram's fleecy back, were air borne, and while they were crossing the strait dividing Europe and Asia, Helle unfortunately fell from the Ram's back. In memory of this sad event, the strait was so called, "Hellepont." Today we

know it as the "Dardanelles."

Manilius, in his poetic writings, recorded the following lines:-

First Golden Aries shines, who whilst he swam
Lost part of's Freight and gave to Sea a Name.

And Longfellow's translation of Ovid's 'Tristia', comes the following line:- "The Ram that bore unsafely the burden of Helle."

And another transcript from Manilius reads:-

The Ram having pass'd the Sea serenely shines,
And leads the year, the Prince of all Signs.

As the story comes to pass, Phrixus landed safely at Colchis on the eastern end of the Black Sea. Because he was grateful for his safe deliverance, he sacrificed the Ram and gave the golden fleece to Aetes, King of the country. Ares, a sacred grove, is where Aetes hung the fleece against danger where a dragon guarded it by never sleeping. The Argonauts, a group of heroes, later organized an expedition to recover the golden fleece. One of their members, the intrepid Jason, succeeded in obtaining it. Then Jupiter placed the faithful Ram among the stars linking it in the golden girdle of the zodiac encircling the sky.

English writers in the 14th, 15th and 16th centuries Angelicized and called it 'Ariete.' And Aries was said to be the representative of Abraham's Ram caught in the underbrush within the verses of the Bible. The story can be found by reading the 22nd chapter of Genesis, where Abraham was going to offer his son, Isaac, as a burnt offering for the sins of the people. But as Abraham was about to do so, God spake not to lay a hand on his son. And as he lifted up his eyes, he saw behind him a Ram and took it from the thicket and offered it as the burnt offering instead of his son. The English writings were about the time when the redonstruction of the constellations in Bible lines was sought. So the Lamb was also considered to be the Sacrificial Lamb on Calvary for all sinful humanity.

Aries can be found encircled by Perseus and Triangulum on the north; Cetus on the south; Taurus on the east; and Pisces on the west. One interesting fact is that a Nova was reported in May, 1012 as described by Epidamnus, the Monk of Saint Gall, as being exceptionally vibrant.



DECEMBER CONSTELLATION

In the Hymn to Taurus of Bayard Taylor, is written the following:

Ere the heels of flying Capricorn
Have touched the western mountain's darkening rim,
I mark, stern Taurus, though the twilight gray,
The glinting of thy horn,
And sullen front, uprising large and dim,
Bent to the starry Hunter's sword at bay.

TAURUS, the Bull is near 5,000 years old and one of the many ancient constellations, and is beyond question the oldest star group. In this constellation, about 5000 years ago, until around 1700 B.C., was a mark representing the Vernal Equinox or the First Point of Aries, not known as such at that time. Of course, this yearly occurrence was

cause for great celebrations and feasts in ancient times. In all zodiacs of auld, which began the year, was the Golden Age of Archaic Astronomy. To that, Vergil alluded in some many quoted lines from the 1st Georgic;

When with his Golden Hornes bright Taurus opes,
The years; and downward the crosse Dog-starre stoopes;

The poet's description agrees very well with the mythological idea of Europa's Bull being snowy white. Taurus was looked to as an emblem of immortality by the Egyptians. Also, the Persians and Babylonians worshipped the Bull centuries before Christ.

A legend of the Greeks related to the fact that the beautiful daughter of the King of Phoenicia, Europa, was very much beloved by Jupiter. Of course the King resented that fact, that Jupiter wanted her hand, thus Jupiter assumed the snowy-white and shape of a bull. And while Europa was gathering flowers in a field nearby, Jupiter, as the bull, approached her.

Europa, being attracted by the beautiful animal, sat herself upon the back of the bull and began stroking its mane. The bull immediately dashed away with her. She was borne safely, though terrified, to Crete where Jupiter revealed himself to her and won her as his bride.

Taurus can be found high in the sky among the constellations Auriga and Perseus on the north; Orion and Eridanus on the south; Orion and Gemini on the east; and by Aries and Cetus on the west. One of the most noted objects in Taurus is M-1, the Crab Nebula, near the star Zeta.

Two other star groups are to be found in Taurus, the Pleiades and the Hyades. In the next issue of the "Spectrum" will entertain these two star groups in regards to their antiquity and mythology.



Darwin Christy

ASTRONOMER from the PAST

Milton Updegraff, a little known American astronomer, was born on February 20, 1861, in Decorah, Iowa. After graduating from the University of Wisconsin in 1884, he was employed as an aid on the United States Coast and Geodetic Survey until 1887. He became an Astronomo Segundo (assistant) Observatorio Nacional in Cordoba, Argentina from 1887-1890.

He taught astronomy at the University of Missouri from 1890-1899, after which he was selected for the position of Professor of Mathematics for the United States Navy, and subsequently became an astronomer in the U.S. Naval Observatory until 1902. While there, he was placed in charge of the U.S. Naval Observatory's May 1900 Eclipse Party at Barnesville and Griffin, in Georgia. In 1902, he accepted the appointment as Instructor in the U.S. Naval Academy, which he held until 1907.

Being an experienced astronomer, he was designated as director of the Nautical Almanac in Washington from 1907-1910, and during the years 1908-1910, he was also assigned to the six-inch transit circle of the Naval Academy.

From 1913-1915 he headed the geodetic and other scientific work in the American Survey of Samoa. From 1915-1917 he was stationed at the Mare Island Navy Yard, at the north end of San Francisco Bay, California, and was also a meteorological observer in Arizona, retiring in July 1920 with the rank of Commander. He was elector of the New York University Hall of Fame in 1925, 1930 and 1935, and was also a Fellow of the A.A.A.S.

It is difficult to find biographical material on Updegraff, as his contributions to astronomy were minimal, though he held a number of significant positions as an astronomer, and teacher of astronomy and mathematics, and wrote several articles on professional subjects. Living at his home in Prescott, Arizona, in his later years, he passed away on September 12, 1938, at the age of seventy-seven.



Darwin Christy

SPY AND TELL

Congratulations to Patty Rupp! On July 24th, this remarkable young lady, and two young men, swam the length of 17 mile Lake Canandaigua in a grueling 6 hours, 56 minutes.

Anthony Rupp graduated Phi Beta Kappa and Magna Cum Laude from the University of Rochester and is now a law student at Cornell University.

Jack Mack had a busy summer constructing play houses for his children, Alice and Jackie. These houses, the answer to every child's dream, are built about five feet off the ground.

Alice Mack is enthusiastic over her horseback riding lessons and is very skilled at the reins.

A reproduction of a beautiful still life painting by John Yerger was on the cover of the fall issue of Buffalo Spree magazine.

With the opening at the museum of the "Big Chill: Return of the Ice Age," a picture of Ernst Both confronting an animated glyptodont appeared on September 15th in the Buffalo News, co-sponsor of the exhibit which runs through December.

At long last, the Koestler's newly remodeled kitchen is finished except for the painting and wallpapering. Doris is delighted with her dishwasher and disposal.

Nancy Adams is enjoying her freshman year at New York State University College at Stonybrook where she is majoring in astronomy.

The following members attended the Stellafane Convention last August: Diane Borowski, Carl Milazzo, Ed Czaplá, Paul and Gary Kielich.

Norine Nirschel, who lived in California before coming to Williamsville, was a member of the San Bernardino Valley Amateur Astronomers. She has been residing in Williamsville for about three years, and teaches math and science to 6th, 7th, and 8th graders at Christ the King School in Snyder. She taught the same subjects to the same age group in the Catholic schools in California.

Diane Borowski is taking communication graphics one night a week at Buff State; just for fun.

One of our new members, Howard Sterling, has obtained a dealer's license to sell computer software and hardware. He does it as a hobby.

Ken Biggie has had a busy summer and fall with bowling, sailing and flying. He is happy with his purchase of a Meade 10" 2120.

Conrad Stolarski has been going to Beaver Meadow and getting excellent results doing prime focus astrophotography under the direction of Dan Marcus.

Bill and Carolyn Halbert can be reached by writing to their new address; P.O. Box 876, Callicoon, N.Y. 12723.

Edith L. Geiger



INSTRUMENT NOTES

The coming of the thin mirror and the Dobsonian mounting has allowed clubs to acquire a large telescope. If a club calls a meeting on this subject they will probably discuss numerous factors. Among these are brightness of image, limited magnitude, attainable magnification and such less involved, but also important factors as ease of manipulation, size and cost. A factor which, it seems to me, does not get enough attention is accessibility. Our experience at the Newstead Learning Center indicates that a much higher priority should be given to this item.

I have seen brutality to long suffering equipment at NLC. I have seen a stalled motor with a burned out winding that could have caused a fire. Innumerable controls were found that didn't respond properly to extreme force. Things were not tied down nor stored properly. Once the telescope was found stored in a vertical position with rain coming down from a leaky roof. The acids in the roof brought down by the rain left about a dozen circular marks on the mirror that could not be washed off but were there

until the mirror later was realuminized.

The problem is not lack of knowledge nor manual dexterity that causes juvenile auto accidents or damage to instruments by beginners. The problem is indifference, inattention and haste. For some reason, time is of the essence. The driver can't get to his destination fast enough and the beginner can't get to his next celestial object fast enough so he can add another "M" Number to his life list.

I don't think people should be in charge of a valuable instrument until they have proved themselves. This is not discrimination against them - it is fairness to those who have given much of themselves be it money or slave labor. A Log Book should be set up for an instrument, showing the operator in charge and time on and off duty. This should be a part of the installation. If everyone who is "entitled" to use a club telescope by virtue of having learned, not learning the controls, has free access to it

Ed Lindberg

OBSERVATORY REPORT

September and October Public nights were a bit of a washout, as the weather was not very co-operative. The September 16/17 Trash and Treasure Sale at Beaver Meadow was very successful. On the 16th the Sun played hide and seek with the clouds, but when it was clear we had over 90 people view the Sun! The spot count that week had to be over 200! so they were treated to an excellent show. Beaver Meadow will be having a Fall Open House on the Weekend of November 11/12, from 1:00 to 5:00 pm. Again I will be needing help to run the Observatory. If you can come on out, bring any astronomy items, photos, books, Telescopes, or anything else you feel like. Bring the rest of the family if you wish, as the Beaver Meadow Audubon Center will be having a Christmas Craft Sale, Bird Feeding Clinic, and Create-A-Craft session. So if you can't join us for the whole time come for a couple of hours!

Please note: The Observatory will be closed to the public starting November, and will not reopen until April.

Speaking of the Observatory, does anyone want to lead an Observing group? Anyone interested please contact me.

Photo sessions- will be on Saturday, November 18, and December 16 starting at 7:30 pm. Again we will be doing piggybacking, or Lunar work.

Solar Viewing- I have #14 welders lenses- 2"X4 $\frac{1}{4}$ " and 4"X5". These can be obtained for a donation of \$2.50 and \$5.00 to the Observatory fund. I have been carrying a filter around all summer, comes in handy, because if you see a really big one, you know to drag out the scope! It is also a great way to show friends how fast the Sun rotates from day to day!

OBSERVATORY PHONE: There has been a donation of an answering machine to the club. There has been talk for some time now of getting a phone for the Observatory. The main purpose is for safety. If anything were to go wrong, be it troubles with the roof, accident or sickness, it could be a while before anyone could get help. Just think if you fell and broke a leg, while you were there by yourself. Fun wow! The other benefit is that we can set up an information hot line. The answering machine could contain information for the general public, like when our next meeting is, topic, Observatory open, and any interesting astronomical events to watch for. Messages could be left on the

machine, for people with questions, or information to pass on. I am willing to operate the "HOT LINE", so that leaves only one problem. How do we pay for the monthly phone bills. There are two schools of thought, let the people who use the observatory pay for it, they want it. The other is since it can benefit everyone, up the dues approximately \$3 per person. The Observatory Directors view is that there will be a phone at the observatory either way. Until then you can continue to call Sky Line at 617-497-4168 at \$.50 per call. So if you call more than 6 times a year, it will pay for itself.



Daniel R. Marcus

A NEW COMET

COMET OKAZAKI-LEVY-RUDENKO can be seen passing Arcturus from October 24th through November 4th in the evening sky. From November 1st through the 30th, it can be in the morning skies traveling from Arcturus past Spica then Gamma Hydrae. On the 24th, it will be in conjunction with the final stage of a crescent moon. A detailed article can be found in Sky & Telescope Magazine, November 1989, pages 510-511.



ACKNOWLEDGMENTS

Credit is given to those who wrote articles or helped in other ways on the "SPECTRUM". Alphabetically they are: Diane Boroski - Ruth Christy - Jack Empson - Edith Geiger - Doris Koestler - Ed Lindberg - Dan Marcus - Rowland Rupp

THANK YOU ALL !

Darwin Christy, Editor



EDITORIAL

How time flies!! It has been ten years that I have been the editor of this newsletter. It has been fun and at the same time aggravating. The fun times are those which I have not had to be vexatious among you. I sincerely estimate highly those articles which have been given me and those little bits of trivia. The aggravation is trying to get an article from those who I know can produce, BUT DON'T! I would like to see someone write a series of articles on some subject relating to astronomy, such as the planets, odd stars, nebulae, galaxies and the like. I have done constellations for the past 12 years and am about to run out of material which will leave a large blank in the newsletter. You write and I'll edit ! OK???

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4096 Loring Avenue

Blasdell, NY 14219 Or see her at one of our meetings.

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