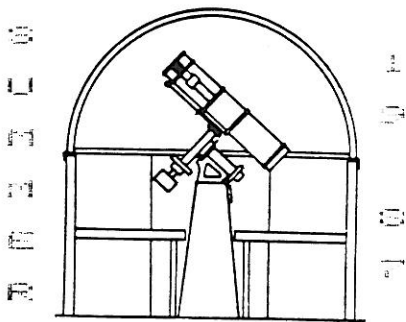


The Spectrum



BUFFALO ASTRONOMICAL ASSOCIATION, Inc.

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Doris Koestler, Vice President
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Jack Empson, Treasurer

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Observatory Director - John Yerger
"SPECTRUM" Editor - Darwin Christy

* * * * *

SUMMER STAR PARTIES

As Spring draws to a pleasant close and Winter is just a cold memory, it's time to look up to another (and hopefully drier) Summer observing season. As in many years past various members of the B.A.A. have offered to hold Star Parties at their homes and observing sites in the Western New York area.

Before I get into the details of this year's event, here are some tips on how to obtain the maximum enjoyment at a star party. STAR PARTIES are informal get-togethers in which all members and guests of members are welcome to attend and get acquainted with other members. Most parties start at dusk but some do start before that (see individual descriptions). You are encouraged to bring your telescope and/or binoculars if you have them. Don't feel that you have to be an expert in observing or know what is up when or where to participate. Every one has their own area of expertise and will be more than happy to share information with you. It is recommended that if the weather looks poor, you give the host for the evening, call and see if there is a change of plans.

Now without further delay, here are the schedules for the 1987 Summer Observing Season:

JUNE 27th, weather permitting, kicking off the 1987 Summer Season, at 2 P.M., Rowland Rupp will be host at his cottage at Lime Lake, N.Y. There will be picnicing, boating, swimming---bring your BOAT. No observing. Bring a dish to pass Rups will supply hotdogs and beverages.

JULY 11th, RAIN or SHINE, there will be stars in the sky and Aliens on the television as Ken Biggie hosts out second star party. Ken is located at 37 Villa Maria Dr., West Seneca, N.Y. If you get lost or have questions, Ken can be reached at 675-8932.

JULY 18th, RAIN or SHINE, next on our tour of Western New York's finer sites is a trip to Richard Jakeil's home at 159 Liberty St., Fredonia, N.Y. He has very dark skies and a full horizon. Things start off at around 8 P.M. and will run until sunrise. For directions or questions, Richard can be reached at 679-0754.

JULY 25th, RAIN or SHINE, for those of us who have had a long hot afternoon working under our afternoon star, Bill Kirst has the answer. We are invited to an afternoon swim and picnic at his home at 8084 Sisson Highway, Eden, N.Y. starting at around 6:30 PM. Observing will follow at dusk. For directions or questions you can reach Bill at 992-4877.

AUGUST 1st, RAIN or SHINE, the following description was provided by our next host Dan & Melissa Marcus:- The party starts around 3:00 PM and will end at sunrise! This will be an astrophotography workshop and the darkroom will be open for developing and printing of black & white photos. The 12½ inch and the 5½ inch 'scopes will be available for taking pictures. A camera and hypered film will be there for those who don't have their own equipment. Don't be bashful bring your own equipment and give it a try. It's easier than you think.

The pool will be open, so bring your swim suit, but don't make it too skimpy unless you wish to appear in the annual Christmas Slide Show (by Edith, ed.) Dan is located at 23 Riverdale Dr., Grand Island and can be reached at 773-5015.

AUGUST 7th, if CLEAR, if NOT the following evening. A full moon and a large backyard will be waiting for us as we will be the guests of Jerry & Adrienne Morris. They are located at 20 Felber Lane, Cheektowaga, N. Y. Things will start off at dusk and end in the 'wee hours' of the morning. If you get lost or have a question, call 626-5441.

AUGUST 15th, RAIN or SHINE, for something different. We have scheduled a trip to the University of Toronto's David Dunlop Observatory. The tour will begin at 9:00 PM and run for about an hour. There will be limited number of people who can attend the tour, therefore, I must know before JULY 1st if you will attend. Reservations can't be made

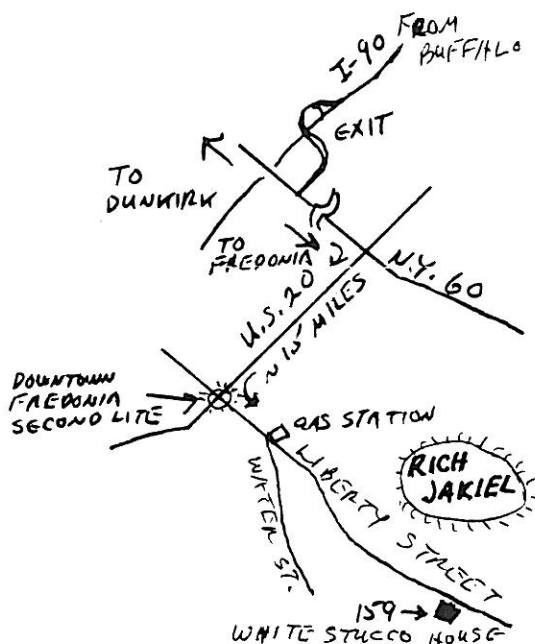
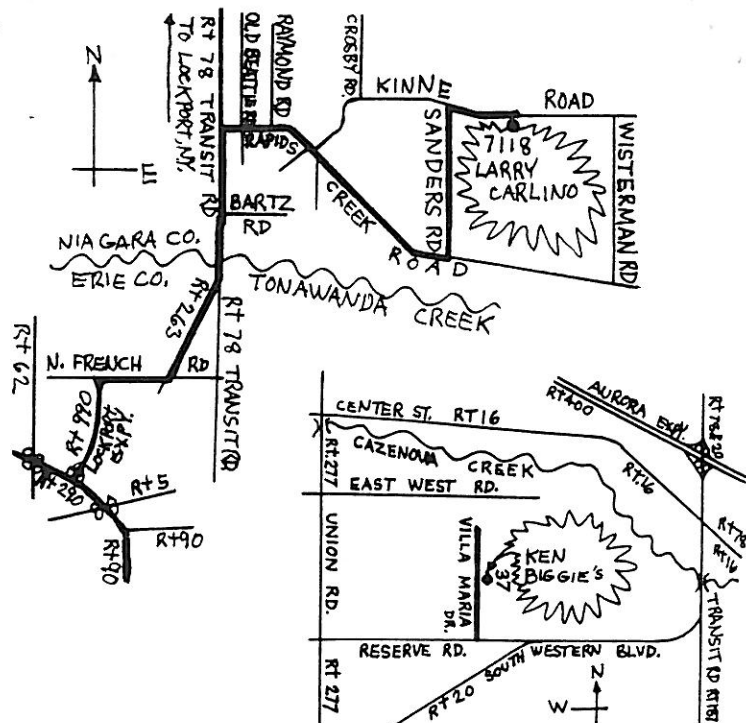
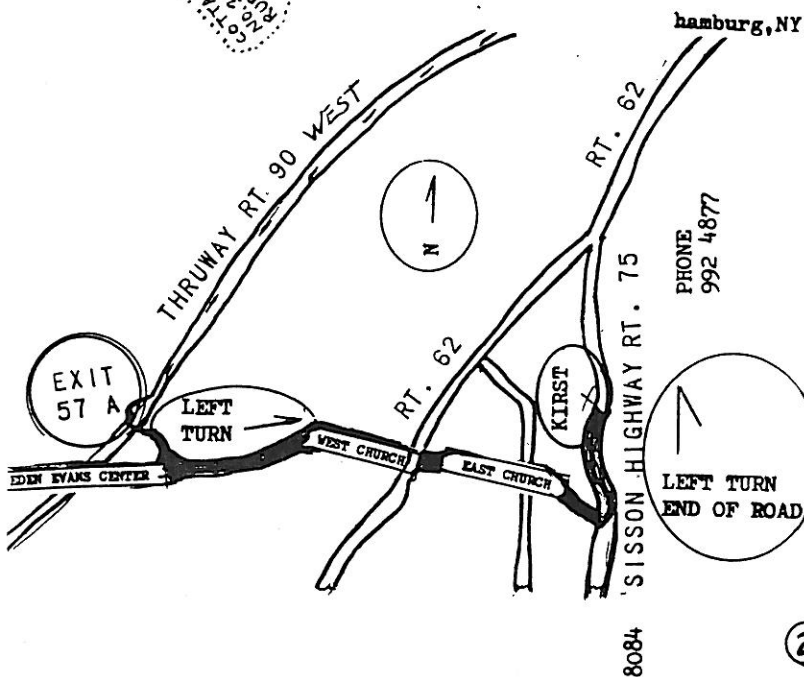
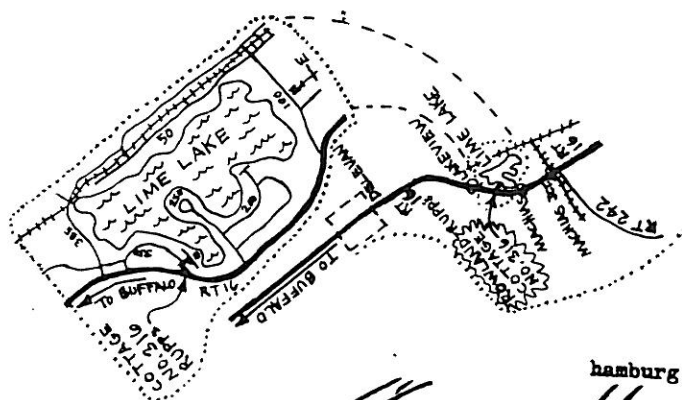
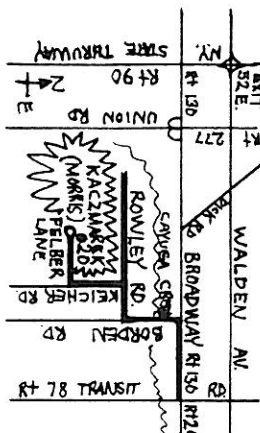
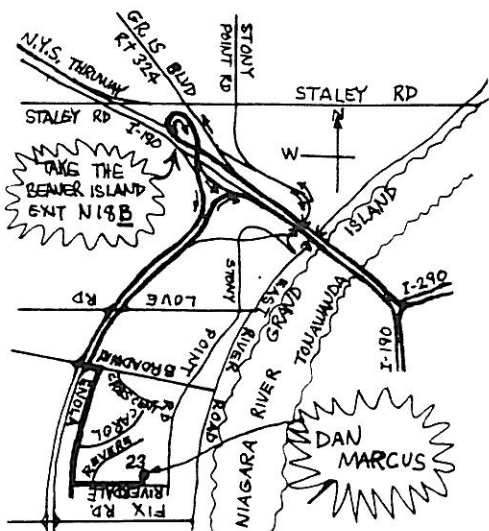
after that. Call Jack Empson - 694-3814 for information and to reserve a spot.

AUGUST 22nd, RAIN or SHINE, to wrap up our Summer, we have been invited to take a look through Larry Carlino's 22 inch 'scope. Larry is located just outside Lockport and has an almost full sky view with dark skies. Larry is located at 7118 Kenne Rd., Lockport and can be reached at 433-3432.

It's hard to believe that the summer went so soon but it has. I would like to thank all of those who helped make these get togethers possible and we'll be looking forward to seeing everyone in the DARK.

Jack Empson

MAPS FOLLOW:-



NEW MEMBERS

Let us welcome to the club, Roger Dunklin, a new member.

"The SPECTRUM" Deadline for the September-October issue is
AUGUST 15th AUGUST 15th AUGUST 15th

* SOLAR ACTIVITY *

Most of the Sunspot groups which appeared on the Sun during April and May 1987 have disappeared. There was no Sunspot activity seen June 7th.

Bob Hughes

It is with regret that WWV time signals may be a thing of the past. Our government seems to think it is not used enough to warrant its upkeep. For those of you who think it should not be removed from the air, write your Congressmen or call 1-303-497-3294 and let them know your feelings.

PRESIDENT'S CORNER

Well, here we are into another summer of Star Parties for the BAA. I would encourage all the members to try to fit one or more Star Parties into their busy summer schedules - you will be glad you did.

By the time you read this, our Public Nights at the Beaver Meadow Observatory should be back on course again after a somewhat shaky start this Spring. Our Observatory Director had problems with publishing a notice in the B.N. Gusto, and with getting persons to volunteer their time to run the Saturday evening event. Please try to assist with Public Nights when contacted if you are at all able. This is an important club function, and a prime responsibility of the BAA under the agreement we have with the Buffalo Audubon Society to make the observatory facility available to the public.

Your Board of Directors has been hard at work this year trying to line up an excellent slate of speakers and interesting topics for next years general meetings. If anyone has any suggestions on particular subject requests, let me know!

Also, if anyone has a short presentation, of say 5 to 15 minutes, they would like to make at any of our regular meetings, (except the May Dinner Meeting) please let me know prior to that meeting date.

Congratulations are in order to Bob Hughes, John Witkowski & Edith Geiger for their successful election to the Board of Directors at the June business meeting. I hope you will try to attend all of our Board meetings, usually held at Doris Koestler's home in Cheektowaga every other month. There will probably be a summer board meeting sometime in July after the holiday. You will be contacted as to time and place.

As an advanced notice for your information our first meeting in the fall (September) will feature a talk on the 'jets' of Quasars and 'BL' Lacerta (a quasar like object next to Cygnus) by a Ph-d candidate at the University of Toronto named Raymond Rusk. He has some new clues to the puzzle of these jets and his talk should be one of the highlights of the year.

Have a happy and healthy summer and I'll see you at the Star Parties.

Ken Biggie, President

* * * * *

OBSERVATORY REPORT

I'm back (!) as Observatory Director. Dave Williams has resigned as director, and I was asked if I would take over. After giving much thought, and having the support of our club members, I decided to come back. With the support and help of the co-directors & club members, the observatory will continue to operate as in the past years. New members in the B.A.A. who would like to learn Astronomy, please visit the observatory. Saturday night is Public Night and a good time to learn by observing. Bring your telescope with you. Members at the observatory will give you all the help they . I would like to extend a special thanks to Hugh Pettit and Ed Czapla for all the work they have done around the observatory.

On May 17th we had forty one teachers from Team Project at the observatory. Everyone had a good time and I enjoyed working with them. On June 5th Dan Marcus gave a workshop on Astro-photography & well attended. Thank you, Dan, for the time and effort you took in preparing for setting up and presenting on interesting and informative evening. I have been informed the telescope needs to be repacked. This will not interfere with viewing. But hard to balance with cameras. This will be fixed as soon as possible. I hope to see the new & older members at the observatory during the summer. Please offer to help out on Public Nights.

John Yerger, Observatory
Director

* * * * *

INSTRUMENT REPORT

Our May meeting was held at the club's observatory at Beaver Meadow. The meeting was a work and familiarization session. Many members are unaware of the equipment and observing facilities owned by the club and available to members.

The first order of business was collimating the 12 $\frac{1}{2}$ inch telescope. This was done with a Cheshire collimating eyepiece. Only a slight adjustment of the orientation of the primary mirror was needed. However, every telescope should be collimated periodically if it is to be used for astro-photography. A portable telescope may be protected from temperature extremes but it gets quite a bit of jarring in handling. The observatory telescope is relatively undisturbed but it is exposed to temperature extremes which may cause misalignments.

We next checked the mirror in Jack Ballantyne's 6 inch telescope. Jack is retired and has become interested in observing again. He made the mirror in a Science Museum telescope making class in the early fifties. He served a term as president of our club during that same era..

Some of our members are interested in astrophotography with the club's telescope. Our telescope is well suited for those work as it has a fast mirror (photographic speed is about f:6.5). Its 80.5 inch focal length gives a prime focus image of the moon of about 0.67 inches in diameter.

It is the dream of nearly every club to have its own observatory. Some of them ultimately achieve that ambition. But very few clubs have a building and telescope all built by its industrious efforts. Some of us need to more fully appreciate our own scientific facility.

Ed Lindberg

* * * * *

*** OBSERVATIONS ***

On April 22nd with my 26 inch jointly owned Dobsonian 'scope, I saw the Coma Berenices super cluster of galaxies. Years ago using a 12 inch 'scope I could only see 3 galaxies belonging to it, and during a whole night of observing the sky, would amount to only 30 to 40 deep sky objects. Now with the 26 inch 'scope pointed at this cluster, I see over 50 galaxies in the eyepiece field of view. By scanning the perimeter of the eyepiece, I can see a panorama of over 100 galaxies, which are 400 million light years away. It's brightest members are 13th magnitude NGC 4889 & NGC 4874, and surrounding NGC 4874, are 6 satellite galaxies which makes it look like a telephone dial. The faintest that I could identify was 16.2 magnitude IC-4012, and the biggest problem is that they are packed too tightly, even on the Palomar Atlas. A larger scale is needed.

Pluto was easily seen $\frac{1}{2}^{\circ}$ from the 4th magnitude star 10 $\frac{1}{2}$ Virgo and less than a degree from two fairly bright galaxies on April 27th, and the following night. NGC 5747 is an edge-on medium surface brightness galaxy having a total magnitude of 11.7. Its 7 by 1 arc minutes in size and has a very conspicuous dust lane. Also near it is NGC 5740 of low surface brightness and only slightly brighter center, it is 2 x 1 arc minutes in size and of magnitude 12.6.

The Space Station Mir was seen at 9:14 PM as a first magnitude object passing in front of the Big Dipper; two minutes later it drifted just above Arcturus, by then it was down to 3rd magnitude. On board is an X-Ray telescope that is observing the Supernova in the Large Magellanic Galaxy, a visual supernova of up to 2.7 in magnitude.

On June 10th, 1st magnitude Mercury was seen less than a degree from 2nd magnitude Mars near the 3rd magnitude star Epsilon Gemini which formed a pretty group through binoculars.

Carl Milazzo

* * * * *

ASTRONOMICAL HAPPENINGS

SOLAR:- The Sun has reached its northern-most point and is now on its way back south. That means we will be having longer nights for observing. On the 3rd of July we will be at 'aphelion' (away from the Sun). Solar activity will appear on another page of the "SPECTRUM".

LUNAR:- The lunar phases for July & August are, First Quarter Moon - July 4th & August 2nd & 31st; Full Moon - July 10th (The Buck Moon) & August 9th (The Sturgeon Moon); Last Quarter Moon - July 17th & August 16th; New Moon - July 25th & August 24th.

LUNAR CONJUNCTIONS:- Saturn - July 9th & August 5th
Uranus - July 9th & August 5th
Neptune - July 10th & August 6th
Jupiter - July 18th & August 14th
Mercury - July 23rd.

LUNAR NODES:-

Ascending Nodes - July 16th & August 12th
Descending Nodes - July 3rd & 30th & August 26th

PLANETARY CONJUNCTIONS:- Mercury & Venus - July 11th

PLANETARY EVENTS:- Mercury - greatest elongation July 25th-20 Degrees West; Mercury stationary - July 15th; Pluto stationary - July 23rd; Saturn stationary - August 19th; Jupiter stationary - August 20th.

Mercury @ Superior conjunction - August 20th
Venus @ Superior Conjunction - August 23rd
Mars @ Conjunction with the Sun - August 25th.

METEOR SHOWERS FOR JULY & AUGUST:-

For July - "Sagittariids" will arrive on July 6th from radiant 20h 00m, dec. -20.0°. It is considered a stream with whitish, 3rd magnitude streaks. It runs for 20 days, plus or minus 10 days from maximum. Not much can be given as to its trajectory or count, a worthwhile observation to confirm those unknowns.

For August - "Iota Aquarids" radiating from R.A. 22h 04m, dec. -05.0° is another stream with an unknown trajectory. This shower lasts 20 days before and after maximum, at which as few as 3 and as many as 30 can be counted per hour. They appear as 4th magnitude reddish streaks.

Other showers for July include:- Alpha Cygnids (14th); Phoenicids (14th); Omicron Draconids (16th); Capricornids (23rd); Alpha-Beta Perseids (27th); Delta Aquarids (29th); Alpha Capricornids (30th); & Piscis Australis (30th).

Other showers for August are:- Upsilon Pegasids (11th); Perseids (12th); Iota Aquarids (Northern 12th); Kappa Cygnids (fire-balls 20th); Iota Aquarids (20th); Omicron Draconids (22nd); Zeta Draconids (26th).

Darwin Christy

?! ? SPY & TELL ?! ?

In the Sunday, April 26th Magazine of the Buffalo News, under People Talk, Ernst Both was interviewed by Jane Kwiatkowski in which Ernst gave answers to her several questions for the article "A Stargazer From Way Back."

Irene Rupp, regent of the Abigail Fillmore Chapter, National Society, Daughters of the American Revolution, represented the Society at the National Congress of the DAR in Washington, D.C. April 20-24. On May 9 she gave a workshop in Hamburg on the use of census records to genealogy for the Western New York Genealogical Society.

On the weekend of May 16, Carl Milazzo attended the General Assembly (RASC) Annual Meeting. Each year it is held in a different city in Canada. This year it was held in Toronto and 250 amateur astronomers from all over Canada were present plus 2½ aliens of which Carl was one. Several members from the University of Toronto astronomy department were at the meeting.

Al and Mary Kolodziejczak will soon be homeowners. They have purchased a house on 19 Exeter Road in Williams-

ville, and will be moving into their new abode in mid-August. During the summer they will be camping and boating in the Finger Lakes Region.

The NFCAAA met in Corning on May 9, and was attended by Ed Lindberg, Doris Koestler, Ken Biggle, David Bull and Carl Milazzo. Carl gave a fine talk at the meeting on large amateur telescopes in a 50-75 mile radius from his home.

This summer, Jack and Jayne Mack and children will be crossing the country on a camping trip.

On Saturday, April 25, the Venus-Moon occultation was enjoyed by some of our members including Tristan DiLapo who got up to see it, Dan Marcus who photographed it, Hugh Pettit who went to Beaver Meadow to observe it, and Brian Fallon and cousin, and Lou Sawicki and his fiancée, Connie Brignole, who drove many hours to reach the dark skies of Michigan to try for the best possible view.

Terence Dickinson whose articles on astronomy appear in the Buffalo News, was on WGR radio on May 19. Carl Milazzo called in with a question and also gave out some information concerning our Beaver Meadow Observatory and Public Nights. Carl said this is the first publicity concerning our observatory that has been announced in 1987.

Orrin Christy and two other employees from Moore Business Forms went to Tel Aviv in April to do ink tests. The lab has new electro ink and the job was to evaluate it in a life test, and all went extremely well. Orrin did 52 hours of work in four days instead of eight as originally planned. The trio had a chance to tour Israel, seeing the Dead Sea, Masada, Eingingi, Jerusalem, Bethlehem, and Kurnah where the Dead Sea Scrolls were found. They visited Jericho, the oldest city in the world, where they were excavating 22 layers representing 11,000 years. Orrin's comment on the layer of 10,600 years ago was, "It was the first urban redevelopment."

They changed planes in Zurich where they spent two hours. At the airport they were subjected to a number of security checks.

Dan Marcus has made a Stepper motor drive for his 12½ telescope. He spoke to the Niagara Falls, Ontario (RASC) on astrophotography on June 25th at the Niagara Falls, Ontario Public Library.

Rowland Rupp is back pitching horseshoes, and we're looking for him to be a winner again in the summer competitions.

At a luncheon on June 17, Darwin Christy spoke to the Exchange Club of the Tonawandas on the May 30, 1984 partial solar eclipse.

On May 13 Ruth Christy received an award for her service as an auxiliary volunteer in the gift shop at the De Graff Memorial Hospital in Tonawanda.

Congratulations to George Scheck who won the Piper Cup Adult Dance Progress Award for the 1986-87 Skating Season at the Buffalo Skating Club.

Because of the resignation of Marge Schmidt, assistant administrator of education at the Museum, she will be replaced by Marilou Bebak, who has worked as part-time assistant astronomer for Friday Public Nights in the Kellogg Observatory and also for the Summer Sun Shows at the Museum.

Edith L. Geiger

Congratulations to Patty Rupp!

Patty Rupp, daughter of Irene and Rowland, and a family member of the BAA, graduated Summa Cum Laude from the University of Rochester in May. A Phi Beta Kappa, Patty graduated with High Distinction in biological research. She also received the Annual Ayman Amin-Salem Memorial Award given to a member of the senior class "who best evidences the quality of good character, and good citizenship such as decency, reliability, responsibility and congeniality."

Patty is a superb student. She majored in molecular genetics and carried a 3.83 (on a 4.00 scale) grade-point

average, and made the dean's list throughout her four years in school.

She is returning to the university this summer to work in the lab, and will be entering the School of Medicine in the fall. She hopes to concentrate in either cancer research or sports medicine. Patty has been doing independent research and thinks she has found a DNA sequence of a possible gene and is trying to prove the gene exists.

She is not only an excellent student, but a top athlete and a fine cellist, taking cello lessons at the Eastman School of Music (part of the university). She also took two courses in astronomy while at UofR.

Patty has acquired many titles. She was named the Rochester-area female college athlete of the year by the Rochester Press-Radio Club, and was recognized as one of New York State's ten outstanding women athletes by the New York State Women's Collegiate Athletic Association. She holds 15 varsity records for the UofR team, 11 All-American awards for the NCAA (National Collegiate Athletic Association) Swimming Competition, 12 New York State championship titles, and 3 All-American Academic awards.

An article about Patty appeared in the Rochester Times-Union entitled "Leader of the Pack." The article is a fine tribute to an outstanding student and superior athlete. It was reprinted in the Rochester Review, a UofR alumni publication.

Patty is a remarkable young lady endowed with an exceptional intellect, athletic prowess, and a fresh, delightful personality. She has a wonderfully bright future, and we wish her the very best. The world is hers.

Edith L. Geiger

**COLLEGE OF FELLOWS
AWARD**

The Second Annual College of Fellows Award was presented at the May dinner meeting to Darwin Christy for his outstanding achievement in the study of micrometeorites, and for his being honored in a book, Meteoritic Dust, by Shigeru Morikubo, in which Darwin's research is given a prominent place. At the dinner, Ed Lindberg praised Darwin for his excellent work as editor of the Spectrum, and for his being a noteworthy and dedicated member of the BAA.

E.L.G.

It seems that we know more about distant galaxies than our own due to the fact that we, being at a fixed location, do not have access to anything which might resemble an aerial photograph of our galaxy.

FROM PAST SPECTRUMS

"Who wrote it?" from the February 1967 SPECTRUM ---

GALACTIC ROTATION

There are few areas in Astronomy about which the experts feel they know all the answers. Although much scientific work has been done on the rotation of 'spiral galaxies', the experts do not agree.

Attempts have been made to solve the problem of the direction of rotation of the spirals by spectroscopic measurements indicating which end of the major axis is approaching and which receding. But in order to discover its direction of rotation we must know its actual orientation in space, so that we can distinguish its nearer edge from that which lies on the far side of the nucleus.

Now there is in fact something that provides this very information - the absorbing band which is projected against the nucleus of edge-on spirals. But if a galaxy is exactly edge-on, its structure cannot be seen, and the problem is indeterminate. On the other hand, when the plane of the galaxy is sufficiently inclined to the line of sight for the arrangement of the arms to be seen clearly, the absorbing band is displaced by perspective above or below the nucleus, and now it cannot be seen; thus the

spiral orientation of the galaxy still evades us. However, as a result of a systematic search of the Mount Wilson files Hubble in 1942 succeeded in finding several photographs of nebulae whose approaching and receding sides had been determined spectroscopically, and whose inclination to the line of sight was just great enough for the layout of the arms to be seen, but not so great that the peripheral absorbing band, indicating the near side, was invisible.

By means of these he was able to demonstrate that all the spiral nebulae rotate in the same sense, and that this is such that the arms trail behind as the nucleus rotates; in other words, the direction of rotation is such as would tend to wind up the arms.

However, the Swedish authority, Bertil Lindblad at the present time rejects this completely. He contends that in spirals which are sufficiently inclined for the layout of their arms to be seen, the zone of strongest absorption does not indicate the near side but the side furthest from the observer, since this zone does not lie outside the outermost spiral arms (as Hubble thought), but between it and the arm next inside it. Lindblad furthermore believes that he has been able to establish, by detailed photometric analysis, that the side further from the observer is redder than the other, and since a color excess of this sort is encountered in regions of absorption he concludes that the direction of rotation is the opposite of that advocated by Hubble.

The problem thus remains unresolved. It may, moreover, be less simple than was originally thought, for Lindblad has drawn attention to the case of a nebula whose outer arms unwind in the opposite direction to the inner, and within our galaxy itself evidence is accumulating that some stars revolve in the opposite direction to the majority.

Author unknown----

**MICRO-COMPUTERS
MODEMS OR TERMINALS**

To the officers and membership of:
The Syracuse astronomical society
and The Buffalo Astronomical association:-

I would like to take this opportunity to invite all members that have access to;

- a) Micro-computers equipped with modems -or-
- b) Terminals

to enjoy the benefits of FREE electronic mail.

I have been operating an electronic Bulletin Board Service (BBS) in the Syracuse area for almost a year. The system has been operating in a 'test' mode, allowing any user access to the board.

Although the system has suffered several hardware/software related problems, they have been resolved, and the system is in operation once again.

In addition to private 'electronic-mail', a BBS provides a forum for PUBLIC messages to be 'posted', as one might 'post' notes at the 'board' provided at the local market, or library...

A BBS is designed to allow its users to share information, ideas, notices (public or semi-private) and views. Some BBS systems have a 'theme'. In the case of 'The B'ville Express' (the BBS I've been operating), the 'theme' or emphasis of the board is Astronomy and related subjects. That is, the users are encouraged to take advantage of the system to post or retrieve messages that reflect (no pun intended) astronomical related happenings or developments.

My intentions in operating this service are to promote astronomy among both the novice observer and those with a more developed background.

I try to include data that appears in printed publications, and newsletters so that the users will be aware of what is (if you'll pardon the expression) going on around

... Any additional information users wish to provide (via a "board" facility, or by "posting" a "bulletin") is always welcome.

I feel the board can provide a medium for S.A.A. and B.A.A. members to share their expertise and experience in astronomy with each other, as well as the general public. Also, members can benefit from the availability of a more timely source of information than a monthly newsletter can provide. I must emphasize, it is NOT my intention to replace "The Spectrum" or "The Astronomical Chronical", but rather to compliment them.

The system is reached by 300 or 1200 baud modem at -- (315) 638-0840, 24 hours a day, 7 days a week. The System is down from time to time, for maintenance or enhancement, but not usually for any extended period.

I would also like to stress the fact that the service is offered at no charge to the club, or the individual users...it is completely free.

The only requirement a user must meet before being given 'full' access to the system, is that they 'register' themselves, and provide their REAL NAME, a telephone number they can be reached at (if it ever becomes necessary), their age (for statistical purposes), and any special interests (helps to persuade the development of the system).

S.S./B.A.A. members should mention the club, so that they will receive a security level that will allow them to post messages on a special 'board' on the system currently reserved for discussion of astronomy and related subjects.

I look forward to seeing some of you on the board, and hope you find the system an enjoyable means of exchanging information.

Jerry W. Silverschatz
SYSOP
The B'ville Express

A PARABLE

In the mid-eighteen hundreds there lived in the small town a Spectrum, Pa., two well-known, competing glassmakers named J. Crown and Q. Flint. Flint made glass different from Crown in that it contained lead, was harder and used it for making cheap crystal tableware. Crown made shot-glasses and spectacles and the like, which was respectable. They both did good business.

One bright summer morning a new shop opened up in town. The man who ran it was a scientist and inventor named Niles a. Chromatic, whom dabble-dabbled in many various fields, the chief of which was making refracting telescopes. Chromatic studied the phenomenon of refraction, the bending of a beam of light as it travels through different transparent media, and had a stroke of genius on how to improve his telescopes, getting rid of stray colorations by using two lenses instead of one. The patent for his new-fangled scope read "N. A. Chromatic Refractor." It made use (not coincidentally, but strategically) of a Crown glass lens and a Flint glass lens to refract, or weed out, unwanted coloration (what he called "Chromatic aberration") to give a clearer image of celestial objects. Needless to say, N. A. Chromatic, Crown and Flint Optical Company made all three men very wealthy.

(note: The above is a fiction, and is in no way intended as replacement for the truth. The real inventor was Chester Moore Hall back in the mid-eighteen hundreds.)

D. A. Czuba

SATURN - 1987

The planet Saturn is one of the most spectacular sights in the heavens with a considerable amount of detail visible even in relatively small instruments. This year Saturn can be viewed in the constellation of Ophiuchus near the Scorpion border. Saturn reaches opposition on June 8.-9 and although it is rather low in the south (declination about -21°) the very wide presentation of the rings makes for a

good year to study the planet.

This year Saturn reaches 0.0 magnitude and will only dim slightly to 0.2 during the summer months. The planet will 'shrink' slightly during this period from 18.3" by 41.2" to about 17.5" by 39.5" for the globe and rings respectively. Thus, with only a magnification of about 40 times, Saturn will look about the same size as the full moon does to the naked eye.

The GLOBE

Saturn, like Jupiter, has a noticeably flattened disc which is easily apparent even at low magnifications. Also like Jupiter, Saturn has cloud belts and bright zones, but they are of much lower contrast and therefore more difficult to see (fig. 1). Currently, the north pole is oriented

Saturn's Belts and Zones (after Sherrod, 1981)

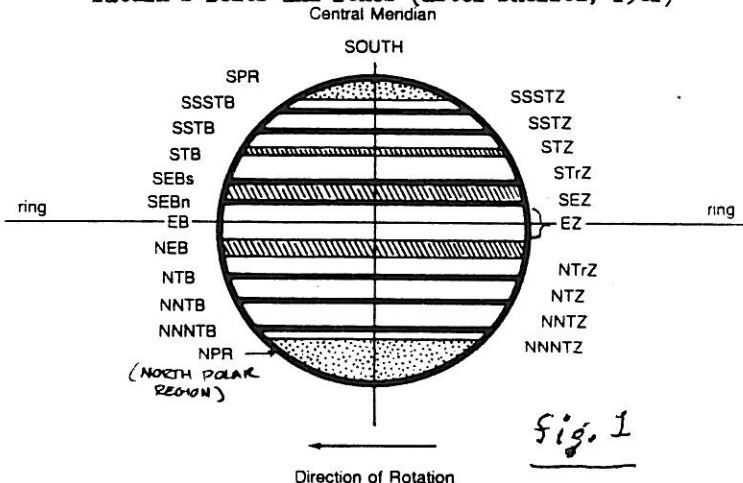


Fig. 1

INDEX TO ABBREVIATIONS:

ZONES

EZ	Equatorial Zone
SEZ	So. Equatorial Zone
STnZ	So. Tropical Zone
STZ	So. Temperate Zone
SSTZ	So. So. Temperate Zone
SSSTZ	So. So. So. Temp. Zone
NTrZ	North Tropical Zone
NTZ	North Temperate Zone
NNTZ	No. No. Temperate Zone
NNNTZ	No. No. No. Temp. Zone

BELTS

EB	Equatorial Belt
SEBn	So. Equatorial Belt North
SEBs	So. Equatorial Belt South
STB	South Temperate Belt
SSSTB	So. So. Temperate Belt
SSSTB	So. So. So. Temperate Belt
NEB	North Equatorial Belt
NTB	North Temperate Belt
NNTB	No. No. Temperate Belt
NNNTB	No. No. No. Temp. Belt

at 26.5° towards the earth so it is not surprising to discover that this is also one of the most prominent regions visible on the globe. This area known as the NRP (North Polar Region) is a large yellow-brown (with a greenish tinge) "belt" that is easily visible in a small telescope (fig. 2).

The next several belts, the NNNTB, NNTB and NTB are much more difficult to observe because of their narrow width and very low contrast. Of these three belts, I've only seen the latter two, and only during nights of excellent seeing. The last major belt and one of the most easy to observe is the North Equatorial Belt (NEB). It is a yellowish-brown colored belt and of rather low contrast. Several times last year I have observed irregularities in the belt structure (fig. 2) in the form of garlands and festoons. Because secondary

features associated with the belts are so difficult to observe, it is well advised to check the suspected features again 45 minutes to 1 hour later to see that they are

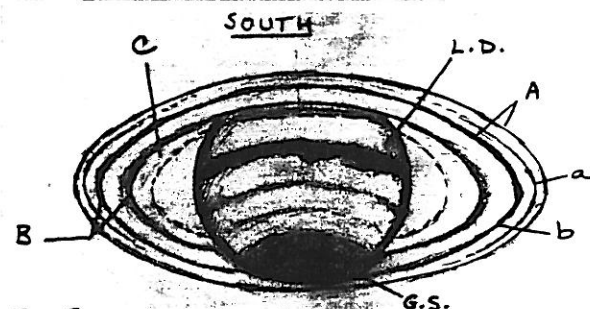


Fig. 2

JUNE 30th 1986
SATURN @ 355X
8" f/7 REFLECTOR

rotating with the planet (sometimes lens/objective imperfections can cause spurious globe details).

Bright zones on Saturn are usually yellowish-white color and rather uniform in brightness. The largest zone is the Equatorial Zone (EZ) which lies between the two large equatorial belts. Other features associated with the globe are spots (similar to Jupiter's but much rarer) and the limb darkening (fig. 2 "L.D.") due to light absorption by the atmosphere. Easily visible a month or two before or after opposition is the globe shadow (fig. 2 "G.S.") projected on the ring system.

The RING SYSTEM

By far the most spectacular aspect of Saturn is the magnificent ring system. Though it is now known that Saturn is no longer unique in the Solar System (both Uranus and Jupiter have extensive but very 'elusive' ring systems while Neptune is thought to have a partial one), it is still by far the most impressive (fig. 2).

Most of the main details of the system are visible with a modest (8 - 10") sized instrument. The brightest components of the ring system are the A and B rings, labeled "A" and "B" in figure 2. The "B" ring is larger than "A" and is the brightest component of the entire Saturn system. They are separated by the broad Cassini division ("C" of fig. 2) a dark high contrast feature visible even in small instruments. Another major division is the Encke division or Keeler gap located 3/5 of the way out in the "A" ring. It is much narrower than the Cassini division and requires excellent viewing conditions, high axial tilt, and high magnification to see well (fig. 2 "a"). The Saturn system is composed of many thousands of ringlets and during favorable viewing they are visible as very thin low contrast ripples on the "B" ring. The innermost ring, the "C" ring or Crepe ring is a faint "filmy" ring located interior to the "B" ring (fig. "C"). Where it crosses the planetary surface it produces a translucent shading unlike the opaque "A" & "B" rings.

Richard W. Jakiel

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* * * * *

SAGITTARIUS

.....glorious in his Cretian Bow,
Centaur follows with an aiming Eye,
His Bow full drawn and ready to let fly.
Manilius

Midst golden stars he stands refulgent now
And thrusts the Scorpion with his bended bow.
Ovid

SAGITTARIUS, The Archer, is bordered by Aquila, Scutum and Serpens Cauda on the north; Telescopium and Corona Australis on the south; Microscopium and Capricornus on the east; & Corona Australis, Ophiuchus and Scorpius on the west.

In ancient times, Sagittarius was depicted as aiming his arrows towards the heart of the Scorpion. It was also described as the "Bull Killer" significant of the fact that as Taurus set in the west, the Archer rises in the east, pointing his arrow at the Bull. And-- according to Greek Legend, Sagittarius represents the celebrated Centaur, 'CHIRON'. That figure of half-man and half-horse was the son of Saturn and Philyra. It is said he changed himself thus, to escape from his jealous wife, Rhea.

Chiron, as we will call him, was famous for his knowledge of '3 M's (Medicine, Music & marksmanship). It is also said that he taught mankind the uses of plants and herbs for medicinal purposes. Having been a noted educator some of his pupils were such famous persons as Achilles, Aeneas, Aesculapius, Apollo, Hercules & Jason.

His death, according to mythology, was attributed to a scratch left by a poisoned arrow which fell from the sheath he carried over his shoulder. Jupiter placed him among the stars honoring him for his suffering.

Many notable objects of interest prevail with the exception of 'galaxies', which are few, perhaps because we cannot see through the 'hub' of our 'Milky Way' galaxy. The galaxies are NGC's 6613 (M-18), 6822, 6835, 6878, 6890 & 6902; also NEW-5. Diffuse Nebulae include NGC's 6514 (M-20), 6559, 6563 (M-8, the Lagoon Nebula), 6589, 6590 & 6618 (M-17, the Omega Nebula), also I,1274 - I,1275 - I,1283 - I,1284 - I,4678 - I,4684 - I,4685 - I,4701 - I,4707 & I,4715.

Planetary nebulae are NGC's 6439, 6445, 6520, 6524, 6537, 6563, 6567, 6568, 6629, 6644 & 6818, also I,4732 & I,4776; by coordinates there are R.A. 17h 55m, dec. -21.8° R.A. 18h 55m, dec. -32.3° & R.A. 09h 45m, dec. -33.2°; Open Clusters include NGC's 6469, 6494 (M-23), 6520, 6530, 6531 (M-21), 6540, 6545, 6558, 6568, 6583, 6645, 6716 & 6774 and TR-33, also I,4706 - I,4725 (M-25). Globular clusters are NGC's 6440, 6522, 6528, 6544, 6553, 6569, 6624, 6626 (M-28), 6637 (M-69), 6638, 6642, 6652, 6656 (M-22), 6681 (M-70), 6715 (M-54), 6723, 6809 (M-5), 6864 (M-75).

Variable stars are:- 3, AP, AQ, AX, BB, GR, Mu, R, RR, RS, RT, RU, RV, RY, ST, SU, U, Upsilon, UX, VX, W, WZ, Y, YZ; also V-350, V-356, V-505, V-634, V-732, V-767, V-909, V-999, V-1012, V-1015, V-1017, V-1059, V-1175, V-1942, V-1943 & V-1944.

Double stars include 16, 21, 28, 52, 53, 54, RS, W, Ka Kappa², Iota, Beta¹, Pi, Omicron, Zeta, Psi, Nu¹, Delta & Eta. Novae are N-1899, N-1905, N-1910, N-1914, N-1924, N-1936 (there are two that year), N-1937, N-1941, N-1944, N-1952 & N-1960. (HAPPY HUNTING)



CORONA AUSTRALIS

.....other few,
Below the Archer under his forefeet,
Led round in circle roll without a name.
Aratos...

CORONA AUSTRALIS, The Southern Crown, is located beneath the famous 'Teat Pot' in Sagittarius. It is bordered by Sagittarius on the north and east; Telescopium and Ara on the south; and Scorpius on the west. It has, in ancient times, been referred to as the Southern Wreath, a Bunch of Arrows held in the Archer's Hand, and the Wheel of Ixion, probably from a relationship to the Centaur 'Pholos'.

Not many interesting objects are contained in Corona Australis but there are a few. Globular Clusters are NGC's 6541 & 6496; Planetary Nebulae include I,1297 & R.A. 18h 00m, dec. -38.7°; Diffuse Nebula are NGC's 6723, 6727 & 6729, also I,4812; Variable stars - AM & V-394; Double Stars are x, 1 and 2, Gamma & Delta; Nova N-1949.

Darwin Christy

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? WHAT'S IN THE FUTURE?

The September-October issue of the "Spectrum" will have "Sunshine - Where Does it Come From?", "Occultation of Venus by the Moon - April 25, 1987" & "Ancient Egyptian Astronomy".....In future issues of the "Spectrum" there will be, "The Astronomer's Drinking Song", "Refractors VS Reflectors - for the Beginner", "Matching a Binocular to Your Eyes", "The Incredible Evolving Program" ----- And many others when I receive them from you, the members of the B.A.A.....

Your Editor

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* THE SPECTRUM *

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