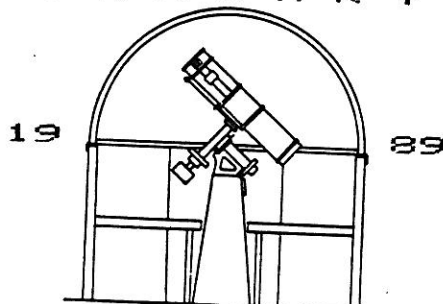


# The Spectrum

J A N U A R Y



F E B R U A R Y

**BUFFALO ASTRONOMICAL ASSOCIATION, INC.**

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## !!! MEETINGS !!!

**FRIDAY, JANUARY 13, 1989 at 7:30 PM in the New Science Building Auditorium, State University College.**

The first meeting for 1989 will feature Carl Milazzo as the guest speaker. His talk is entitled, "Charts, Catalogues and Deep Sky Observing Techniques." Carl is a very experienced observer and long time member of the B.A.A. He will also be discussing the possibilities of new observing sites, and new designs for observatories. Members are encouraged to participate in the discussion by expressing their ideas. Refreshments follow.

**FRIDAY, FEBRUARY 10, 1989 at 7:30 PM in the New Science Building Auditorium, State University College.**

A newer member of the B.A.A. will be our guest speaker this month. Chris Krstanovic has enjoyed astronomy for many years and has recently become very active in the field. His talk is entitled, "The Use of the C.C.D. in

Image Processing in Astronomy." Chris is also interested in HAM radios and building electronic devices. Lets give a warm welcome to a new member. Refreshments follow.

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## NOTICE--MEETINGS--NOTICE

THE SCIENCE MUSEUM WILL BE CLOSING FOR SEVERAL MONTHS, BEGINNING IN JANUARY, THEREFORE WE WILL CONTINUE TO HOLD OUR MEETINGS IN THE NEW SCIENCE SCIENCE BUILDING AUDITORIUM, STATE UNIVERSITY COLLEGE.

## PRESIDENT'S CORNER

The purpose of our newsletter, "The SPECTRUM", is to print astronomical articles and observations written by our members. Astronomical announcements, items for sale, profiles on members, and inside information about what members are doing other than astronomy help make the Spectrum an excellent publication. Because of the time involved obtaining articles, re-writing and printing, a monthly newsletter is not feasible. Space is limited and the Spectrum has been kept at four pages because of postage rates. More pages means higher postage. Copies of the Spectrum are sent to the members of the BAA, member clubs of the NFCAAA as well as other clubs around the country. Lets try to maintain the quality of the Spectrum with astronomical information and knowledge when submitting future articles.

Many thanks to Irene Rupp for her time auditing the books.

The \$50.00 donation from Dave & Marty Junkin has been applied to the purchase of a Mylar Solar Filter for the Beaver Meadow telescope.

Our thanks to Joe Provato for bringing the wine and soda for our Christmas Party. Many thanks to everyone who brought cookies or other refreshments to help make our party a festive occasion.

There will be a board meeting on January 10, 1989 at 7:30 PM.

A dinner meeting will be held in May. Because of the low attendance of last year's dinner meeting, a large sum of money had to be paid from the treasury. This was unexpected and a major disappointment to all of the board members, therefore, this dinner meeting will be advance ticket sales only. No tickets will be sold at the door. For the convenience of all the members, the dinner will be scheduled, as always, on a regular meeting night, Friday, May 12, 1989.

Doris Koestler

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"WHAT'S THE BEST BOOK TO USE TO LEARN ABOUT THE STARS?" I WISH I HAD A DIME FOR THE NUMBER OF TIMES I'VE BEEN ASKED THAT QUESTION! IT'S NOT AN EASY QUESTION TO ANSWER, BECAUSE YOU HAVE TO QUIZ THE QUESTIONER AS TO WHETHER THEY MEAN STAR POPULATIONS, EVOLUTION, CLUSTERS, CONSTELLATIONS, OR A HOST OF OTHER POSSIBILITIES. USUALLY WHAT THEY MEAN IS, "HOW CAN I LEARN TO LOOK UP AT NIGHT AND MAKE SOME SENSE OUT OF WHAT I SEE?" WELL, FORTUNATELY FOR ALL WOULD - BE AMATEUR ASTRONOMERS, MANY DEDICATED WOMEN AND MEN HAVE SPENT CENTURIES WORKING ON JUST THAT PROBLEM. THEIR EFFORTS ENABLE US TO SPEND PLEASANT NIGHTS RETRACING THEIR EXPERIENCES IN THE HEAVENS. WE ARE ALSO MOST FORTUNATE THAT MODERN ASTRONOMERS HAVE COMPILED THIS KNOWLEDGE INTO READABLE AND CONVENIENT BOOKS AND ATLASES.

SO, WHERE DO YOU BEGIN? FOR THEORY I HIGHLY RECOMMEND ABELL'S EXPLORATION OF THE UNIVERSE AND BURNHAM'S CELESTIAL HANDBOOKS VOLS. 1, 2 & 3. ABELL'S FRESHMEN COLLEGE TEXT IS A CLASSIC. IT OFFERS AN EXCELLENT INTRODUCTION TO ACADEMIC ASTRONOMY. BURNHAM'S HANDBOOKS ARE ALSO CLASSICS WITH IMPRESSIVE ESSAYS (SOMETIMES RUNNING 70 OR 80 PAGES) ON VARIOUS OBJECTS ACCESSIBLE TO AMATEUR TELESCOPES.

TO BEGIN OBSERVING YOU NEED A GOOD ATLAS - A ROAD OF THE SKY. I STRONGLY RECOMMEND EDMUND SCIENTIFIC'S MAG 5 STAR ATLAS. IT'S GREATEST VIRTUE IS IT'S SIZE (8.5" BY 11"), WHICH IS MOST CONVENIENT OUTSIDE AT YOUR SCOPE. IT HAS A GREAT TEXT WITH SUGGESTIONS FOR OBSERVING VARIOUS OBJECTS WHICH APPEAR ON THE SIX "STAR MAPS". THE CHARTS THEMSELVES HAVE MOST M OBJECTS (MESSIER), MANY NGC OBJECTS AND ALL STARS DOWN TO FIFTH MAGNITUDE. THE CONSTELLATIONS ALSO HAVE LINES CONNECTING THE MAJOR STARS, A GREAT HELP FOR THE NOVICE. I STILL USE THIS VERY SIMPLE ATLAS AS A QUICK OVERVIEW OF THE SKY.

EDMUND SCIENTIFIC ALSO PUBLISHES A MAG 6 STAR ATLAS, A MUCH MORE SOPHISTICATED VERSION OF THE MAG 5, BUT IT'S SIZE (12" BY 12") MAKES IT AWKWARD AT THE SCOPE. ANOTHER GOOD TOOL FOR THE BEGINNER IS THE ABRAM'S MONTHLY STAR CALENDAR (AVAILABLE AT MOST OF OUR CLUB MEETINGS). I DO NOT RECOMMEND THE FIELD GUIDE TO THE STARS AND PLANETS (# 15 IN THE PETERSON FIELD GUIDE SERIES). THE CHARTS ARE MUCH TOO SMALL TO BE PRACTICAL. HOWEVER, IF YOU CAN PHOTOCOPY THE INSIDE COVERS OF THE FIRST EDITION (AUTHOR DONALD MENZEL) YOU WILL HAVE THE BEST CONSTELLATION HOPPING CHART I HAVE EVER SEEN. IT'S A SHAME THAT THE NEW AUTHORS DISCONTINUED IT.

FOUR MORE BOOKS I RECOMMEND FOR THE BEGINNING OBSERVER ARE WHITNEY'S STAR FINDER BY CHARLES A. WHITNEY, THE MESSIER ALBUM BY MALLAS AND KREIMER, THE ATLAS OF DEEP-SKY SPLENDORS BY HANS VEHRNBERG AND SAM BROWN'S ALL ABOUT TELESCOPES (WHICH HAS OBSERVING TIPS AS WELL AS INVALUABLE INFORMATION ABOUT EQUIPMENT).

ONCE YOU HAVE GAINED SOME EXPERIENCE AT THE TELESCOPE, YOU'LL PROBABLY WANT A MORE SOPHISTICATED ATLAS. A CLASSIC IS NORTON'S STAR ATLAS. I HAVE NEVER USED IT, BUT AMATEURS WHO DO SEEM TO LOVE IT. ANOTHER CLASSIC IS THE ATLAS COELI (USUALLY CALLED SKALNATE OR BECVAR - AFTER THE OBSERVATORY AND AUTHOR). IT WAS FIRST PUBLISHED IN 1948 USING 1950 CELESTIAL COORDINATES. IT WAS THE SERIOUS AMATEUR'S CHARTS FOR JUST ABOUT THIRTY YEARS. IT CAME IN TWO BASIC VERSIONS - A FIELD EDITION (BLACK WITH WHITE STARS) AND A DESK EDITION (WHITE WITH BLACK STARS). THE SIZE WAS 14" BY 18" AND IT CAME IN A VERY HEAVY PAPER STOCK (WHICH ABSORBED DEW WITHOUT HARMING THE CHARTS). A DELUXE COLOR EDITION (MUCH LARGER AND MUCH MORE AWKWARD AT THE SCOPE, AND WITH THINNER STOCK) WAS PUBLISHED IN 1958. SO, WHY AM I TELLING YOU SO MUCH ABOUT AN OUT-OF-PRINT ATLAS? BECAUSE IT WAS THE STANDARD FOR SO LONG AND BECAUSE IT'S REPLACEMENT HAS JUST RECENTLY BEEN PUBLISHED.

THE REPLACEMENT FOR THE SKALNATE IS CALLED THE

SKY ATLAS 2000.0. IT IS PUBLISHED BY SKY PUBLISHING, AT ABOUT THE SAME SIZE AS SKALNATE. COMES IN THREE EDITIONS (FIELD, DESK AND DELUXE), AND WAS FIRST RELEASED IN 1980. AMATEURS WERE VERY ENTHUSIASTIC ABOUT A NEW IMPROVED ATLAS (MAG 8 WITH 43,000 STARS ON 26 CHARTS VS. 7.75 MAG WITH 32,500 STARS FOR SKALNATE). THE CHARTS ARE A GREAT IMPROVEMENT OVER SKALNATE, BUT THEY ARE A BIT DISAPPOINTING. TWO MAJOR COMPLAINTS ARE THAT THE PAPER STOCK IS TOO THIN (WRINKLES IN THE INEVITABLE DEW) AND THERE IS NO SIMPLE GRAPH OR MARGIN COMMENT THAT DIRECTS YOU TO ADJACENT CHARTS. THESE COMPLAINTS MAY SOUND TRIVIAL, BUT OUTSIDE AT THE SCOPE THEY CAN EAT UP A LOT OF VALUABLE OBSERVING TIME. STILL, IF YOU ARE LOOKING FOR A SERIOUS ATLAS, THIS IS THE ONE TO BUY.

IN 1987 STAR ATLASES TOOK A GREAT LEAP FORWARD WITH THE PUBLICATION OF THE GRANMETRIA 2000.0 VOLS. 1 & 2. THIS ATLAS QUICKLY SUPERSEDED THE SKY ATLAS 2000.0 AS "THE" ATLAS FOR THE SERIOUS AMATEUR. WHILE YOU NEED LARGE SCOPE TO SEE MANY OF THE OBJECTS PLOTTED, I HIGHLY RECOMMEND IT FOR THE EXPERIENCED OBSERVER. EACH VOLUME IS 9" BY 12", COMES IN A HARD COVERED BOOK FORM, HAS 25 CHARTS AND TOGETHER INCLUDE 300,000 STARS, 13,000 DEEP-3 OBJECTS AND GO DOWN TO 9.5 MAG. VOL. 1 CHARTS GO DOWN TO DECLINATION -6, SO YOU NEED BOTH VOLUMES. ASK A MEMBER (CARL, MYSELF, ETC.) FOR A PEEK. THEY'RE BEAUTIFUL.

ANOTHER SOURCE FOR THE SERIOUS AND EXPERIENCED OBSERVER ARE THE WEBB SOCIETY'S FIVE HANDBOOKS. WHILE THEY LEAVE MUCH TO BE DESIRED, THEY DO HAVE INFORMATION AND CHARTS ABOUT OBSCURE OBJECTS.

TWO OTHER EXCELLENT SOURCES OF INFORMATION ON ATLASES ARE TRISTAN DILAPO'S BOOK REVIEW IN THE LAST SPECTRUM AND THE NOVEMBER ISSUE OF SKY & TELESCOPE PAGES 509-512.

WELL, I HOPE I'VE BEEN OF SOME HELP. PLEASE FEEL FREE TO CALL (634-5443) WITH ANY QUESTIONS. I HOPE TO WRITE AN ARTICLE ON EYEPIECES AND FILTERS NEXT TIME. SEE YOU AT THE NEXT MEETING.

ALPHONSE KOLODZIEJCZAK

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#### \* AMATEUR TELESCOPES, YESTERDAY & TODAY \*

Over the last fifteen to twenty years, there has been a revolution in large telescope design. In contrast, during the period 1945-1975, all large telescopes resembled the Palomar 200-inch. Less noticed is that an equally large change has occurred in amateur telescope design. The following is a summary of the changes in amateur telescopes over the past twenty years, between 1968 & 1988:

#### TELESCOPE TYPES

When I was in high school (ca.1964) the dominant amateur telescope was the old reliable 6-inch f/8 reflector. These telescopes were sold by Edmund Scientific and Criterion for about \$200 (\$750 in 1988 dollars). Larger telescopes made by Cave and others cost \$450 (\$1500) and a 12.5" cost \$1200 (\$4000). More adventuresome (and well-to-do) amateurs bought Celestron 8" catadioptric telescopes for \$800(\$3000). Because of these large costs many amateurs made their own mirrors. Some amateurs also bought 3" refractors for about \$300 (\$1125).

Today, after the "Dobsonian Revolution", aperture fever has struck. Many amateurs have 10" and 13" Dobsonians, by Coulter or homemade. Note that these telescopes are also much cheaper-- a 13" Coulter is about 1/7 the cost of an old Cave 12.5" (although the Cave had a much better mount). Amateurs still have 8" Celestron and Meade catadioptrics, as in the 60's. Among the more expensive telescopes, refractors have recently made a comeback, particularly in the 5" to 7" sizes.

#### OPTICS

Because of the high cost of mirrors many amateurs in the 60's ground their own mirrors (an 8" cost about \$370

in 1988 dollars). I made seven mirrors at the Adler Planetarium mirror shop in Chicago. Today, most amateurs buy their mirrors, even the large sizes. Because of this, I think that amateurs are less sophisticated today when it comes to optics than in the past. At the Adler Planetarium, people routinely made Cassegrains, Maksutovs and even off-axis systems. Today, most amateurs just build big 'dumb' telescopes. The B. A. Astronomical Society recently built a 31" telescope, an impressive feat of mechanical design. But the optical design was just that of an f/4.5 Newtonian-Dobsonian.

#### SITES

Skies were much better twenty years ago and not coincidentally amateur telescopes were very heavy and immobile. I used to drag my 6" telescope (weighing 70 lbs.) out into the backyard. Now trips to dark sites are far and telescopes are built for portability. Some amateurs, like professionals, have started to consider ways to improve local seeing conditions, by minimizing turbulence in the tube or around the dome or site.

#### EQUIPMENT

Many amateurs have cameras for astrophotography as in the 60's. In addition, recently amateurs have used photometers for recording star variability and lunar occultations, and some use electronic cameras. Three competing firms have recently started selling CAT (Computer Aided Telescopes) that can automatically slew a telescope to a number of objects in succession.

To conclude, amateurs now have generally much better telescopes at a much lower cost than twenty years ago. But they no longer have the dark sites in which to use their telescopes. Although the mechanical design of telescopes has improved, the neglect of home-brew optics has resulted in a decline of average optical skill in the amateur.

by Bill Bagnuolo  
from the October 1988 Journal of the  
Astronomical Society of the Atlantic.

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#### \* JANUARY CONSTELLATION \*

Tender GEMINI strict embrace

Stands clos'd and sailing in each other's face.....

GEMINI, the third sign of the zodiac, is not in the region so occupied but is in the area of the crab, Cancer, today. It is not only a modern constellation but is old enough to be considered an ancient constellation as well. It is dated by many at around the year 256 B.C., but some other reports find it to be from around 2100 B.C., as well as the other members of the zodiac. It seems to have originated within the era of the "Chaldaeans Astronomers". Even the Chinese were involved, but they gave it the name, "TIGER".

CASTOR & POLLUX have been known as the "TWINS" from the earliest times. They were the sons of Jupiter and Leda. One was an expert horseman, the other a skilled pugilist and soldier. They were considered patron deities by the Roman soldiers, swearing by them. In an old quote or swearing by the soldiers, "By Gemini", came the more modern expression, "By Jimmy!".

The two stars were regarded by the Arabs as "Two Peacocks"; the Egyptians named them as "Two Sprouting Plants"; and the Hindus (Indians of India) referred to them as "Twin Dieties". The 'Twins' were great favorites of the mariners who sailed the seas in ancient times. In honor of them, the electric effect known as "St. Elmo's Lamps", which darted about in the rigging of the ships in a storm. They were originally known as the "Ledeon Lights", but today, they are called, "St. Elmo's Fire".

In the 4th century B.C. there is recorded in Gemini, a Lunar Occultation of an unknown wandering star, which perhaps, was the planet Saturn. The record is vague. Today, there is a meteor shower, the Geminids, radiating from Gemini. It has a duration of 14 days with maximum

centering on December 14th. Castor is one of the finest doubles, whereas Pollux is a quadruple easily seen in a small telescope.

GEMINUS, a Greek writer, is supposed to have been named as such by his parents, having been born, perhaps, under the Astrological Sign in the 1st century B.C. Only one of his works has been possessed, "Introduction to Phenomena" which deals with Astronomy. It was translated and published in Latin in 1590 by Hilderic.

Gemini can be found bordered by Lynx and Auriga on the north; by Canis Minor and Monoceros on the south; on the east by Cancer; and on the west by Taurus and Orion.

Interesting objects in Gemini are:-

Castor, a double with components, 2.0 & 2.8 magnitude. Both of a greenish-white hue. It is at a distance of 47 light-years.

Pollux, a quadruple and is a first magnitude star. It is 31 light-years away. Gamma, a double of 4.0 & 8.0 magnitude is yellow and blue with the primary being a variable.

Lambda, a double of 3.5 & 10 magnitude, both greenish-blue but difficult to see in a small telescope.

Delta, a double, 3.6 and 8.0 magnitude, yellow and red or purple in colour. Kappa, a double of 3.7 and 8.0 magnitude are orange & pale blue.

Two open clusters, NGC 2420 and NGC 2168 (M-35), are barely visible to the naked eye. They are well defined with small opera glasses or binoculars.



#### \* FEBRUARY CONSTELLATION \*

....And there a crab

Puts coldly out its gradual shadow claws.

CANCER, the Crab or a Chinese "Hare", is the fourth sign of the zodiac. It no longer occupies that position in the zodiac, but now is in a place where the sign of Leo should be located. The Sun is at its greatest northern declination, the point referred to as the 'Summer Solstice' also the line farthest north called the 'Tropic of Cancer' 23.5 degrees north latitude.

Macrobius tells us that the name "Cancer" was selected by the Chaldeans to represent this constellation because the crab, being an animal which walks both backwards and obliquely, well typifies the Sun's apparent retrograde motion when it is this part of the zodiac.

Between two 4th magnitude stars, the open cluster, M-44 lies. This cluster has many names, and an interesting history. It has been called the Praesepe or Bee-Hive from the earliest times by the ancients. These two stars are Gamma and Delta and they bear the names, "Asellus Borealis" (the Northern Ass) and "Asellus Australis" (the Southern Ass) respectively from the Greeks. Also the Greeks, as well as the Arabs, imagined these two stars as representing two 'Asses' feeding at the "Manger", another name having been given to the cluster.

The star cluster, by the ancients, is described as a sort of barometer or weather guide. It was referred to by Pliny that if it is not visible in a clear sky, it foretells the coming of a violent storm. (ed's note: Can not say that that is true today, but I would not place a bet on it as I have seen stormy weather when it has not been visible on the Niagara Frontier.)



According to Greek legend, while the valiant Hercules was engaged in his famous contest with the dreadful Lernaean Monster and envious of his fame, Juno dispatched a crab to attack him but Hercules quickly put it to death. Juno then persuaded Jupiter to reward the Crab and immortalize it by placing it among the stars. Another story tells us that the God Bacchus, while on his way to the Temple of Jove, came to a marsh barring his way. He saw two wild asses browsing in a field and by mounting one, crossed the marsh 'dry shod'. In gratitude for this service, transported both creatures to the heavens.

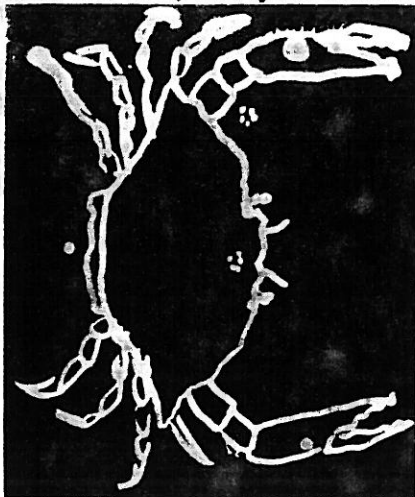
One of the "Claws", as translated from the Arabic, is "Acubens", (meaning claw) is a fourth magnitude, Alpha Cancri.

Cancer can be found bordered on the north by Lynx; on the south by Hydra; by Leo on the east; and by Gemini and Canis Minor on the west.

Cancer is the least conspicuous constellation among the members in the zodiac. Noted objects in Cancer are; Acubens, a double with 4.4 & 11 magnitude components.

Iota, a double of fine contrast, 4.4 & 6.6 magnitude yellow and blue.

The open cluster M-44 as described above and another open cluster M-67



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#### \*\*\*\*\* ASTRONOMICAL HAPPENINGS \*\*\*\*\*

**SOLAR:-** The Sun will be traveling from Sagittarius into Capricornus on January 20th, where it will remain until February 17th. It will then pass into Aquarius and remain there until March 12th. Astrologically speaking, the Sun will leave Capricornus and enter Aquarius in January and then in February it will enter Pisces.

While the Sun is traveling northward, we find that the days are becoming longer and the nights shorter. Of course, this shortens our time for observing, but the Solar observer seems to like it as he has more opportunity to observe the Sun.

On January 1st we will be at our closest approach to the Sun (perihelion), near 5:00 PM EST.

**LUNAR:-** The lunar phases will appear as NEW MOON on January 7th and February 6th. FIRST QUARTER MOON will be on January 14th and February 12th. FULL MOON will be (Wolf) on January 21st and (Snow) on February 20th. LAST QUARTER MOON will be on January 29th and February 28th. Three hours later we would NOT have had a fourth phase of the moon in February.

**LUNAR OCCULTATIONS:-** Regulus will be occulted by the moon on January 23rd, and should be seen by the BAA membership barring any clouds. Another occultation of Regulus will occur during the Lunar Eclipse on February 20th, which should be observed here in this area.

**LUNAR ECLIPSE:-** An eclipse of the Moon will occur on February 20th. It will be total, but not seen in its entirety in our area. Its duration will be for 78 minutes and our western states, Hawaii & Alaska will have the better view.

**LUNAR CONJUNCTIONS:-** ANTARES: January 4th & February 1st  
ANTARES: January 4th and February 1st & 28th

VENUS: January 5th

MERCURY: January 8th and February 12th

MARS: January 24th and February 13th

JUPITER: January 16th and February 13th  
URANUS, SATURN & NEPTUNE: February 3rd.

**PLANETARY CONJUNCTIONS:-** VENUS & URANUS: January 12th

VENUS & SATURN: January 16th

VENUS & JUPITER: January 18th

MERCURY & VENUS: January 31st

**PLANETARY EVENTS:-** Mercury at greatest elongation at 19 degrees east on January 8th; Mercury stationary on January 15th; Jupiter stationary on January 20th; Mercury at inferior conjunction on January 24th; Mercury stationary on February 5th; & Mercury at greatest elongation at 26 degrees west on February 18th.

**METEOR SHOWERS:-** In January are the QUADRANTIDS of the 3rd KAPPA CYGNIDS (fireballs) of the 17th; DELTA CANCRIDS of the 16th; also the COMA BERENICEIDS of the 17th. The latter being from radiant R.A. 12h 24m, at declination +20 degrees. They have a duration of 4 days, are reddish and average about 4th magnitude. Their type and trajectory are not known. They have been found to have come from a comet designated as 1913-I, no name being mentioned for the comet. Look carefully, as they are NOT related to the Kappa Cyngids, although appear to be from that radiant.

In February are the AURIGIDS on the 9th and the DELTA LEONIDS on the 26th.

Darwin Christy

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#### \* FULL MOONS \*

Last month's Astronomical Happenings noted that the full moon of November 23rd was called the "Beaver Moon". This sounded wrong to me because I recalled the "Hunter's Moon" occurring in November and the "Harvest Moon" in October. Could Darwin be wrong?

I looked it up, which isn't so easy to do in an era when astronomy books are concerned about evaluating Hubble's constant and whether neutrinos have rest mass. But Charles A. Young's Manual of Astronomy, published in 1902, managed to shed light on this issue of full moons. He agreed with Darwin, as you might expect.

The full moon occurring nearest the autumnal equinox is the "Harvest Moon"; the one following is the "Hunter's Moon". The full moon of September 25 was clearly the former and October's full moon was the latter. However, if a full moon occurred in early October it would be the "Harvest Moon", and November's would then be the Hunter's - hence my confusion.

The reason these moons are noteworthy is because for the few days around the time they are full the moon rises at nearly the same time each night, presumably benefitting harvesters and hunters with early evening illumination. The cause of this phenomenon is that the angle between the ecliptic and the eastern horizon is near a minimum shortly after sunset during early fall. When the moon is near this position it is full, as it must be if it is rising when the sun is setting, and its position with respect to the horizon is similar on successive nights due to the shallow angle of the ecliptic. The result is that for a while it rises full at almost the same time from night to night.

I haven't found out anything about Beaver Moon in any material I have. Maybe Darwin can tell us more about it.

Rowland Rupp

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#### \* NEW MEMBERS \*

Howard Sterling - Frederick Gordon - Dan Furmanek - Chris Krstanovic - Jeff Pignatora - Frank Plennert - Richard Arlauskas - Jack & Robin Keough - Richard Klemann.

WELCOME!!!!

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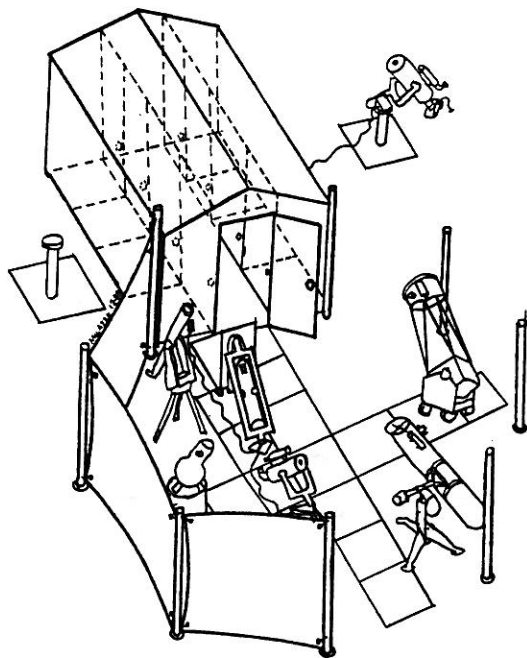
#### # WANTED #

EQUATORIAL MOUNT suitable for Astrophotography with an 8" f/5.6 Telescope....

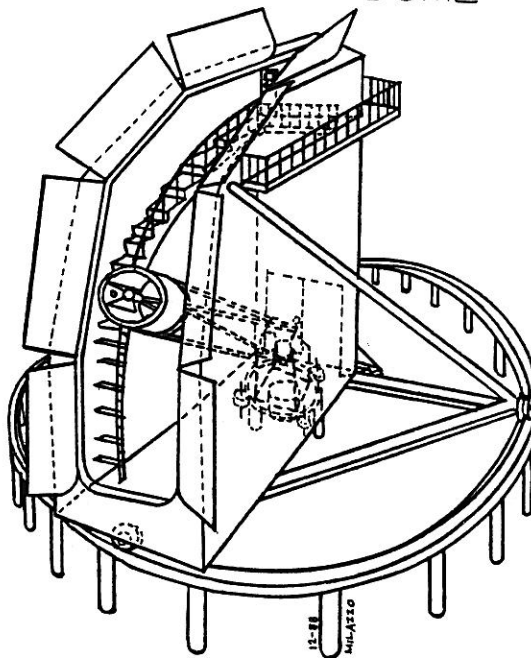
Gary Kielich - 662-2940

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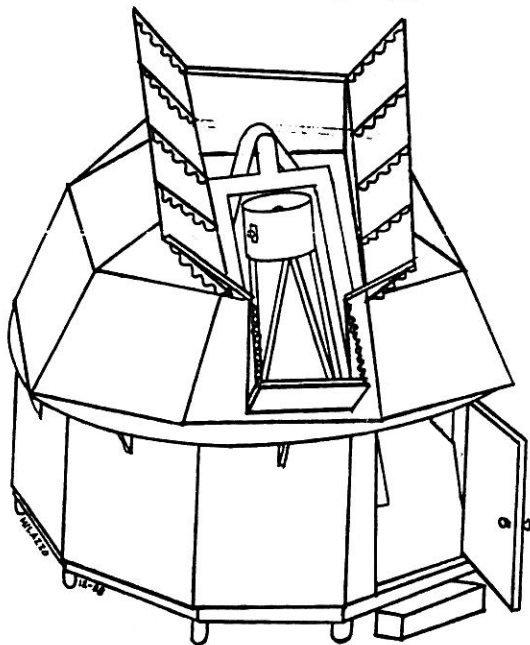
## LOCKER OBSERVATORY



## SEGMENTED DOME



## GEODESIC DOME



B.A.A.'s PLAN for a SECOND OBSERVATORY ? ? ? ? ?

The following local clubs have two observatories: SYRACUSE, HAMILTON, TORONTO, NORTH YORK and KITCHENER.

The following local clubs own 'scopes larger than our club's: 14 & 16 inchers of SYRACUSE; 17.5" in HAMILTON; 16" in elmira-CORNING; 17.5" in NIAGARA CENTRE; and 17.5" & 30" of the MARTZ CLUB near Jamestown.

Distant clubs have built large telescopes such as a 24" in Peoria, Illinois with a computer which points to 8,000 objects in the skies. In Kansas City a club owns a 29" and 30" telescope; and four clubs in California own 30", 31", 48" and 70" 'scopes

The Hamilton club, with 80 members, in 1980 built a domed observatory for their 5" refractor. It has a 20' by 30' warm-up room. In it are portable telescopes, a 4"

refractor and 12" reflector; also many club's members store the telescopes there. They have a library, phone, a bathroom and an area large enough for holding small meetings. In 1987 they built a second observatory with a large roll-off roof containing three permanently mounted equatorial telescopes of 5", 10" and 17.5", all reflectors.

Over the past 12 years, some members have found better sites with little or no problem with ground fog, heavy dew or lake effect clouds. Also portable observatories and telescopes which are easy to build at low cost and best of all, nearly problem free.

During the January meeting I will go into more detail about the many choices the club could have. I wish to hear as much input from the membership as possible. The three drawings herewith are some of the ways our club can go.

### DRAWINGS

1 LOCKER OBSERVATORY

2 GEODESIC DOME

3 SEGMENTED DOME

Carl Milazzo

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### KELLOGG OBSERVATORY REPORT

by ML. Babak

Due to the Erie County budget cuts, the Friday Public Nights at the Kellogg Observatory have been cancelled. The observatory will remain closed until further notice; we hope to open for Summer Sun Shows in July. Needless to say, this is a very sad situation, as the Public Nights are quite popular, but given the current financial situation from Erie County, we have no choice.

I wish to extend my sincere thanks to all BAA members who have volunteered during the fall of 1989. Your assistance is greatly appreciated and adds a lot to our program. On Friday, November 18th, Conrad Stolarski, Nancy Adams, and Gene Witkowski observed Io as it made its appearance from behind Jupiter. The sunspot number for October 1988 was 124.4, this is the most sunspots since December of 1982.

Upcoming Astronomy events at the Museum where we could use BAA help are:

20th Anniversary Celebration of the Apollo 11 manned landing on the moon, Thursday July 20th, 1989 from 10:00 am - 3:00 pm. All types of assistance is welcome, from astronomy related displays of astro-photography or equipment, to conducting an astronomy talk or tour. Call Marilou at 896-5200 if you can help.

The "Ice Ages" exhibit, with moving robotic pre-historic creatures will take place from September through December of 1989. As part of the exhibit, the solar and Kellogg Observatories will be in operation during the day as part of a presentation on astronomy related causes for the Ice Ages. We will need help on weekends for the general public, and during the week for school groups. This will be a great chance to routinely observe sunspots as we approach solar maximum! Training for Ice Ages will take place in August 1989. More information to follow.

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## OBSERVATORY REPORT

I would like to thank the volunteers who pitched in for public nights!! These people showed up rain or Mars shine to show the public the wonders of Mars.

Marilou Bebak  
Ed Czapla  
Jack Empson  
Bob Hughes  
Doris Koestler  
Ed Lindberg  
Kim Monkiewicz

Peter Olchvary  
Laszlo Olchvary  
Hugh Pettit  
Bob Rzoska  
Dave Sepulveda  
Conrad Stolarski  
Bill White

Starting in March I will be asking people to sign up to give public nights. Public nights will be the first and third Fridays of the month. This is to avoid conflict with STAR PARTIES. Please avoid these nights when you are planning your star party! I would like to encourage people to use the scope! I do not know about you, but given a choice I would rather attend a star party than go out for public night. If you don't feel you can handle public night by yourself, sign up to assist!!

OUR Observatory is doing just fine in case you have not gone out to use it. The roof rolls freely, and the leak is fixed. The clutch works fine, the drive controls are repaired, the Telrad finder is installed, all the scope requires is someone to use it!

The Saturday, November 6 repair day was a resounding success! Even though the Observatory Director was sick and 45 minutes late, it was a really good feeling to see so many people all working away, cleaning, inspecting, and getting ready to fix the roof! Conrad Stolarski was helping Dian Borowski, and Marilou Bebak by getting all those yucky spiders, and bugs out of the lights. So if those nasty crawly bugs bug you, you had better check out the place before spring, while it is bug free.

The rest of us:

Jack Empson  
Amber Empson  
Shauna Empson  
Dave Sepulveda

Bob Rzoska  
Bryan Rzoska  
Ed Czapla  
Car l Milazzo

all pitched in with the rest of the chores. The Observatory looks great, Dian even washed the curtains.

Photo sessions: The next one will be Saturday January 21, 1989, at 7:00 pm at the Beaver Meadow Observatory. As usual, this will be held even if snowing, provided it is not a blizzard, so dress warmly, (yes there is a warming room!) if you do not have a camera, I will provide one, along with film.

Daniel R. Marcus

P.S. Photo sessions are a great place to discuss what we need to do to improve the Observatory. So come on out and join in the planning!

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### # \* INSTRUMENT NOTES \* #

"Mirror making involves a lot of luck" say some amateur telescope makers. "If everything goes right you get a good mirror." Untutored though these workers may be, their remark has some merit. Some mirrors seem to evolve with little effort while others have to be cajoled into shape through endless hours of corrective measures. The problem faced by the beginner is a lack of familiarity with the

effects of various figuring strokes. Figuring can take as long as the combined times of all the preceding grinding and polishing sessions. The curve of a paraboloid has to vary from a relatively short length at the center to a longer value at the edge. And the variation must be smooth and continuous.

Suppose that on test a mirror exhibits a high center but has very good outer regions. Because the central region has very little area it can be worked down with relative ease. This operation is referred to as "working downhill".

If the mirror has low central area, the solution is much more difficult. The whole large outer area has to be lowered to blend with the level and curvature of the center. Because of the large volume of material to be removed, this phase is referred to as "working uphill".

All areas of a mirror contribute equally to image formation. But what may not be generally realized is that when a fairly large circle at the center is compared with the equal area of a ring at the edge the ring will be surprisingly narrow. Suppose that we have a mirror ten inches in diameter and that we consider a circle of two inches in diameter at the center. We ask the question: What will be the width of a ring at the outer edge to have the same area as the two inch circle?

The area inside of the inner edge of the ring equals the area of the whole disk minus the area of the two inch circle. This works out to 25 minus 1, or 24 square units. The radius of this inner circle will be the square root of 24 or 4.9 inches. Subtracting from the radius of 5.00 gives a value of 0.10 inches for the width of the ring. Hence the area of a two inch circle at the center is equalled by the area of a ring at the edge of only one tenth of an inch in width. This points up dramatically the importance of having the outer zones properly corrected.

There is only a few millionths of an inch difference in surface depth between an excellent and a mediocre mirror. If the maker produces a mirror of good quality he may say, "Luck was with me". Luck, plus long sessions of thinking and dedicated effort.

Ed Lindberg

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BAA Board of Directors  
Tuesday, November 1, 1988

Present: Doris Koestler, Ken Biggie, Edith Geiger, Gene Witkowski, Jack Mack, Ed Lindberg, Bob Hughes, Dan Marcus, Rowland Rupp. Absent: Jack Empson.

Meeting started at 7:39 PM

Discussion of speakers: Ed said he received a confirmation letter from Phil Kronberg, U. of Toronto, the November speaker.

A general discussion of a letter sent to Darwin from Carl Milazzo to be published in the next Spectrum. The letter was three pages long and was very critical of the actions and inactions of the Board members, especially one member called the "Bully" who was not identified.

There was a brief discussion about where were all the various old telescopes and pieces of equipment given the club over the years. Nobody seems to know.

Back to speakers: January -- Carl Milazzo  
February -- Open, but three members possible, Doug Smith, Darwin and Dan Marcus  
March -- April -- Fred Price, Terry Dickenson or Larry Carlino.

Membership: The Board agreed that if dues are not paid by December 31, 1988, persons will be cut off the membership list and no more Spectrums.

Doris recommended we purchase a 40 minute video on "Backyard Astronomy with Binoculars". It could be used for one of our meetings combined with a panel directed discussion on basic observing. The Board agreed to let Doris send for this tape. It was also suggested that this video can become a loner to our membership.



Doris suggested a 50/50 split club at each meeting, but the Board decided this would only be implemented when and if funds are needed.

Jack Mack said he would bring a book on black holes to raffle at the November meeting.

What to do with the \$50.00 donated by Dave & Marty Junkin was discussed. The money was donated in memory of Bob Mayer. Dan Marcus proposed using it for the purchase of a Mylar Filter for Beaver Meadow. The Board agreed this was a good idea, and Dan will look into a Mylar or other type Solar Filter for Beaver Meadow.

A discussion about sponsoring a syndicated astronomy radio program called "STAR DATE" resulted in the decision to scrap the idea because of the high cost (\$483/yr). Also a small return. Dan Marcus suggested, and he will look into, having a line recorded message on the new talking telephone thing.

It was decided to authorize Ken Biggie to continue the subscription to the Sky Calendar from Abrams Planetarium for \$6/year.

Meeting ended at 9:14 PM.

Ken Biggie

\* \* \* \*

#### Spy and Tell

The NFCAA banquet was held at the Queenston Heights Restaurant at Queenston, Ontario, on November 12th. There were 120 people present. Ed and Olga Lindberg, Diane Borowski, and Carl Milazzo, attended the meeting. Dr. Robert Garrison from David Dunlap Observatory of the University of Toronto, spoke on "Small Telescopes and Big Discoveries." A third of his talk was on Ian Shelton and the discovery of the super nova. Dr. Garrison said that astronomers expect to see the neutron star as early as 1989. Shelton is not in the southern hemisphere at present, but is a student at the University of Toronto working on his Masters degree. As a youth he was an amateur astronomer with a 10" scope, living on the family farm in Winnipeg, Canada.

Diane Borowski, our membership chairperson, who works at the Empire of America Computer Center during the day, took a course in anthropology at Buff State last semester and will be taking a course in geography this semester.

Nancy Adams will be graduating from Alden High School in May, and is going to the New York State University College at Stonybrook in the fall where she will major in astronomy.

The DiLapos are very busy people. Debbie is the speech pathologist in the Eden Schools, and Tristan is doing construction work at French and Transit Roads, building town houses and other buildings.

Marilou Bebak had a fine article in the November 16th Buffalo News on what would befall Buffalo's cultural institutions if their Erie County funding is cut. Marilou is Chairman of Education at the Buffalo Museum of Science.

Gene Witkowski is getting a full aperture solar filter for his 14" telescope. He is buying a large house on Linwood Avenue across from Millard Fillmore Hospital. He will live there and rent out a few rooms.

Congratulations to Kevin Biggie who has been elected Vice President of the Science Club at Orchard Park High School.

Adrienne Morris received a book on astrophotography for Christmas, so we can expect some fine astrophotos from her in the near future. Little Lisa Morris, 2½ years old, is making a booklet on her observations of the moon. She is particularly interested in lunar phases, and watches the moon at crescent, quarter, gibbous, and full. We'll have to keep our eyes on this young lady.

Bernie Montanari is an active gentleman at E.C.C. North Campus. He is a professor of physics and also teaches astronomy, and is advisor to the Astronomy Club.

Jack Mack is considering the purchase of a Dobsonian,

perhaps a 10". With a special device, he will be able to set his computer on two stars, and the computer will find anything he likes for the rest of his observing session.

Richard Williams operates his neon sign business from his home on Custer Road in Buffalo. He has been very busy but hopes to find time for some astronomy in the coming year.

Michael McGrath, a junior in Hamburg Senior High, has an 8" Celestron, and is interested in the planets. He has been observing Mars and has seen the Red Spot on Jupiter.

Belated news item: We're sorry to hear about the loss of Miro Catipovic's beautiful boat in the 2½ hour fire on the morning of October 21st at Smith Boys Marina in North Tonawanda where 40 boats were in winter storage.

Ken Biggie is flying high these days since he received his pilot's license on September 29th and is now a certified private pilot.

Edith L. Geiger

\* \* \* \* \*

#### BAA ANNALS

5 YEARS AGO - Five years ago we heard two unusual topics. In January Dr. James Bix of Canisius College spoke on "Eternity and Infinity: Speculations in Cosmology", and in February Claudia Bielinski, our Membership Chairman at that time, spoke on astrology. Dr. Bix's talk dealt philosophically with cosmology, and Claudia actually cast a horoscope for one of our members. The SPECTRUM carried an article by Rowland Rupp on "Double Star Colors". The next issue contained additional remarks on that topic by Ken Brown of Rochester.

The Beaver Meadow telescope was given a new lease on life. John Riggs, Observatory Director then, and Michael Idem had the 12.5 inch mirror re-aluminized, and reinstalled it in the telescope. Rowland Rupp repaired the telescope's frequency controller, originally designed by past member Bill Deazley, so we could do astrophotography once again. An instruction sheet for its use was prepared and should still be available at the observatory - I hope.

10 YEARS AGO - Buffalo State's Dr. Francis Lestingi spoke on "Einstein" at the January meeting. He showed a movie he made himself, highlighting the career of the illustrious physicist. We had our annual member's night in February. The idea was to encourage two or three BAA members to give brief talks on a topic that was of particular interest to them. Speakers in 1979 were:

Charlie Weiss - Astrophotography

Larry Hazel - Variable Stars

Edith Geiger - Lunar Domes

An article on the relationship between sidereal and synodic periods by Tom Giosomo was featured in the SPECTRUM. He had a follow-up in the next issue. Another article, "Yardsticks of the Universe", covered Cepheid variable stars and Henrietta Leavitt's contribution to that study. Regrettably, this article was unsigned. Edith wrote a biography on Orrin Christy, and Fred Price was congratulated on the publishing of his new biology textbook.

BAA publications prior to 1976 are not presently available so these earlier annals are taken from previous SPECTRUMs.

15 YEARS AGO - Meeting topics for January and February 1974 were "Astrophotography" by the late Dale Hankin and "The Quest for the Black Hole" by Dr. Jack Mack.

The BAA had two headlines back then. It seems that Darwin Christy was recovering from "falling on his head" from a power company cherry picker. Fred Price was interviewed on a television show for a short segment on Comet Kohoutek.

20 YEARS AGO - "Standard Telescopes" was the topic for the January 1969 meeting. Ron Clippinger, an authority on the history of telescopes and observatories, was the speaker. One of the many "Observations of Deep Sky Objects", written over the years by John Riggs, appeared in this SPECTRUM.

25 YEARS AGO - Ernst Both spoke at the February meeting on

the December 30, 1963, lunar eclipse. Also on the program was a panel discussion on catadioptric telescopes. Panel members were Ron Clippinger, Ed Lindberg and Paul Redding.

We had three special groups in 1964: the Elementary Study Group with Paul Redding as Chairman, the Advanced Study Group with Ron Clippinger as Chairman, and the Observing Section with Ernst Both as Chairman. A new drive to raise funds for an observatory was being started.

35 YEARS AGO - There's no newsletter from 1954 but a program list by Program Chairman Jack Ballantyne gives two topics for January: Gene Wallmeyer on "Celestial Photography" and Jack himself on "Solar Energy". In February Dr. Davis of U.B. spoke on "Astronomical Mechanics".

Rowland A. Rupp

\* \* \* \* \*

According to our trivia man, there can be a maximum of SEVEN eclipses in ONE year. THREE lunar and FIVE solar. Can anyone come up with the fact when such an event may have happened in the past ? ? ? ? ? (dpc)

\* ? ! \* PUZZLE \* ! ? \*

How about brushing up on your knowledge of the Messier objects by solving the following puzzle. In each puzzle are five Messier objects of which one is not common among the other four. Your job is to figure out which is the 'odd one' and then tell why???

- 1) M-92    M-100    M-13    M-5    M-4
- 2) M-101    M-31    M-51    M-107    M-77
- 3) M-66    M-67    M-6    M-21    M-35
- 4) M-27    M-57    M-76    M-50    M-97
- 5) M-41    M-43    M-78    M-1    M-42
- 6) M-59    M-83    M-84    M-32    M-109

What is the one common factor among the following:-

- 7) Proxima Centauri - Alpha Centauri - Barnard's Star - Wolf 359 - HD 95735 - Sirius A&B - Ross 248 - UV Ceti A&B Ross 154 & Epsilon Eridani
- 8) Sirius - Vega - Capella - Rigel - Procyon - Altair - Betelgeuse - Acrux - Aldebara & Arcturus
- 9) Venus - Ceres - Halley's Comet - Pluto - Vesta - Earth Comet Mrkos - Saturn & Jupiter
- 10) Octans - Mensa - Chamaeleon - LMC - Hydrus - Volans - SMC - Musca - Apus & Pavo

Answers will be published in the next SPECTRUM.

D. P. C.

\* \* \* \* \*

#### METEOR ####

On the evening of October 16, 1988, an amateur astronomer from Illinois saw a meteor impact of the surface of the moon -- this was not a case of seeing a small flash in the dark section and assuming it must be a meteor -- he actually watched it come in and impact.

■ THE SPECTRUM ■

BUFFALO ASTRONOMICAL ASSOCIATION, INC.

DARWIN CHRISTY, EDITOR  
216 KOHLER ST.  
TONAWANDA, N. Y. 14138

FIRST CLASS  
MAIL

To date, two other amateur astronomers have had confirming observations, however, those in a position to question the sighting are asking for more verification from other amateur astronomers.

Any further detail has been deliberately omitted. Those with information regarding this sighting are asked to call or write the impartial search coordinator:

Bob Summerfield  
Delaware Valley Amateur Astronomers  
6233 Castor Avenue  
Philadelphia, PA 19149

PLEASE, CONFIRMING CALLS ONLY!!!

From the Chronicle  
of the Syracuse Astronomical Society.

\* \* \* \* \*

TICK - TICK - TICK -----  
Uh-Oh, time's run out! If you haven't paid your 1988-89 dues, this will be your last issue of The SPECTRUM. Dues are: Undergrad Students & Senior Citizens; \$5.00; Individual; \$10.00; Family; \$15.00; Also Subscription Only; \$4.00. Send your check (payable to the B.A.A.) to Diane Borowski, 4096 Loring Ave., Blasdell, NY 14219.

\* \* \* \* \*

MOVING SOON?

Help us keep our mailing list up to date. Drop a note to Diane Borowski (see above) or call her at (716) 823-4027 (evenings)

ADDRESS LABEL INCORRECT

Diane Borowski,  
membership

\* \* \* \* \*

MARCH-APRIL    DEADLINE  
IS FEBRUARY 10TH



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