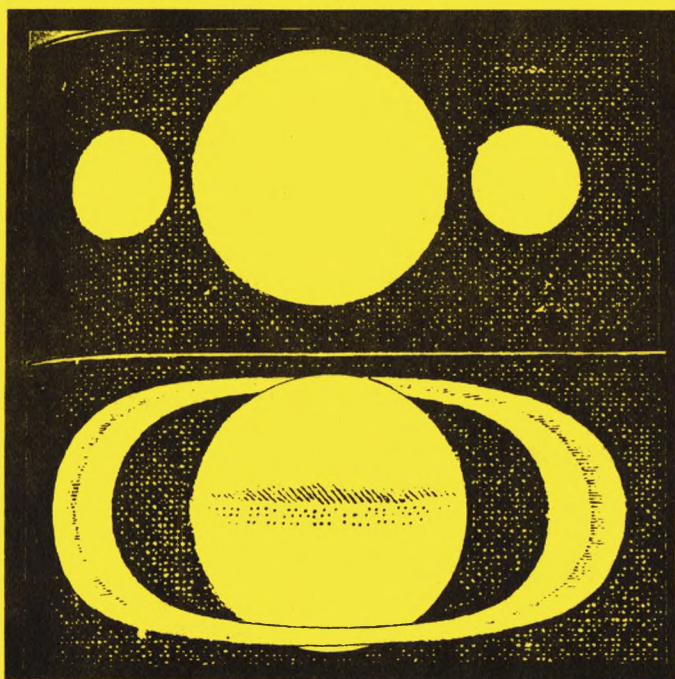


NOVA NOTES



Halifax Centre



Jan-Feb 1990
Volume 21
Number 1

1990 Halifax Centre Executive

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Notice of Meetings

Date: Friday, January 12th: 7:15 P.M.
Place: Doug Pitcairn's house: 13 Ferguson Road, Dartmouth (off Windmill Road, near Tuft's Cove - 463-7196)
Topic: Observer's Group Meeting. *Telescopes and Preferences*

Date: Friday, January 19th: 7:15 P.M. for the regular meeting; 8:00 P.M. for the main speaker
Place: Nova Scotia Museum, Summer Street, Halifax. Access from the side entrance. Meeting to be held in the lower theatre.
Topic: Dr. David Turner from the Astronomy Department of Saint Mary's University will be giving a talk on Wolf-Rayet Stars.

Date: Friday, February 9th: 7:30 P.M.
Place: Jason Adam's house: 23 Reindeer Avenue, Middle Sackville (map will appear in next issue - 865-1437)
Topic: Observer's Group Meeting. *Astrophotography*

Date: Friday, February 16th: 7:15 P.M. for the regular meeting; 8:00 P.M. for the main speaker
Place: Nova Scotia Museum, Summer Street, Halifax. Access from the side entrance. Meeting to be held in the lower theatre.
Topic: Father William Lonc from the Physics Department of Saint Mary's University will be giving a talk entitled *The World of Amateur Radio Astronomy*..

Halifax Planetarium Public Shows

Thursday, January 11th	The January Sky
Thursday, January 25th	Star Clusters
Thursday February 8th	The February Sky
Thursday February	The Solar System

The Halifax Planetarium is located in the Sir James Dunn Building of Dalhousie University. All shows begin at 7:00 P.M.

Note: The above list is tentative and subject to change.

About the cover

The cover shows two sketches of Saturn, the upper made by Galileo in 1610; the lower made by Cassini in 1675. Note Cassini's Division and the bands on Saturn now visible due to the "New Technology Telescope".

Editor's Report

Patrick Kelly

Once again, there are lots of items of news to pass on to you. First off, my apologies for the typos in Dave Lane's article in the last issue. In the third paragraph there is a missing "P", so that what David meant was I **present**, not I **resent**. However, since he does use an IBM clone instead of a Macintosh, I suppose either word would be equally valid! Additionally, when I was entering the data, I misread one piece of data which got carried forward as a result of "copying and pasting". The dates from the 15th to the 24th of December should have MR (moonrise) as the reason for the end of the observing sessions.

For those who weren't able to make it to the November meeting, we closed it off with an auction of an official NASA crest. The rule of the auction was that all of the bids had to go up by one dollar, and if you made a bid and it wasn't the highest, then you still had to pay the money. I'm sure that you all recall doing arithmetic progressions at some point in school. We raised a considerable sum of money and we'd like to thank all who participated.

Also on the financial end of things, we have had several people who wished to borrow the Centre C8 to use it for astrophotography. Since it was not originally equipped for that purpose, the executive approved the expenditure of \$500 to upgrade the C8. Some of the items that this will purchase include a camera mount, a counterbalance, a prime focus camera adapter, an eyepiece projector, a drive corrector and T-rings for four popular models of cameras.

For those of you interested, we just received a catalog from a company in Connecticut that sells meteorites. Not only do they have them from a wide range of "famous" meteorites, you can also purchase samples by type. The list of available meteorite types looks like the list of things that are eaten by a Tasmanian devil, so I won't give it here. You can buy either actual fragments or slices at. Anyone who is interested, should drop us a note and we'll send you more information.

Well, after getting some feedback regarding the new meeting times, we decided to change them again! There will be a short executive meeting from 7:15-7:45 which is open to any member who would like to sit in. Announcements will run from 7:45 - 8:00 and the main speaker will begin at 8:00. I hope this will be the final change for a while.

Mary Lou Whitehorne is the centre's newest life member! It is always encouraging when a member makes such a long term commitment to the centre and the society. However, we just lost

track of another life member. If anyone knows the new address of Mark MacLean, formerly of Box 244 Howe Hall, Dalhousie University, could you please drop me a note so that he can continue to receive his publications.

Several members from the Halifax Centre went to Antigonish in November to give a talk to the astronomy club there. Joe Yurchesyn gave a talk about the Halifax Centre and David Turner gave a lecture on comets. Doug Pitcairn, Dave Lane and Randall Brooks also attended. They got there despite a blizzard in the area which made driving somewhat difficult. In fact, on the way back visibility was so poor that Dave was steering based on Doug calling out "soundings" of the distance to the edge of the road. After the meeting, they observed Jupiter through breaks in the clouds with the C10 at St. F.X.

On Doug Pitcairn's initiative, we are going to try to initiate an astronomy club in Truro. There are several reasons why we feel that this might be possible. Over three dozen people have taken his continuing education astronomy course in that area. In addition, we have several active members from the Halifax Centre who live in the Truro region that might help get things started. For our part, we have offered them speakers for their first four meetings. From previous experience in Bridgewater and Saint John, a lack of speakers seems to be the biggest obstacle in getting a club started., so we hope that this offer will help.

As I've already mentioned in the last issue, our new "billing" system for renewals seems to be paying off. As of December 12th, the total number of memberships is 130 "normal" plus six associates. I say "normal" because National Office does not count associate memberships. That breaks down into twenty-nine life, eighty-two regular, eleven senior and eight youth. For those who haven't renewed at the date of mailing, there will be a final renewal notice included with this issue.

One last item. We have had quite a few non-members who have placed "Astro-Ads" in NOVA NOTES. We have never made a charge for this service, because it has been felt that this provides a service to members, as it lets them know about equipment for sale that they might otherwise not hear about. However, from now on, we will be asking non-members to make a voluntary contribution if they sell any equipment through NOVA NOTES. We feel that this is a reasonable request, because an ad in NOVA NOTES provides them with the targeted audience which will most likely be interested in purchasing their equipment.

Clear skies until next issue! Ω

Nothing exists but atoms and empty space, everything else is opinion. - Democritus

1990 Halifax Centre Executive

Pat Kelly

Those of you who have been members for some time are probably aware that it is quite rare that we have enough people interested in running for positions on the executive that an election is required. Alas, we continue that tradition for yet another year. All of the positions for the executive have been filled by acclamation as only one person offered for each position. Thus I get to "roast" those members who are involved in the running of your club. There are a number of changes for this year, with some new members joining the executive, some changing positions and others still in a holding pattern! The later category include the following:

Dave Lane stays on as secretary. He hopes to improve on the good job he has done in the past by having minutes of the previous executive meeting circulated **before** the next one. This should speed them up so that the battery in his computer won't run out halfway through the meetings and he has to take notes by hand!

Nat Cohen continues as treasurer. Despite the apologies in his treasurer's report for what he perceived as inattention to his office, I wish that we had no term limit on that position. The centre's finances have never been in such good shape!

I continue on as NOVA NOTES editor. Now that we have a scanner in the office, I hope to get more graphics into future issues. I still wish that my spelling checker also checked my grammar....

Randall Brooks will continue for another year as national rep. Randall will get to go to Ottawa for the G.A. this year, which is only fair, since we only gave him a causeway token for this year's!

Doug Pitcairn continues as observing chairman. I'm sure that this year he will complete his goal of creating sufficient demand for Odyssey telescopes that Coulter is forced to set up a branch plant in Burnside!

In keeping with the new environmental awareness in today's society, a few of the people from last year's executive are been "recycled" to extend their usefulness!!

Joe Yurchesyn moves from president to first vice-president. Joe defies the laws of physics in the sense that he is the only person I know who can completely remove the entropy from whatever he is doing. This guy is ORGANIZED! Look out, handbooks! Not only has he been able to line up some excellent talks in the past year (and into 1990), but we now have enough ideas on the bottom of the agenda to last us the through the '90s!

Mary Lou Whitehorne takes over at the helm as president making her (to my knowledge) only the second female president

in the centre's history. Oddly enough, she has already acquired the same title that Kathy Oakley had almost ten years ago.. that of General! She said she doesn't mind "General Lou" as long as we don't spell the "Lou" part with two O's!

It's always nice to see new faces on the executive. This not only gives us new ideas and approaches to things but helps prevent burnout among those who have been around for a while.

Brain Segal of Antigonish will be our second vice president in charge of public relations. He is one of those really keen members who not only writes lots of articles for NOVA NOTES (hint, hint..) but he attends just about every meeting despite the distance involved. With his combination pocket calculator/ note taker/ memo book/ tricorder/ spectrograph/ mass spectrometer/ thermonuclear warhead, I'm sure that executive meetings will be a lot more fun!

Jason Adams , who was a councillor last year has moved up to the "real" executive and is now in charge of our library. Things should be a bit easier to keep track of since our holdings have been thinned out to get rid of a lot of obsolete material. Nevertheless, Jason will be keeping track of when things should be back and says that he will be "putting the hit" on those with outstanding books!

David Turner of the Saint Mary's astronomy department has joined us as a councillor this year. He has been doing quite a bit of work with the planetarium group and his help will be greatly appreciated.

Lastly, there are those who for various reasons will not be with the executive this year.

Paul Smith is stepping down as first vice president. Between work and his other major interest, his amount of free time has "gone to the dogs" so to speak! We are trying to arrange to have all future dog shows held near full moons so that he and Caroline will be able to get some more observing in!

Jim MacGuigan was a councillor last year but decided not to reoffer this year. However, he plans to keep up his interest in the history of astronomy in the Halifax area, as evidenced by his article elsewhere in this issue.

Hugh Thompson was librarian last year but has since moved to British Columbia to attend university. We haven't heard from him since he left in the fall, but I imagine he is doing well. With any luck, we may hear from him if he is back at Christmas.

Well, that is a wrap-up of the executive for another year. I would like to invite all of you who think that you would like to help out, to approach any of us on the executive. Whether you want to really get involved or just help out from time to time, we would appreciate the extra help. If you aren't really sure what you'd like to help with, we'll find something for you to do! Ω

The Dominion Astrophysical Observatory

Dan Falk

This year I had the good fortune of landing a summer job at the Dominion Astrophysical Observatory in Victoria, B.C. The observatory is a part of the Herzberg Institute of Astrophysics, a division of the National Research Council. The DAO offices and the telescope domes sit on top of Little Saanich Mountain, often called Observatory Hill, just north of the city of Victoria.

When the DAO opened in 1918, its 1.85 m (72") telescope was the largest in the world. As a result of continuous upgrading, the telescope now operates 10,000 times more efficiently than when it was built. It is used virtually every clear night. The telescope's huge white dome can be seen for miles around, and is a familiar sight to the people of Victoria. In 1962, a 1.2 m (48") telescope was added. This instrument is used for precision spectroscopic work. DAO staff also make use of other observatories and telescopes, including the 3.6 m (140") Canada-France-Hawaii Telescope.

Most of the research conducted at DAO over the years has involved stellar and galactic astronomy. DAO astronomers were among the first to accurately determine the size and nature of our Galaxy, the Milky Way. In 1987, astronomers at DAO found evidence for a supermassive black hole at the center of the Andromeda Galaxy. Spectroscopic studies carried out at DAO have been used to determine the orbits of binary star systems.

My supervisor for the summer was Michael Bolte, formerly with the University of Washington but now full-time with the DAO. He has recently received a lot of attention for a study of globular clusters he did with Peter Stetson, another DAO astronomer. Their results, show that globulars can have widely differing ages, suggesting that galaxy formation took place over a much longer period of time than was previously thought. Dr. Stetson is an expert on computerized stellar photometry, and is well known in the astronomical community as the creator of DAOPHOT, a very sophisticated profile-fitting photometry package. DAOPHOT is used by many astronomers across North America.

During my four months at the DAO, I worked on several different projects for Dr. Bolte. We studied two different open star clusters, including NGC 559, a young cluster thought to be associated with a supernova remnant. Towards the end of the summer, we also began an investigation of mass segregation in the globular cluster M 13. Most of my efforts were devoted to data reduction from digital images, which gave me a chance to become

familiar with the ins and outs of DAOPHOT and other software packages. Although most of the computer work that I did involved a VAX mainframe, I also had the opportunity to use a Sun workstation, which was a real treat -- the graphics are just amazing!

There were lectures by visiting astronomers about every second week, which gave me an opportunity to see how researchers at DAO cooperate with astronomers from around the world. In August, the Jet Propulsion Laboratory provided a live link-up of Voyager's flypast of Neptune. The images were sent to the Newcombe Theater of the Royal British Columbia Museum, where DAO astronomers were on hand to answer questions during public shows.

There were three other summer students at the DAO while I was there. We got along very well, and went on several weekend trips together, including visits to Pacific Rim National Park (about 1/4 of the way up Vancouver Island) and Olympic National Park in Washington. The weather, which is normally much better than what we get in Nova Scotia, often seemed to be out to get us, but we always had fun anyway. We'd often eat our lunches outdoors near the "big dome," enjoying the spectacular view of Victoria and the Saanich peninsula. On clear days you could see the Olympic Mountains in Washington.

Although I was only working during the day, I was able to visit the observatory at night several times. I helped out with the Saturday night public tours, which gave me an idea of just how popular the observatory is among both locals and tourists. On my last Saturday on the hill, I decided to stay the whole night. Flashes of light coming from the east had caught my attention, and I walked around until I found an unobstructed view in that direction. The flashes were from a lightning storm over Washington, across the Strait of Georgia. I went up to the roof of the DAO office building for an even better view, and started taking long exposure photographs, some of which turned out okay. Despite the storm across the water, the sky was clear overhead. At about midnight I went up to the 40 cm (16") telescope, which occupies the smallest dome on the hill. One of the other summer students was already there, along with one of the DAO staff. We looked at various celestial objects including clusters, nebulae, galaxies, the planet Jupiter, and finally the waning crescent moon before the dawn came.

It was a real pleasure to work at a world-class institution like the DAO. The fact that it is located in the midst of some of the most spectacular scenery in Canada was an added treat. Whether or not I become a professional astronomer myself, I know I have benefitted greatly from my summer at the DAO -- a summer that I will not forget. Ω

The Burke-Gaffney Scholarship

Dave Turner

During most of the last thirty years of his life, Father Michael Walter Burke-Gaffney, S.J., played a vital role in the development of the R.A.S.C. in Nova Scotia. As a consequence of his selfless and inspirational activity, he was the recipient, both before and after his death in 1979, of a variety of honours. Randall Brooks has outlined most of these honours in his obituary for Father Burke-Gaffney, published in the April 1979 issue of the Journal of the Royal Astronomical Society of Canada. Members of the Halifax Centre of the R.A.S.C. should be familiar with two of them, the Burke-Gaffney Award for astronomy essay writing by a non-professional, and the Burke-Gaffney Observatory located on the campus of Saint Mary's University, both of which were established in honour of Saint Mary's popular astronomer-priest. Lesser known, however, is the Father Burke-Gaffney Memorial Scholarship, which is awarded to graduate students in the Astronomy M.Sc. program at Saint Mary's.

The Burke-Gaffney Scholarship was established in 1979 by the Alumni Association of Saint Mary's with the intention of providing a fitting and lasting memorial to Father Burke-Gaffney. Similar to all awards of this type, the value of the Burke-Gaffney Scholarship depends directly upon the amount residing in the Memorial Trust Fund as well as the prevailing interest rates. In 1983 the fund was able to provide a scholarship of about \$800, while this year the fund has grown large enough to provide a scholarship valued at \$1500. This growth has actually been occasioned by considerable "behind-the-scenes" activity, and the trust has grown as a consequence of generous donations by several individuals, including members of the Department of Astronomy and others at Saint Mary's, and by allowing the interest to accumulate when the scholarship was not awarded.

The continued growth in value of the Burke-Gaffney Scholarship is of some concern to those of us in the Department of Astronomy at Saint Mary's, since awards of this type often fall victim to the devastating effects of inflation, which cause them to lose value and prestige relative to other graduate scholarships. The only way to counteract such effects is to ensure that there is a constant infusion of funds into the trust, something difficult to accomplish without expanding upon the base of potential donors. It is with this in mind that I am making the present appeal for assistance in boosting the current value of the Burke-Gaffney Scholarship, which is about \$1000 below the average value of graduate scholarships at Saint Mary's which are financed entirely through University-directed funds.

I find myself rather uneasy making a personal plea for donations to the Father Burke-Gaffney Scholarship Fund, since I have always felt that charitable donations of this type should be personal initiatives. However, the cause is unquestionably well worth-while, and I know that there are lots of individuals associated with the Halifax Centre of the R.A.S.C. who are probably unaware that they have the opportunity to help bolster the memory of the Halifax Centre's founding President and first Honourary President. Donations of this type are income tax deductible, and can be directed to Mr. Donald Keleher, Director of Development, Saint Mary's University, Halifax, Nova Scotia, B3H 3C3. Annual gifts of this type would be particularly welcome. It would be my great pleasure to be able to report back annually to the Halifax Centre to provide details on future scholarship recipients and the value of their awards. Ω

A Potpourri of Astronomical History

Jim MacGuigan

Reported in the May-June '75 issue of NOVA NOTES: New members Larry Bogan, Larry Coldwell, Ralph Bosun, G.F. Burton and David MacDonald were welcomed to the Halifax Centre

From NOVA NOTES, January 1974: Father Lonc of Saint Mary's University spoke to the centre on radio astronomy, while Randall Brooks talked about the Canada-France-Hawaii telescope. Randall was assisted at the Junior Group's December meeting by Dianne Brooks and John MacNeil. A total of 105 novices turned out!

An observing session was held at the Horse Field (corner of Jubilee Road and Connaught Avenue) on August 1st, 1957. Among those attending were Father Burke-Gaffney, James Paul, Bob Baglow and Len Carrigan.

It is reported in the March 1955's R.A.S.C. Newsletter (Halifax) that Rube Hornstein gave a speech on meteorology.

At the October 1972 meeting, Walter Zukauskas was the guest speaker. Also reported was the death Dr. Robert Aikens who had served as the centre's Secretary from 1960-1964. A total of eight people attended the observing session held on October 6th at the Life Sciences Building at Dalhousie.

Star Night I was held on October 1st, 1971 at the Connaught Battery and was attended by fifteen people. Among these were Craig MacDonald and his father, E. W. MacDonald, Mr. and Mrs. Roy Humphry and Mrs. Sheehan. Coffee was held afterwards at the residence of Mary King.

Thousands of people including Jim and Peter MacGuigan were rained out for the solar eclipse of October 2nd, 1959 whose path ran up the Eastern Seaboard. Ω

That Indescribable (Long Distance) Feeling

Brian Segal

When I was a young boy my parents used to pack me off to summer camp for two wonderful months of non-urban adventure. During more cynical moments, I assumed that this was a clever way for them to find some quality time to work on their golf game. However, I long ago came to realize that, in their own way, they were offering me an alternative view of the world. The view one can only get by really inhabiting a natural environment.

By the time I was ten years old, I was partaking in arduous canoe trips throughout northern (and quite uncivilized) Québec. More time was spent in the woods than at the actual camp, and that was certainly a matter of preference. It was during these long excursions that I formed my lifelong relationship with the night sky. There was (and is) nothing quite like lying on your back in the middle of a clearing in the woods, perhaps with the gentle lapping of the waves on the lake shore, tucked into a sleeping bag and staring for hours into the heart of the Milky Way.

I am certain that the feelings of wonder, loneliness and curiosity ignited under that heavenly canopy had a profound effect on the course of my life, choices I have made with respect to career and place, and certainly my interest in all facets of nature - especially astronomy.

A few weeks ago I was fortunate to be able to give a slide show and talk to a special meeting of the Antigonish Astronomical Society. The specialness of the evening was created by two events. The university's astronomy class was invited to stay for the meeting and one of the members fulfilled a long held desire.

During the course of the evening, I presented an array of images captured through my telescope and committed to film. It had occurred to me that if the evening proved to be clear we could first view the slides while waiting for astronomical twilight, and then view the heavens through the university's ten inch Celestron. Consequently, I made certain to include slides related to that evening's observational potential.

The show went well, many interesting questions were asked. I'm sure that even more went unasked... but there's always time when the show is over. The night had set in and the sky was clear. We hurried up to the dome. After some brief explanations about the scope and its habits and pitfalls, I began an observing program that retraced the section of the slide show chosen for the evening's observing session. It was wonderful to hear many of the students expressing their wonder at the view through the eyepiece.

The slide primer had been a good idea. They knew what to look for, but were impressed with the differences offered by the camera and direct observation with the human eye.

We looked at many old favorites - the Ring Nebula, the Dumbbell, the Double Cluster in Perseus, M13 and others. We made a sorry attempt to view Saturn through 100 miles of the densest atmosphere I've seen in a long time. I pointed out that this was probably as good a view as Galileo ever got. To cap off the night, and because so much interest had been expressed in my slides of the Andromeda galaxy, I saved it for last. We located the great nebula in the eyepiece and one by one, the observers took their turn.

For those who have studied the Mount Palomar photos of Andromeda, the view through a mere ten inch scope can be somewhat anti-climatic! I was a bit curious about how the group would react. Most were respectful, some were truly impressed that they were really looking back over 2.2 million light-years of distance and history. Then a newer member of the club, a wonderfully enthusiastic lady, stepped up to the scope. She looked into the eyepiece, drew a long, satisfied breath and whispered "I've waited over forty years to see this. It's just wonderful... thank you so much." I'm not sure just who she was thanking, but the moment made me flash back to that little boy, lying snuggled under his sleeping bag transfixed by the splendor of the heavens. I know just what she meant - it's a feeling that never leaves you.Ω

In Praise of the Long-Suffering Astronomer's Spouse

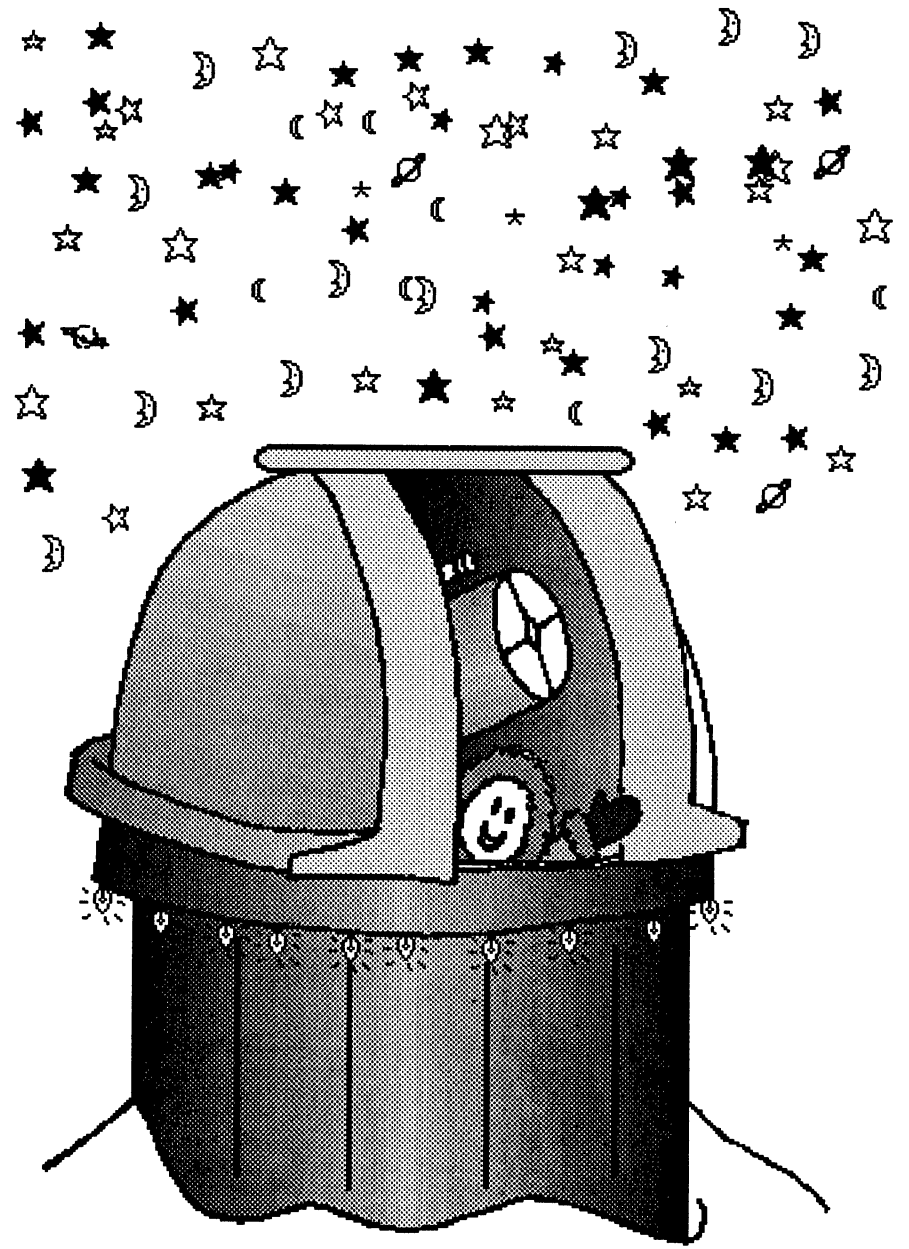
David Griffith

The time has come for we creatures of the night to cease contemplating the heavens long enough to contemplate the many sacrifices made by our "astronomy widows/widowers". For far too long have the trials and tribulations of these heroes and heroines been overlooked. Their time has come.

Consider, if you will, the following hypothetical scenarios that are played out, night after night, by those "star-crossed" lovers: the astronomer and his/her spouse.

Who else but an astronomer's spouse is faced with the dilemma of answering such questions as, "Why does your husband stand outside at night in sub-zero weather wearing a black cape?". You consider attempting to explain to this worthy soul the concepts of night vision and light pollution, but would probably do just as well to admit that your husband is a vampire.

Who else but an astronomer's spouse has to contend with



Card based on an original design by Mary Lou Whitehorne
with some additional work done with your editor's Mac.

Seasons Greetings!

All of the best for the holiday season and
clear skies for the new decade!

From the executive of the Halifax Centre

Marylou Whitehouse Davis Jane

Randall Brooks Paul Smith

Jason Adams

Paul M. Kelly

Lois Pittman

Joe Greenberg

Pat Cohen

such ultimatums as, "Honey, I'm coming in to grab a bite to eat. Would you please shut off all the lights and sit in total darkness for a while?" And when you finally emerge into the kitchen, clad in five layers of clothing, a black cape and red goggles, what do you think is going through the minds of the guests your spouse invited over for tea?

Who else but the poor astronomer's spouse lives in constant fear of the the dreaded "night drive"? While you are uttering superlatives concerning that lovely aurora in the north, your loved one is feverishly attempting to call your attention to that string of vehicles approaching from the east.

Who, but our long suffering spouses, are continually subjected to being ruthlessly shaken from a peaceful night's repose, only to be escorted, clad only in nightgown or pajamas, into the backyard to "experience an occultation"? Such incidents typically occur during the dreaded "observing window", a period during which our heros and heroines are deprived of the security and warmth of a shared bed. When communications are restored next morning, the sky gazer is scarcely worth talking to, wandering about as if in a trance, a victim of "astronomer's hangover".

Consider too, the financial burden shouldered by the astro-spouse. The sky gazer becomes a virtual rogue when bitten by the crave for a new accessory. While husband or wife is desperately trying to balance the books, our astronomer lurks in the shadows, waiting for a chance to dip into the emergency fund to finance a new Nagler. And if there isn't enough? Well, there's always little Joey's piggybank!

Such are the burdens of our tormented mates. What recourse do they have? Sadly, their choices are few. The more desperate ones could perhaps install bright yard lights and trade in the four wheel drive "scope mobile" for a tiny sports car. Some will, after years of resisting, succumb to the creatures of the night and become one of them, doomed to roam the fields by night, thirsting for the ideal observing site.

So, here's to you, astro-spouses! We acknowledge your plight! We hear your cries for overcast skies and Full Moons. We feel your pain, and we offer you release from it...

Just come closer...closer...look into my eye(piece)...deeper... deeper....feel the photons... Ω

Astro Ads

FOR SALE: MEADE 2120 LX5 (10")

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NOVA NOTES - Halifax Centre - January-February 1990

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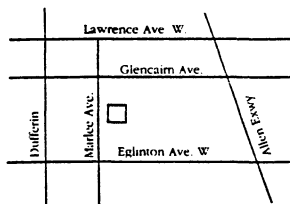
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More Double Shadows

Pat Kelly

Readers may recall that last year I produced a list of events involving Jupiter wherein two of its moons' shadows were visible at the same time. Using the 1990 edition of *The Observer's Handbook* as my source of data, I was quite excited, as I came up with a list of twenty-one occurrences for this year! However, after weeding out those events that would occur while Jupiter was in conjunction and the ones that happened during daytime in Nova Scotia, the list had dwindled down to only nine. These events are listed below. As the time is in UT, some of these events (such as the one on August 16th) will occur on the **previous** date once the times are converted to Atlantic time. The column labelled "original" refers to the moon that is already on Jupiter's disk.

Date (UT)	"Original"	Event	Time (UT)
February 27	Callisto	Io Ingress	2:43
		Callisto Egress	3:39
May 29	Ganymede	Europa Ingress	5:07
		Ganymede Egress	5:40
August 16	Ganymede	Io Ingress	0:46
		Ganymede Egress	1:42
August 23	Ganymede	Io Ingress	2:40
		Io Egress	4:57
August 30	Io	Ganymede Ingress	6:14
		Io Egress	6:51
August 30	Ganymede	Callisto Ingress	7:13
		Ganymede Egress	9:40
October 2	Callisto	Io Ingress	19:35
		Io Egress	21:51
December 24	Europa	Io Ingress	23:45
		Europa Egress	0:09*
January 1	Europa	Io Ingress	1:38
		Europa Egress	2:46

* the following day

I am not really sure about the visibility of the second event on August 30th. I left it in more to point out that on that date there are two double shadow events! The other one of special interest is that of October 2nd, when Io's shadow catches up to and passes that of Callisto. A similar event happened last year, but the weather was cloudy (of course!). One can only hope that it will be better this year. It would make an interesting series of sketches (or photographs). I plan to include these dates in the Calendar of Events at the end of NOVA NOTES so that readers will be reminded of them for upcoming observing sessions. Ω

A New Manifesto for Interplanetary Exploration

reprinted from **Astronomy London - London Centre**

The United States National Aeronautics and Space Administration persists in sending unmanned space probes to the planets. Many of these, beginning with Pioneer 10, are destined to leave the solar system altogether. NASA, in its penny-pinching, zero-budgeted capitalistic state of moral bankruptcy, seeks to add velocity to these unwitting instruments of cosmic degradation by the deplorable method of gravitational assists

This perfidious technique involves passing the spacecraft near a giant planet, such as innocent Jupiter or unsuspecting Saturn and using the gravity of the planet as a slingshot. The hidden truth, which NASA cunningly cloaks under technical jargon in all of its deceitful press releases and official statements, is that this procedure transfers angular momentum from the planet to the spacecraft. Stripped from the solar system, the angular momentum goes with the spacecraft, lost forever in the eternity of space, never again to return to its rightful home!

The space agency has calculated that Galileo's two flybys of Earth will slow the planet's orbital velocity by 9.6 billion billionths of a mile per hour. That would alter the Earth's position by 5.3 inches per billion years!

This shameful act is robbing the planets of their angular momentum without their democratic consent or any form of social rehabilitation. The SOCIETY FOR CONSERVATION OF ANGULAR MOMENTUM (SCAM) is an international movement which will not cease its relentless efforts to stop the expansionist technology-mongering bourgeoisie of the corrupt scientific establishment at NASA from this horrible rape of the solar system. These unconscionable acts of systematic planetary genocide are worse than the theft of moon rocks from a defenseless natural satellite of the Mother Planet without remuneration, an act which NASA has already been condemned for by all free-thinking peace-loving peoples.

The angular momentum of the solar system has no recourse to defence and resists these terrorizing attacks in vain. You must help! Join the SOCIETY FOR CONSERVATION OF ANGULAR MOMENTUM (SCAM) today! Keep the solar system's angular momentum constant! Don't permit the battle for the planets' integrity to be lost! For your free SCAM introductory kit and secret decoder wheel, send \$1.00 (or foreign currency equivalent) to: London Centre, R.A.S.C. (sole brokers and agents for SCAM under International Berne Convention agreements), P.O. Box 842, Station B, London, Ontario, Canada, N6A 4Z3 Ω

Book Review: Deep Sky Observing with Small Telescopes by David J. Eicher David Griffith

Picture, if you will, the beginning sky gazer, proudly beholding a freshly unpacked new telescope, something in the three to six inch range. Those first glimpses of M42, M31, M27 and the Perseus Double Cluster fill our fledgling astronomer with a sense of wonderment and awe. Thirsting for some literature to help him expand his horizons, he obtains some of the many excellent catalogues and observing guides available. These tomes assure him that "spiral arms are easily visible in a 17.5 inch scope" and "instruments of ten inches or more reveal extensive nebulosity". He is left wondering whether or not his modest instrument will reveal the object at all.

Happily, David Eicher has come to the rescue of the small scope owner. *Deep Sky Observing with Small Telescopes* is the ideal guide for the enthusiast who has already mastered the constellations and wishes to pursue telescopic observing. The book begins with an introduction to the basic techniques of deep sky observing and such things as equipment, dark adaptation, and directions are adequately covered. I was, however, disappointed with the author's advice on polar alignment, a simple, yet often frustrating task for beginners. The suggestion, "see the telescope's instruction manual" is not wise; most manuals are notoriously inadequate in their treatment of polar alignment. There are numerous books and magazine articles that do a much better job.

The rest of the book covers each type of deep sky object, from double stars to galaxies, and the organization of each section is clear, concise and free of most of the astrophysical jargon that often intimidates and bores casual observers.

Essentially, *Deep Sky Observing* is a catalog organizing DSO's by type. A typical chapter begins with short sections dealing with the history, nature and best observing techniques for the object. This is followed by several black and white photos and eyepiece sketches of typical examples. Following this is the most valuable part of the chapter; the catalog of objects visible in small scopes. Beginners and advanced observers alike will be pleasantly surprised at the number of objects cataloged (the double star section alone spans fifty-eight pages; galaxies cover twenty-eight pages). Each entry includes pertinent observing data (R.A., Dec., mag., etc.) and eyepiece impressions accompany the more intriguing objects.

The only real "weakness" I could find in this manual rests with the eyepiece sketches provided in each chapter. Some seem just a trifle too bright and detailed to approximate the view rendered by the average small scope. Perhaps the author was thinking "ideal conditions" or perhaps the printers were a bit too liberal with the ink. Whatever the case, it is a relatively minor glitch in an otherwise excellent manual.

Eicher and associates have done a commendable job in assembling an informative and user-friendly observing guide for small scope owners. Small scope owners and indeed first-time owners of **any** size scope would do well to consider this book as their first accessory. Highly recommended for the beginner and intermediate observer. Ω

Notes from the Chair

Doug Pitcairn

Brrrr! Well, Christmas time approaches, but the weather would fool us into thinking it is February. I learned last year that winter observing is just a matter of dressing right, but this year it is most difficult to venture forth on these cold, clear nights. I have managed some planetary observations, as these can be done from the back yard. Venus and Saturn in the west, Jupiter in the east are about all I can take before running for the house and the woodstove.

[Editor's Note: I would imagine that the combination of horrible weather and cold air is affecting not only Doug and is the main reason that there are no gawker's reports for this issue. I know that the one clear night in November that I went out to Beaverbank it was clear in Halifax, Bedford, and Sackville but overcast at Beaverbank! A pleasant way to waste an hour and a half driving around!]


I have noticed something of late. Is it just me, or are our efforts at public education/awareness finally bearing fruit? It seems we are hearing much more about astronomy these days from the media. One night I even observed on my "Boob Tube" a bunch of esteemed R.A.S.C. members gazing intently through their telescopes as a local news personality spoke about our beloved society. Didn't they fake it well! (A little birdy told me that Pat didn't even remove his dust cap from his objective.) Nonetheless, it gladdens the heart to see such exposure.

All you other members out there should consider getting into the act. Local small town weekly papers might just welcome an astronomical article every now and then. Your local Scout/Guide leader will certainly welcome a talk about astronomy for his/her troop. Even your local high school science teacher might find a talk by a local astronomy "nut" a break from the classroom routine. These types of people don't know your name so get out there and tell them who you are and what you can do.


Afraid to give a talk? Forget it. Anybody who is keen enough to join the society and reads one of the astronomy magazines faithfully knows plenty to handle the questions from a group of boy scouts. The average question is like "What happens when you drive a spaceship into a black hole?". Take a telescope if one's available. If its clear, show 'em M13 and Jupiter's moons. If its cloudy, show 'em the streetlight down the road and explain the meanings of the word "power". The R.A.S.C. will shortly have available at least one slide set for use by members giving talks. I am also proposing that we purchase a slide projector for this purpose. I have accumulated a large slide set just by shooting pictures out of calendars and magazines. All you need is one of those cheap screw-on close-up lenses (about twenty dollars at your local camera store) and a flat well lit spot to lay out the pictures on. Also slides may be available for copying from some university's slide collections, but don't tell 'em I said so.

Let's keep up the good work. Let's try to get everybody into astronomy. If interest grows strong enough, we may even be able to convince more school boards into adding astronomy courses at the high school level. You love and enjoy your hobby, do a kid a favor, show 'em some stars! Ω

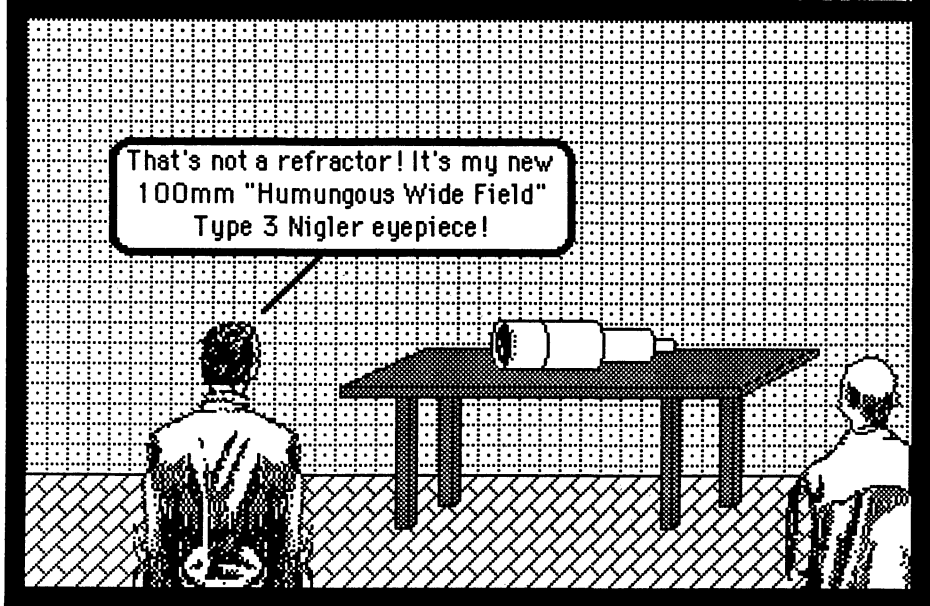
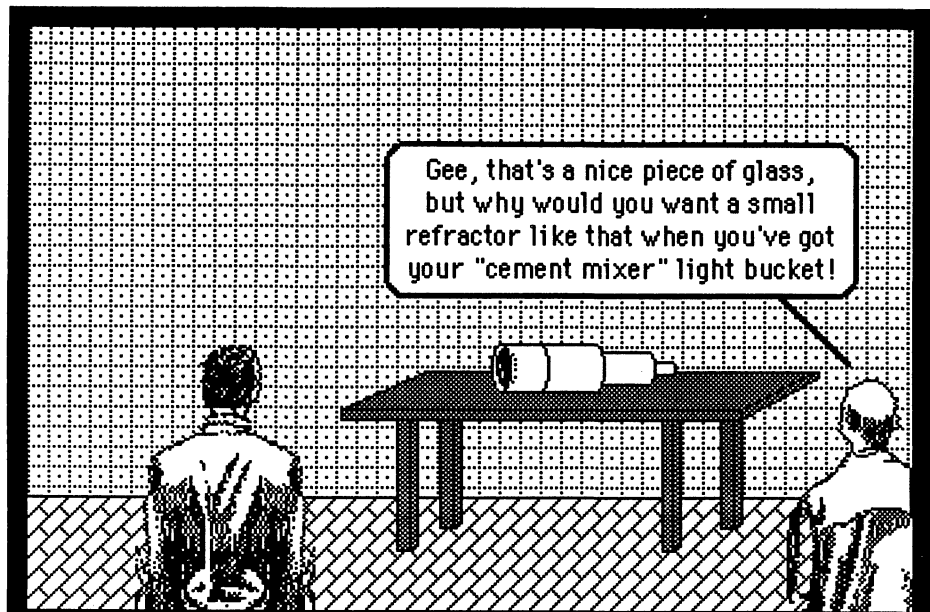
GA★ZER



Hi GAZER!
I came as soon as I could!



So what is this neat thing that you
got for Christmas?



Patrick Kelly

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January-February 1990

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HALIFAX CENTRE - R. A. S. C.
1990 CALENDAR OF EVENTS

January

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	<u>18</u>	<u>19</u>	<u>20</u>
<u>21</u>	<u>22</u>	<u>23</u>	<u>24</u>	<u>25</u>	<u>26</u>	<u>27</u>
<u>28</u>	<u>29</u>	<u>30</u>	<u>31</u>			

February

S	M	T	W	T	F	S
				<u>1</u>	<u>2</u>	3
4	5	6	7	8	9	10
11	12	13	14	15	16	<u>17</u>
<u>18</u>	<u>19</u>	<u>20</u>	<u>21</u>	<u>22</u>	<u>23</u>	<u>24</u>
<u>25</u>	<u>26</u>	<u>27</u>	<u>28</u>			

March

S	M	T	W	T	F	S
				<u>1</u>	<u>2</u>	<u>3</u>
<u>4</u>	5	6	7	8	9	10
11	12	13	14	15	16	17
<u>18</u>	<u>19</u>	<u>20</u>	<u>21</u>	<u>22</u>	23	<u>24</u>
<u>25</u>	<u>26</u>	<u>27</u>	<u>28</u>	<u>29</u>	<u>30</u>	<u>31</u>

April

S	M	T	W	T	F	S
<u>1</u>	<u>2</u>	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	<u>18</u>	<u>19</u>	20	<u>21</u>
<u>22</u>	<u>23</u>	<u>24</u>	<u>25</u>	<u>26</u>	<u>27</u>	<u>28</u>
<u>29</u>	<u>30</u>					

Key to calendar:

Regular and

Observer Group Meetings: **bold and shadowed**

Special days: **bold**

Possible observing sessions: underlined

Special Days:

- January 3 - Quadrantid Meteors
- February 3 - Mercury 0.2° N of Saturn
- February 26 - Two shadows on Jupiter
- February 28 - Mars 1° S of Saturn
- March 23 - Venus 2° N of the Moon
- April 1 - Jupiter 3° S of the Moon
- April 22 - Lyrid meteors
- April 29 - Jupiter 3° S of the Moon

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