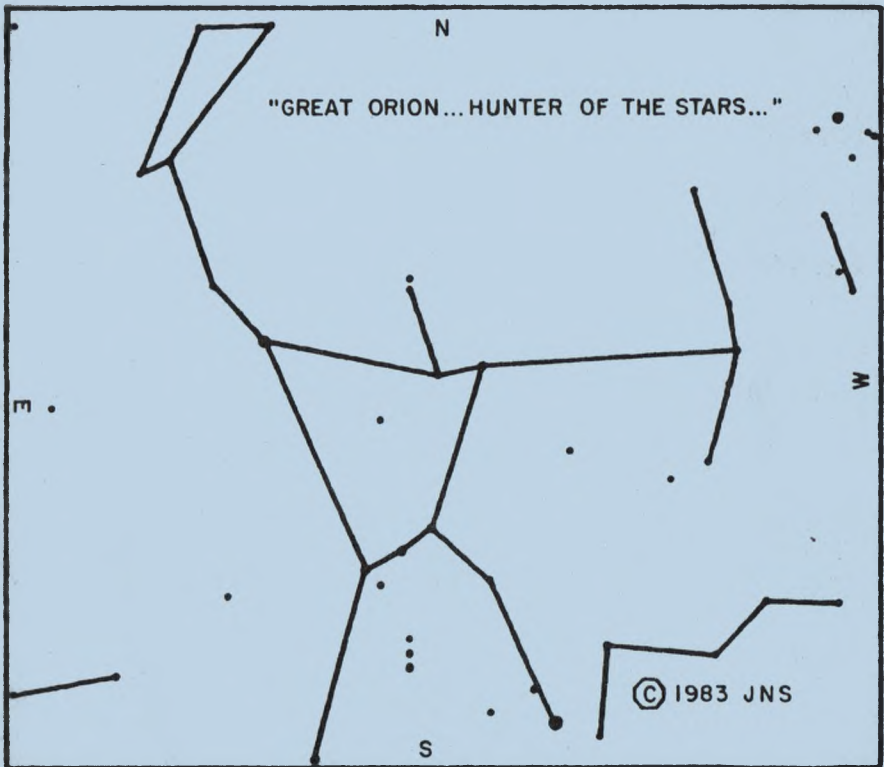




NOVA NOTES



BI-MONTHLY JOURNAL OF THE HALIFAX CENTRE
NOV-DEC 1983 VOL. 14, No 6

1983 HALIFAX CENTRE EXECUTIVE

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-

NOTICE OF MEETING

DATE: Friday, 19 November, 8:00 PM

PLACE: Nova Scotia Museum: Meeting to be held in lower auditorium/theatre. Access from parking lot and side entrance.

SPEAKER For the November meeting the Halifax
& TOPIC: Centre will be holding a "trivia" night and will also feature Cathy McLeod and "The Christmas Stars".

REFRESHMENTS WILL FOLLOW!

NOTICE OF MEETING

DATE: Friday, 16 December, 8:00 PM

PLACE: Nova Scotia Museum: Meeting to be held in lower auditorium/theatre. Access from parking lot and side entrance.

SPEAKER Our selected guest speaker for the
& TOPIC: December meeting will be Terry Danks who will be talking about Globular Clusters.

REFRESHMENTS WILL FOLLOW!

PLEASE NOTE: THE ABOVE IS A TENTATIVE LIST OF MEETINGS AND SUBJECT TO CHANGE.

MINUTES OF THE SEPTEMBER MEETING

Executive Meeting - 16 September, 1983

The following items were taken up during the executive meeting:

1. Financial Report - The Centre has a balance of \$1066.
2. Membership dues were reviewed which are up for renewal in October. The dues are the same as last year.

\$20 for regular members
\$12.50 for youth members
\$5.00 for associate members.
3. The # of sales of Observers Handbooks were down by 20 from last year. It was decided that any new members at this September meeting would be given a free one.
4. The date of the April meeting is to be changed because in 1984 the third Friday of that month falls on Good Friday. Watch for an announcement of this change of date and possible change of location of meeting.
5. A possible gift of thanks for the Museum was discussed. Randall Brooks is going to look into designs (or design one himself) of a sundial as a gift.

General Meeting - 16 September, 1983

As a substitute for Dr. Holden's expedition film we had three presentations. The first presentation was a film on "Chasing The Eclipse". This is an account of the Solar Eclipse of 1979. It was centered around an Astronomy Club from the U.S. trying to get the best location to see the eclipse near Brandon, Manitoba. It showed everything from Murphy's Law setting in with their equipment to final and wonderful success.

This year one of our members, Laurie Burgoyne spent part of her summer at Lowell Observatory in Flagstaff, Arizona. Laurie gave us a tour of the observatory showing the different facilities and telescopes. (There were four reflectors) This is where Clyde Tombaugh with the 13 inch refractor, discovered Pluto in January, 1930. Lowell was recognized for being instrumental in the search and discovery of Pluto.

In her presentation Laurie showed us slides of the Meteor Crater and the Grand Canyon which she took during side trips. What a fascinating place to spend the summer. Thank you Laurie.

The last presentation was a film on Galileo called the "Challenge of Reason". Anyone who has not seen this film should try to obtain it. Galileo was portrayed by a very able actor. The church was questioning his beliefs of the church in relation to Aristotles beliefs of the universe.

We hope that Dr. Holden has recovered from his operation and is able to have his presentation at a future date.

Wilf Morley

* * * * * NOTICE * * * * *

For 1984 NOVA NOTES will have a new editor. He is Patrick Kelly, 2 Arvida Ave., Halifax, Nova Scotia, B3R 1K6 / 477-8720. All articles for the next issue of NOVA NOTES should be forwarded to him.

THE 1983 CAMPING-OBSERVING WEEKEND

This year's annual Camping-Observing weekend was held to coincide with the peak of the Perseid meteor shower on August 12-14. Again this year Dr. William Holden kindly opened his home and cottage at Trout Lake for the observing site. Situated in the country, far from city lights, it is the ideal place for a meteor watch and general stargazing.

Although Friday night was rainy, several people arrived (including our group of Randall and Diane Brooks, Norman Scrimger, Werner Maute, Christine Wilson and myself), staked out a piece of lawn and waited for Saturday to dawn clear and hot. The day was spent on or near Trout Lake, an excellent place for canoeing, swimming, windsurfing, etc., or doing some solar observing with Dr. Holden's C-8.

Saturday night was perfectly clear, (but extremely cold) and the field around Dr. Holden's house was filled with people setting up telescopes for an evenings' viewing. The sky was incredibly dark (after the moon had set) and the Milky Way was positively brilliant. There were at least 20 people observing and scanning the skies for most of the night, picking out constellations, testing their eyesight on Mizar and Alcor and, of course, counting meteors. About 10-20 meteors were seen per hour, most of them around third or fourth magnitude with a few spectacular bright ones that rivaled the brighter stars. Most of the meteors sighted seemed to be sporadics or part of several lesser showers peaking at approximately the same time (see your 1983 Observer's Handbook for the names of these). A few, including the brightest ones, were definitely Perseids, seeming to radiate from the constellation Perseus low in the northeast.

Meteors were not the only things being observed that night. Dr. Roy Bishop had brought along his refractor and was showing everyone such sights as the Veil Nebula, M31, h and X Persei, and other objects. Others were using varying sizes of telescopes and binoculars to examine star clusters, galaxies, double stars and whatever else they could find.

Nearly everyone stayed out until after midnight, making frequent trips into the house to warm up a little or get a hot cup of tea or coffee. Eventually though, everyone retired for the night to their respective beds or sleeping bags with one brave soul, Larry Caldwell (who must be part polar bear!), sleeping out under the stars on the dock by the lake. The lake was so calm it acted like a gigantic mirror, reflecting the starry sky in its smooth surface. What a beautiful sight!

Sunday was also clear and hot and, while most of the people packed up and went home by lunchtime, many lingered on to enjoy Dr. Holden's hospitality and try to extend their weekend a little further. All in all this year's Camping-Observing weekend was a great success; we couldn't have asked for more (except that if Friday night had been clear).

Our sincerest thanks to Dr. Holden for his kindness and hospitality; it wouldn't have been the same without him.

J. S. Wells

* THE 1984 *

➔ BURKE - GAFFNEY AWARD ➔

The Burke-Gaffney Award was established several years ago to promote the development of the writing skills of non-professional members of the Centre. The Award also acknowledges the contribution of the Centre's first Honorary President to the formation of the group and to his long and tireless efforts to educate the public in the mysteries of astronomy. This years contributions for the Award must reach the President, Editor or the third person of the Judging Committee by 16 March, 1984.

RULES

1. Topics. Awards will be given for articles relating to astronomy, astrophysics or space science. Topics should interest average to well informed amateurs and may be of current or historical interest.
2. Presentation. Articles should be 1000 - 1500 words, written in proper grammatical form and presented typewritten and double spaced. Diagrams should be complete and ready for drafting and photographs should, if possible, be submitted with the original negatives.
3. Eligibility. Any member of the Halifax Centre in good standing may submit articles with the exception of those with graduate degrees (any field of study).
4. Judging. Articles will be judged on scientific accuracy, originality and with a strong emphasis on the overall literary merit.

Papers must demonstrate that the author(s) has/have read widely and has contributed some original thought to the discussion. Judging will be carried out by the President, Editor of NOVA NOTES and a third person appointed by the Halifax Executive.

5. Prize. The Award will be given once annually. The winning contribution becomes the Centre's official entry in the Simon Newcomb Award competition which is held annually on a nation-wide basis. The winner of the Burke-Gaffney Award will have the choice of one of several prizes offered.

6. Submission of Entries. Entries will be received anytime until 16 March, 1984. You may direct inquiries concerning the rules to the President.

7. Previous Awards. The Burke-Gaffney Award has been won on five previous occasions by Bill Calnen (1979 and 1980), Dianne Brooks (1981), Michael Boschat (1982) and most recently by Jennifer Wells (1983). The winners are eligible to go on to enter the Simon Newcomb Award at the annual General Assembly.



ELECTION OF OFFICERS:

The election of Centre Officers will take place at the November meeting. Your ballot which you should have received by now must be returned by the time specified. Late ballots will not be counted. Please Note, you must be paid up for the 1984 Membership year to vote. You may include your cheque in the outer envelope when returning the ballot.

PORTER'S LAKE OBSERVING SESSION - AUGUST 13/14 1983

After two nights of bad weather, one of them obscuring the maximum of the Perseid Meteor shower, the evening of August 13 produced a clear sunset with promise of good observing conditions. We set out for Porter's Lake Provincial Campground armed with 7X50 binoculars, 8" Celestron, and cameras for meteor photography. An excellent campsite was found on a point of land jutting into the lake, with good views of the horizon from NE to SW. The sky was initially hazy, with a tantalizing bit of clear sky to the NW, but eventually cleared up totally at 0015 ADT. At that time, the magnitude 5.2 star near Zeta Ursa Minoris was the limit of naked-eye visibility. Although clear, the air was chilly and damp, resulting in fogged lenses on cameras and telescope. A cautious experiment with a naphtha-fired camping lantern proved that it generated just the right amount of heat to de-fog the lenses. (Curiously, the naked-eye visibility deteriorated soon afterward!)

The 8" Celestron provided Dave with his debut observation of M57, the Ring Nebula, in Lyra. Other deep-sky objects were observed to advantage, such as the galaxies M81 and M82 in Ursa Major, and the globular cluster M13 in Hercules.

The wonders of the deep sky had distracted us from meteor observations, so we turned our attention to these, but we made no attempt to count meteors or estimate accurate magnitudes. We did set up two fixed 35mm cameras: one had an f/2.8 lens of focal length 35mm and was loaded with Ilford 400 ASA B&W film. The other had an f/1.7 lens of focal length 50mm and was loaded with 64 ASA Ektachrome colour slide film. Exposures from 5min-20min were taken in the general direction of the Great Square of Pegasus. We suspect we have one or two of the brighter Perseids on film.

Several good examples of the bright Perseid meteors were observed, complete with vapour trail. We also observed several meteors, fainter than the Perseids, emanating from a region near the SW corner of the Great Square. These seem to correspond with the "new" shower reported in Sky and Telescope (p174, August 1983) whose radiant is 4 degrees S of Upsilon Pegasi. The 1950 coordinates are 23h 20m, +19 degrees, within 3 degrees. Although faint for the most part, Dave did observe two meteors of negative magnitude.

After watching Aldebaran (Alpha Tauri) rise, we called it quits at 0230 ADT. Tired and cold, but happy, we packed away our things and turned in, Dale driving the short distance back to Dartmouth. We were pleased with Porter's Lake as an observing site, but it may be too damp (or even foggy) for serious observing.

Dave Chapman and Dale Ellis

* * * * *



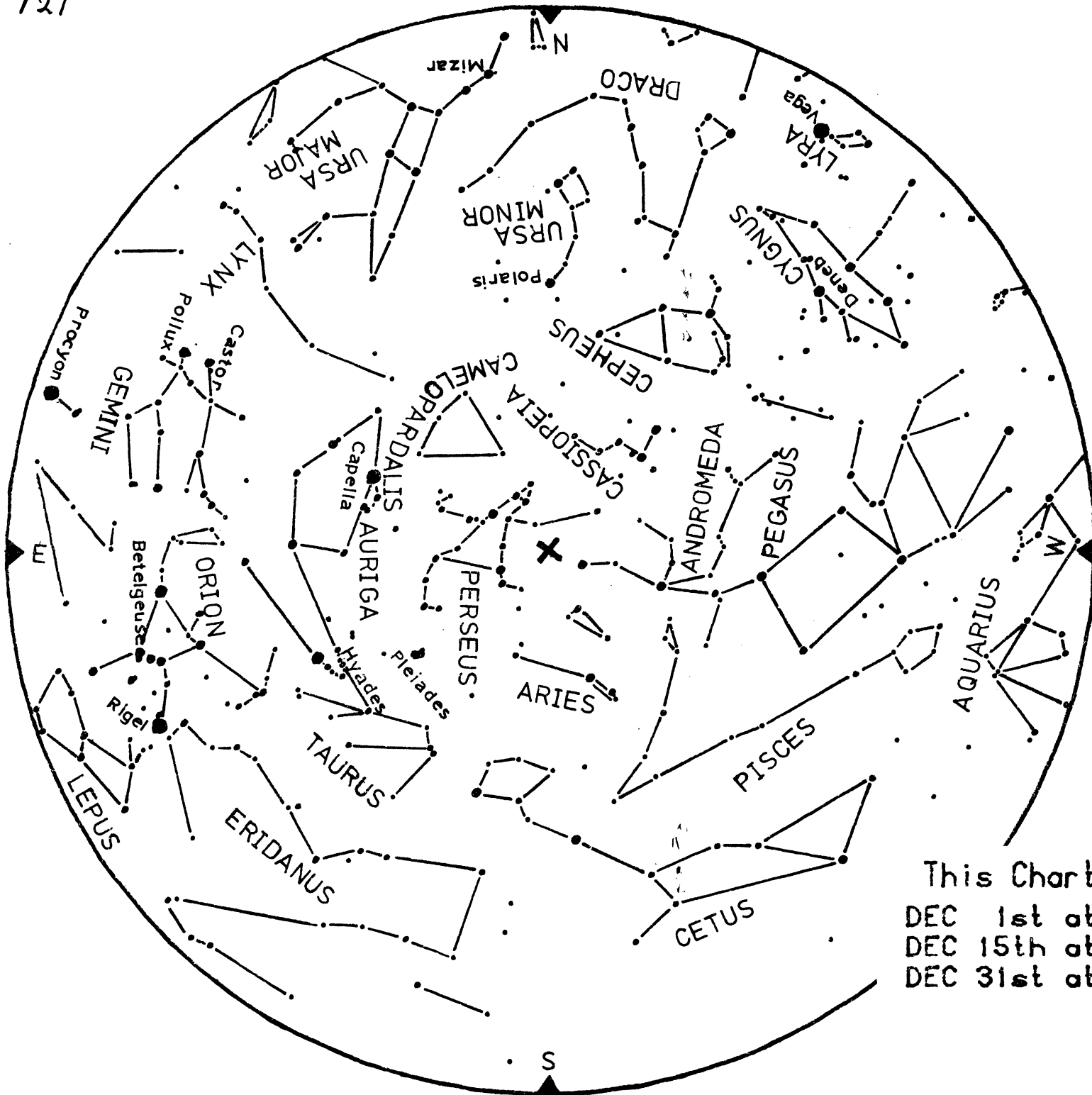
FOR SALE

2, count-em, two Celestron-5's

The first C-5 includes drive, wedge, 2 eyepieces, cases, prism and mounting ring for a Minolta camera. If interested call Mr. Kindelmann in Chester at 275-3407. He also has copies of ASTRONOMY magazine (March 1974-Nov. 1980) for sale.

The second C-5 is a standard system with a 2" Tasco refractor added as a guide scope. Accessories include counterweights for guide scope and camera, 3 eyepieces for each telescope, and 2x Barlow. Price \$1150 but negotiable. If interested call Dr. Allen Cook at 422-6106.

Both instruments are described as being in excellent condition.



This Chart Can Be Used
 DEC 1st at 10:00 pm AST
 DEC 15th at 9:00 pm AST
 DEC 31st at 8:00 pm AST

OBSERVATORY SITES IN NOVA SCOTIA

or

Astronomy on the Fenian Plan

Remember the Fenians? Let me refresh your memory.

In the late 1860's, directly after the American Civil War, a motley, comical troupe of transplanted Irish patriots still spoiling for a fight assembled along the Maine - New Brunswick border. Their goal: the conquest of the Dominion of Canada. They weren't very successful. But what has all this to do with astronomy? Patience, friends.

I can safely say that the main centre for astronomical research in the Maritimes has to be St. Mary's University in Halifax. If you are familiar with the aforementioned establishment, you will know that the 0.4m telescope of the Burke-Gaffney Observatory sits atop the 22 storey Loyola building in the South end of Halifax. This would be fine if it weren't for the fact that the observatory is in relative proximity to a large, well-lit container pier. As well, the observatory has to contend with other sources of light pollution. Thousands of street lights house lights, donut shop neon signs and luminous wrist-watch dials contribute to the glow of the Halifax sky.

After personal reflection I have decided that there are two things that could greatly alter the plight of astronomy in Nova Scotia:

- (1) Stir up interest in a Fenian revival. Equip these green guerrillas of St Pat's with an air force, and see Halifax plunged into blackout conditions for an indefinite period of time.
- (2) Consider alternate observatory sites in Nova Scotia.

There are several sites where one could place an observatory in Nova Scotia. But first we must consider factors one has to be knowledgeable of before deciding on where to place an optical observatory.

Weather Factors: The best method by which to analyze the weather conditions of a site is to sift through meteorological reports for the area in the last twenty years. You're trying to build up a pattern of weather conditions for your specific area. Obviously you cannot expect any region in Nova Scotia to yield results similar to Arizona, but there are areas of differentiation. Even if it only amounts to a couple of extra nights viewing per year, it still makes it worth the effort.

Physical Features: There are a number of significant physical features which you should want to examine. Water plays a large part in your decision. Every local elementary school geography course teaches the fact that one cannot travel fifty miles in any direction in Nova Scotia without reaching the ocean. But logic dictates that the further you are away from water, the less water vapour you'll encounter in the surrounding air. This water will play minor havoc with images, distorting, refracting, and absorbing them. Therefore, you'll also want to avoid large lakes and swamps.

The height above sea level is another critical factor. By selecting a fairly lofty site you are ensuring better quality of seeing (seeing is the atmospheric phenomenon by which light is refracted as it passes through different air densities, causing the image to dance and twinkle). The shorter the column of air directly above your telescope, the less air there is to interact with your image.

A factor which seems at first rather innocuous, is the accessibility of your site. If your institution happens to own a helicopter, maybe you'll have no worries, but otherwise you must select a site to which there is easy access. If the site will require a bit of trail blazing and road building, make sure that it is kept within budgetary restraint. If the army corps

of engineers regard your plans with incredulity , you should consider other locations.

Miscellaneous Items: Earthquakes occur in every part of the world almost daily. I'm not speaking of the tower tumbling, rift-ridden Hollywood variety, but rather I speak of low intensity rumbles which we never feel. Depending of the delicacy of your optical instrumentation, you may want to try to obtain seismological data for your proposed site.

Make sure you are removed as far as possible from all sources of light and air pollution. Airports, oil refineries and electrical generating plants do not top my list of areas to place a dog house, let alone an observatory. Figure one shows us some approximate locations for proposed observatory sites. These are all areas which best fit the rules outlined earlier in this article.

FIGURE ONE
Observatory Sites

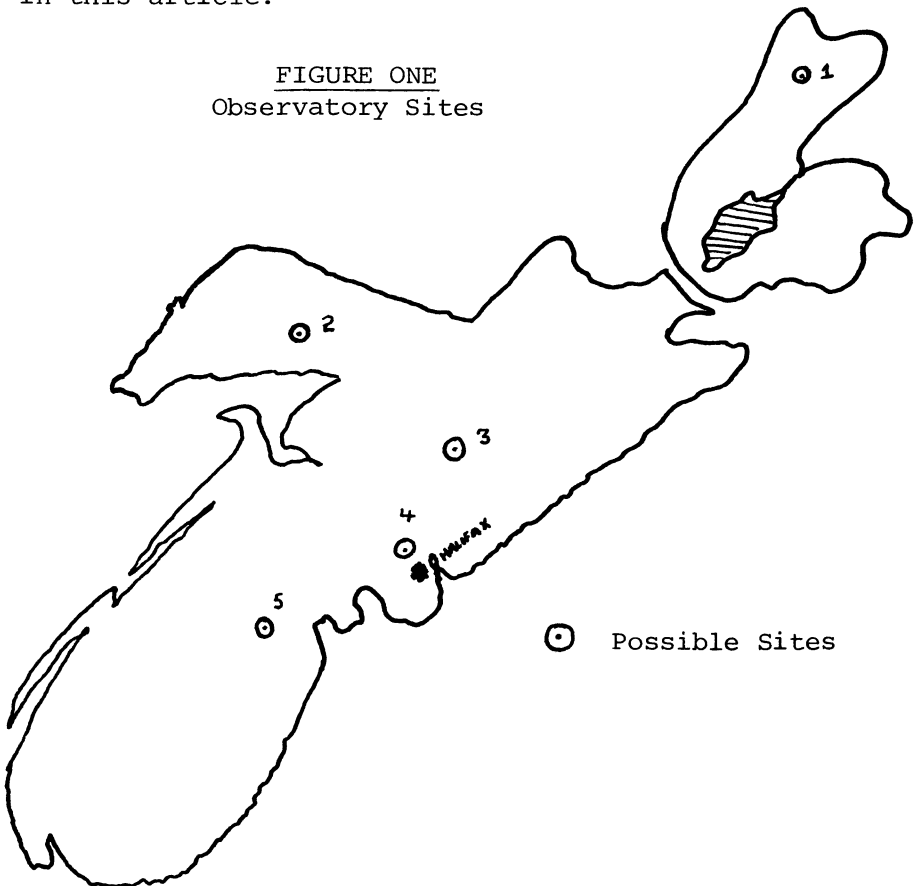


TABLE ONE
Information Related to Figure One

SITE #	MAP SERIES	GRID REF.	APPROX. ELEV. +
1	National Topographic Series, "Cape Breton National Park"	*	1700
2	National Topographic Series, "Oxford", # 11 E/12	475425	1000
3	National Topographic Series, "Hopewell", # 11 E/7	152268	750
4	National Topographic Series, "Mount Uniacke" # 11 D/13	387762	650
5	National Topographic Series, "New Ross", # 21 A/16	927606	850

+ Approximate elevation in feet above sea level

* There are no grid references available on this map, but latitude and longitude are given instead. For this position :

Latitude 46^o 47' 30"
Longitude 60^o 41' 45"

In the course of this article I have concentrated solely on the province of Nova Scotia. This is by no means saying that New Brunswick, Prince Edward Island and Newfoundland could not be considered. One would think that Newfoundland could supply sites of superior elevation.

In closing I must also state that this article is by no means an exhaustive study -- your author would be hard-pressed to find anything he exhaustively studies! However, I do sincerely believe that there is a future for astronomy in Nova Scotia, and if we are going to grow, we must prepare for it now.

Mike McKay

NOTE FROM THE LIBRARY

The Halifax Centre library wishes to thank the following people for their recent donations to our book collection:

Wilf Morley	The Unfolding Universe by Patrick Moore
James Morton	Until The Sun Dies by Robert Jastrow
	White Holes by John Gribbin
	Science, Technology and Society in Seventeenth Century England by Robert Merton
Dr. Roy Bishop	Observers Manual Ottawa Centre RASC
	The Joy of 'Gazing by David H. Levy, Montreal Centre

If you have any astronomy or science books you would like to donate to our library just bring them along with you to the next meeting. We'll be glad to take them off your hands!

L. G. Burgoyne

J. S. Wells

* *Simon Newcomb Award* *



At the meeting of the Council of the R.A.S.C. on May 21, 1978, a proposal from the HALIFAX CENTRE, the 'Simon Newcomb Award' was adopted. The award is named after a native of Nova Scotia, an astronomer who was the foremost man of science of his time in America.

Simon Newcomb (1835-1909) was born at Wallace Bridge, N.S. At age 18 he moved to Massachusetts and later to Washington, D.C. where he spent his entire professional life. In 1861 President Lincoln commissioned him as professor of Mathematics and Astronomy in the United States Navy. For 16 years he carried on astronomical observations at the Naval Observatory. From 1877 to 1897 he was Superintendent of the American Ephemeris and Nautical Almanac Office. Newcomb became the world authority on the orbital dynamics of the Moon and the Planets. Among the many honors which he received were the Gold Medal of the Royal Astronomical Society (1874), the Copley Medal of the Royal Society of London (1890), President of the American Association for the Advancement of Science, the first President of the Astronomical and Astrophysical Society of America (the present American Astronomical Society), and seventeen honorary degrees from leading universities in the United States and Europe.

RULES

TOPICS

Awards will be given for articles relating to astronomy, astrophysics or space science. Topics should interest average to well-informed amateurs and may be of current or historical interest.

PRESENTATIONS

Articles should be 1000-2500 words, written in proper grammatical form and presented typewritten and double-spaced. Diagrams need not be in finished form but should be complete and ready for drafting. Photographs may also be submitted and if possible original negatives should accompany the submission. References should be included and according to the style used by the JOURNAL.

ELIGIBILITY

Any R.A.S.C. member in good standing may submit articles. The intent of the SIMON NEWCOMB AWARD is to recognize literary ability among non-professional members of the Society.

SUBMISSION OF ENTRIES

Articles must be received by the Awards Committee of the R.A.S.C. between January 1 and March 31. Members of Centres must first submit the entries they wish to their Centre Executive with the Executive choosing the entries they wish to represent their Centre. It is the responsibility of the Executive of the Centre to ensure the entries are received by the deadline above. Unattached members will submit their entries directly to: The Awards Committee, Royal Astronomical Society of Canada, 124 Merton St., Toronto, Ontario, M4S 2Z2.

JUDGING

Articles will be judged by the Awards Committee. Criteria shall include scientific accuracy, originality, and literary merit. To maintain unbiased judging, the identity of the author(s) should not appear in the body of the paper.

PRESENTATION OF AWARD

The award will be presented at the General Assembly by the Halifax Centre representative to the winner (or a representative of the winner's Centre). The award will remain in the hands of the winner's Centre for display and will be returned to the National Office by April 1 of the following year. If the winner is an unattached member, the award will be displayed at the National Office of the R.A.S.C. A photograph of the Award may be found in the R.A.S.C. NATIONAL NEWSLETTER, L81, Dec. 1978.

MORE PLANETS IN THE MAKING

In August Drs. George Aumann and Fred Gillett, using the IRAS (Infrared Astronomical Telescope) discovered that a disc of material exists around Vega. The disc is composed of millimeter-sized particles at 90 degrees Kelvin. The diameter is twice the Solar System's diameter and as it turns out, the disc was observed ten years ago with NASA's infrared telescope adjacent to the CFHT on Mauna Kea. Suggestions have been made that the disc around Vega is evidence for a possible planetary system, albeit in an early state since Vega is less than a billion years old. For comparison, our Sun is 4.7 billion yrs old.

However, several T Tauri type stars have been studied on the premise that the discs of material surrounding these even younger stars can be explained as planetesimals or protoplanets in the process of coalescing. RU Lupi and RY Lupi are T Tau stars less than a million years old. They produce energy by nuclear reactions as does the Sun, but their outer layers are still contracting and turbulent. RU Lup emits one third of its energy in the infrared suggesting that the energy produced by the star is absorbed and re-emitted by particles in clumps--perhaps 1000 to 100,000--orbiting the star at perhaps 1 AU. Likewise, RY Lupi is bright in the infrared and also shows variations in brightness. As the magnitude fades, this star becomes redder indicating that as a "ball" of dust

blocks the light of RY, the blue light of the star is absorbed while the red passes through. The amount of reddening indicates dust grains of 0.1 μ m. More prominent drops in magnitude are not accompanied by the same amount of reddening. This is interpreted as "balls" of dust with grains at least three times as large in them--hence a suggestion of a progression of early stages of planetary formation is seen.

The most recent report on a disc surrounding a T Tauri star was of HL Tauri, the youngest known member of this stellar class--it's only 100,000 years old. The observations reported were made with the Kuiper Airborne Observatory in the long infrared and show that HL Tau emits 630 times more IR radiation as is emitted in the visible part of the spectrum. This is the only T Tauri star which shows absorption (ie. dark lines) in the IR spectrum and indicates the presence of silicate "rocks" and icy particles of water, each at different temperatures. Interpretation by the investigator, Martin Cohen, places the silicate grains in an area covering, by analogy to our own Solar System, Mercury to Saturn, while the icy grains lie in a band from Saturn out to three times Pluto's distance from the Sun. Cohen further speculates that the dust, of which there is ten times the amount around the Sun, and gas which may exist in the outer regions could form giant planets like Jupiter. The total mass of the planets, he thinks, might reach 500 Earth masses--much less than the total mass of the planets in our Solar System.

Together with the evidence amassed by Peter van den Kamp on planets around Barnard's star, these new discoveries are adding strength to our suspicions that other planetary systems indeed are to be found around relatively nearby stars. The definitive proof will probably not come until the Space Telescope rides into space in 1986 or 87. It will for instance, be able to actually "see" the planets around Barnard's Star (assuming they exist) and the ST will be directed to investigate other possible candidates for dark planetary companions and interesting objects such as HL Tauri.

ASTRONOMY EDUCATION MATERIALS

Every once in a while, I receive a request for sources of information on astronomy. Until recently one could only refer back to the Resource Letter published in 1973 by the Journal of the American Association of Physicists as no other comprehensive compilation had been made. The International Astronomical Union's Commission 46 (Teaching of Astronomy) has recently published a listing of materials available to mid 1982 in English, Slavic and other languages. This may be obtained free of charge from Prof L Houziaux, Vice-President IAU Comm 46, University of Liege, Liege, Belgium. It was prepared with the financial assistance of UNESCO.

This work lists organizations involved in the teaching of astronomy, journals and magazines, as well as books and curriculum materials. The materials are generally classified into three levels: technical (some math and physics required), educational (no math or physics required) and juveniles. In the educational section you will find such sub-headings as activities books, laboratory materials atlases, films, etc. Addresses of suppliers, film distributors and publishers are given including several NASA addresses which are handy to have available. Both the film and book sections are subdivided by topics, however, the book list only includes volumes published in 1980-81--The IAU intends to reissue this booklet approx. every three years with updates.

The English section is derived primarily from North American resources and runs for 68 pages. The compiler of this section recognized this flaw but hopes to rectify the situation in preparing new editions. More than half of the work is devoted to resources available in other languages. It was interesting to read through the short translations to get an idea of the dominant interests in public astronomical education in other countries--particularly the USSR.

Despite the short period covered, particularly in the English book listings, I think teachers would find this booklet quite useful. The price is certainly right!

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