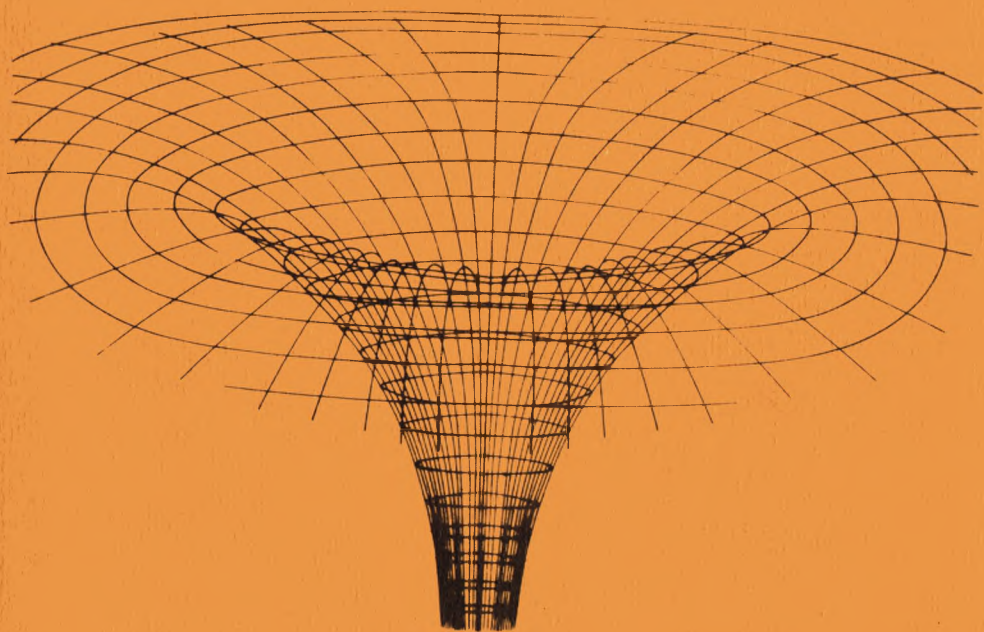




NOVA NOTES



BI-MONTHLY JOURNAL OF THE HALIFAX CENTRE
NOV-DEC 1980 VOL. 11 , No 6

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NOTICE OF MEETING

- Date: Friday, 21 November, 8:00 pm
- Place: Saint Mary's Univ., Rm 146 of the Loyola Building
[This may be reached most easily by approaching SMU on Robie St. Proceed past the grey stone building facing Robie and go down the driveway on the right hand end. The Loyola Building is then on your right and L146 is down the second hallway on the ground level.]
- Speaker: Dr. Robert Roeder, Dept. of Astronomy, Univ. of Toronto.
- Topic: Do-It-Yourself Gravitational Lenses
Gravitational lenses, ie. one or more massive objects alined in the line of sight, are sometimes invoked to explain why some objects appear to be separating at velocities greater than the speed of light. The objects are strange and are very interesting to study. You're sure to find this talk just as interesting! This lecture is being jointly sponsered by the Dept. of Astronomy and our Centre.

ELECTION OF OFFICERS:

The Election of the Centre Officers will take place at this meeting. Your ballot which you should have received several days ago must be returned by the time specified. Late ballots will not be counted. Please note that you must be paid up for the 1981 Membership year to vote. You may include your cheque in the outer envelope when returning the ballot.

DECEMBER MEETING: Note that the December meeting will be held on Friday 12 Dec. at the Nova Scotia Mus. This is a week earlier than normal so mark it off on your calendar so you don't forget it in the pre-Christmas rush.

A Unique Gamma-Ray Burst Observed:

On 5 March 1979 gamma-ray detectors on board nine different spacecraft were triggered by the passage of a strong burst of electromagnetic radiation. The instruments are designed to observe the most energetic form of radiation, ie. gamma-rays, but these detectors cannot distinguish the direction of the observed events. The 5th March event was the most intense event ever observed with an estimated 10^{37} watts being emitted in a few milliseconds. A secondary effect--"a faint throb with a period of 8 seconds" was observed for several minutes. The event was one of about 90 which have been detected in the last 10 years.

The first satellite to 'see' the burst was Venera 11 (USSR) in solar orbit, and 25 seconds later Venera 12 and Helios 2 also in solar orbit. The other space craft were the Pioneer Venus orbiter, Vela's 5A, 5B, 6A (nuclear spy satellites), ISEE (at the first solar/Earth Lagrangian point and Prognoz 7 (in Earth orbit). Since gamma-rays move at the speed of light, astronomers from the US, USSR France and West Germany have been able to use the time delay between the satellites' detection of the event to triangulate the position of the object. The position is accurate to a couple of arc minutes and it happens that there is a super nova remnant in the error box. The object, N49 is believed to be in the Large Magellanic Cloud, one of the small companion galaxies to the Milky Way Galaxy. This object is 150,000 light years distant and this fact concerns astrophysicists because it indicates that the emitting object is "uncomfortably large"--100 to 1000 km in diameter. Neutron stars 10 km in diameter are usually associated with such intense bursts and this has led astronomers to suggest that they have observed an event from an intervening object. The probability of this is only one in several thousand. If the burst can be associated with the SNR, it may mean the distance determination is incorrect. In any case this was a remarkable event and demonstrates the usefulness of even spy satellites when in the hands of scientists!

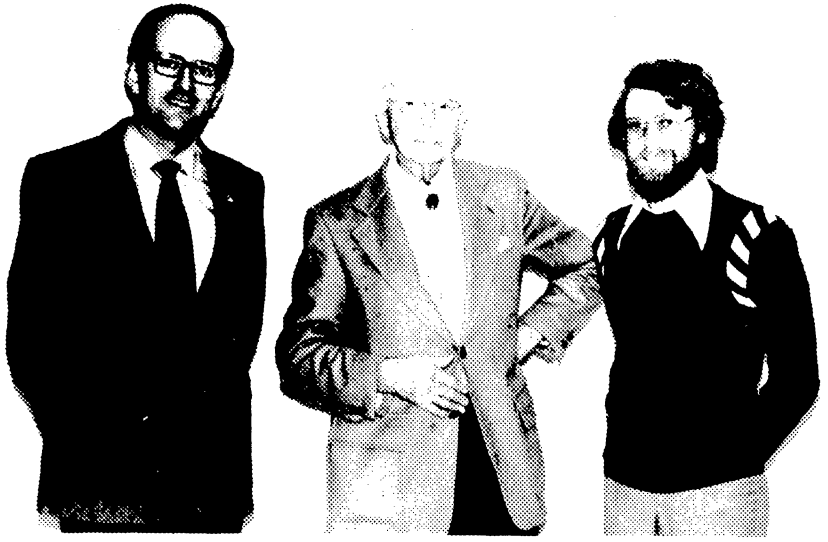
(details in Astrophysical J., 237, L1 and L9).

Dr. William HoldenHonorary President, Halifax Centre

William Hall Holden was born in Lynn, Massachusetts on January 24, 1897. He studied medicine at Tufts College Medical School, obtaining his M.D. in 1924. He then specialized in otolaryngology, involving reconstructive surgery of the head and neck, and was associated with the Columbia Medical Center in New York city from 1926 to 1950. From 1950 he worked at the Medical Center in Macon, Georgia, completing 50 years as a surgeon in 1974, the year of his retirement.

In addition to his long and distinguished medical career, Dr. Holden has made other contributions to his country. He left college for a time in 1918 when he enlisted in the U.S. Navy and qualified as a pilot flying the amphibious biplanes of that era. He retained his interest in aviation, becoming qualified in aviation and aerospace medicine, and accumulating some 3800 hours of flying time, part of it in his own plane, during flights ranging from Greenwood, N.S. to the Caribbean and Central America between 1918 and 1973. In 1936 and 1937 he was involved in two scientific expeditions to the then little-known Sierro Akari mountain range in the southern part of British Guiana. For the collections he brought back, he was elected a Patron of the American Museum of Natural History. Among other honours, Dr. Holden is a member of the New York Academy of Sciences, a Fellow of the American Geographical Society, a Patron of the Smithsonian Institution, and a Fellow of the Explorers' Club.

Dr. Holden's interest in Nova Scotia began in 1897 when he visited his mother's home at



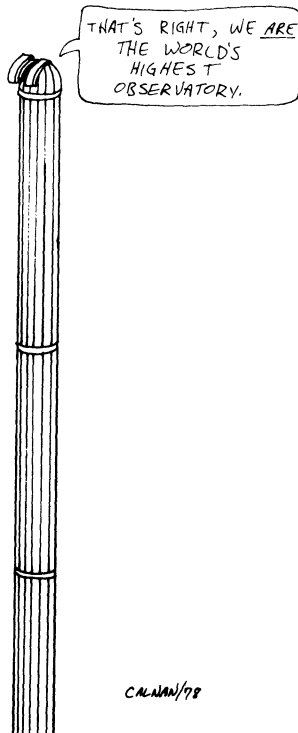
L to R - Roy Bishop, Dr. Holden, Randall Brooks

Albany, Annapolis County. Many subsequent summers were spent there. In 1940 he built a cottage on nearby Trout Lake, and when he retired in 1974 he chose Albany as his home, having purchased a small farm house there a few years before. He lives there alone, his children being in the United States.

His interest in astronomy began about 1970. He joined the Macon astronomical club and, after his return to Nova Scotia, the Halifax Centre of the R.A.S.C. Recently Dr. Holden erected a roll-off roof observatory under the dark skies of his Albany home to facilitate the use of his Questar telescope. During a recent visit there, the full moon shone through broken clouds, crickets called from the surrounding fields and forest, while the music of Vivaldi and Bach joined the curl of pipe smoke as Dr. Holden reflected on his long life and waited for a darker, clearer evening when he would again stroll out to his observatory.

In view of Dr. William Holden's example of service to his fellow man, of his love for this part of Canada, and of his demonstration that an active and keen interest in astronomy has no limits, the Halifax Centre of the Royal Astronomical Society of Canada is honoured to have Dr. Holden as its Honorary President.

Roy L. Bishop
2nd Vice-President
R.A.S.C.



CALMAN/98

PERSEID OBSERVING AT LOCHABER

I am one of the fortunates who spends a large part of the summer at a cottage with beautiful trees, a picturesque lake and dark skies. For those of you who live in a city or in a town and often wonder what dark skies are really like, let me tell you.

That white band across the sky which seems dim and featureless becomes the great and glorious expanse of the Milky Way with its dark inlets and bright islands. I hadn't realized how even the few streetlights near my village home destroyed the true beauty of the heavens until I experienced the sights at Lochaber. You could actually see the Milky Way in the still of the lake. Also visible to the naked eye and easily found was the Great Andromeda Galaxy (M31, NGC224). This wonder which is invisible at home except on the best of nights, stood out clearly and was an impressive sight.

While July was rather bad for observing due to cloudy nights, August proved more fruitful. Most of my observing entailed leisurely scanning the skies with a pair of 7x50 binoculars and trying to pick out as many constellations as possible. I did , however plan to take a meteor count on the night of the peak of the Perseids. The week previous to the Perseid meteor shower was excellent for astronomy, and sure enough the day of the Perseids dawned cloudy! I was really downcast all day (or should I say overcast). Late in the afternoon the clouds began to break up. Soon the sky was clear. Elated I thought only of the night's observing ahead.

About 9:30 local time, I went down to the floating dock with my trusty 7x50's and a "scorepad". At first I just looked around and got orientated. The seeing was perfect: not a twinkle anywhere!

The first meteor I saw was stunning: A bright yellow streak running through Sagittarius with a tail lasting about $\frac{1}{2}$ second.

At 10:05 I started to take count of the meteors I saw. They came in a flurry and in twenty minutes I saw 29! Most were swift and left no tails; some however, were slow and left bright tails that lasted 1-2 seconds. They ranged in colors from white to yellow, with a red or orange one thrown in. The red ones were the most impressive. They had long lasting tails and often fragmented. Between 10:25 and 10:40 I counted 24 meteors, and between 10:42 and 11:07 I saw 23. Sporadics seemed few and I tried not to include them in my counts.

For the rest of the time I was out I just watched the display. It was the damp and cold that drove me indoors at 12:30.

My nights spent observing at Lochaber were happy. The time spent observing the astral wonders in the darkness there is over for another year, but I am looking forward to next year. Remember, the dark skies are there for anyone who wants to enjoy them.

Mark T. MacLean,
Hopewell, N. S.

SOME COMMENTS ON THE 1980 GA

We have received a number of notes from people who attended the GA here in Halifax this past summer. You might be interested to read portions of some of these.

"Thank you all one more time for the superb job which your local organizing committee did. The meeting was an unqualified success in all respects. Thanks also for the beautiful photo of the Bluenose, suitably inscribed. It will be a lasting memory of an outstanding General Assem."
--John Percy (retiring Pres. of the RASC)

"The latest GA of the RASC was a great success. Please pass on to all members of the local Assembly Committee the sincere thanks of the National Council and all members in attendance, for a very pleasant, worthwhile and memorable gathering. Your committee had every detail planned to perfection; ...We have come to expect an outstanding GA when hosted by the Halifax Centre, and this year's gathering only enhanced those expectations."
--Rev. Norman Green (National Secretary).

"I have just returned home...I realize that I owe the Halifax Centre a note of sincere thanks for an excellent GA. Your Centre deserves a great deal of praise for its hard work, superb organization and very warm hospitality. The 1980 GA was by far one of the most worthwhile and most enjoyable that I have attended in nearly twenty-five years of membership in the Society."
--Harlan Creighton (National Recorder)

"Just a note to say "Congratulations!" for what must surely have been one of the most successful GA's ever. I think that both Societies benefitted greatly from the interaction, and that similar joint meetings will occur with full support from both groups in the future."
--Ralph Chou (Secretary, Toronto Centre)

"I would like to thank you all for the excellent GA you hosted this year. I found the displays and papers very stimulating, and hope as a result to have something to contribute myself next year....I would like to congratu-

late you for the tours and other parts of the assembly. My family is still recounting the tour of the Minas Basin region. Roy Bishop is to be commended for his efforts in this tour, and in spite of the weather, my family and I feel the endeavor was entirely successful. I would like to especially thank Michael Edwards for meeting us at the airport and transporting us to St. Mary's...It is important that your Centre be aware of how important such thoughtfulness is to weary travellers." J. D. Jones (Castlegar, B.C.).

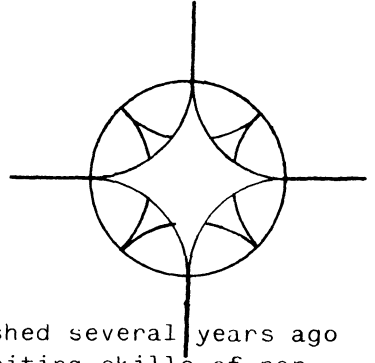
And finally a few comments from Dr. Helen Hogg, Honourary President of the RASC which were sent to Dr. Cunningham. "I want to thank you most gratefully for all the effort you put into making the joint meeting of CASCA and the RASC the big success that it was. In particular, I appreciate the personal touches such as your giving up your precious holiday morning to transporting me to the airport....It made a very pleasant finish to my already pleasant stay in Halifax."

NEW EDITORS APPOINTED

The National Council of the RASC has announced the people to replace Dr. Lloyd Higgs (Journal Editor) and Dr. John Percy (Ed., Observer's Handbook). The new Journal Ed. is Dr. Alan Batten, a former President of the Society and an astronomer at the Dominion Astrophysical Obs. in Victoria. The new Editor of the Observer's Handbook will be Dr. Roy Bishop! After being elected 2nd Vice-President of the Society this year, and, being Chairman of the Historical Committee, he's going to be rather busy. We'll wish them both contratulations (or commiserations) in their new positions.



Burke Gaffney Award
for 1981



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 20 March 1981.

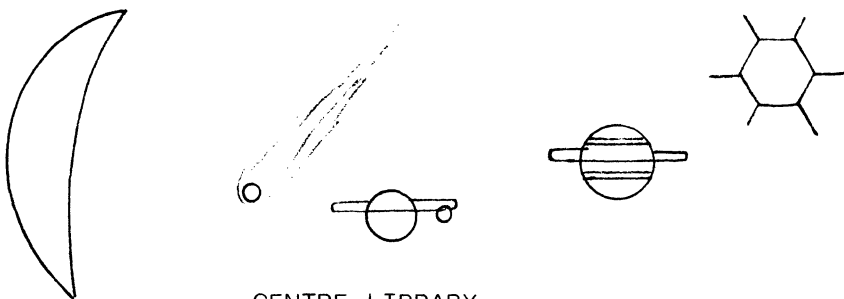
RULES:

- 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 type-written 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 feild 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 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.

PRIZE: The Award will be given once annually. The winning contribution then becomes the Centre's official entry in the Simon Newcomb Award which is nationally competed for. The winner of the Burke-Gaffney Award will have the choice of several prizes including: Ottwell's Astronomical Calendar (1981); year's subscription to Griffith Observer; or the Nation Geographical Society's The Amazing University.

SUBMISSION OF ENTRIES: Entries will be received anytime until 20 March 1981. You may direct queries concerning the rules to the President.

PREVIOUS AWARDS: The Burke-Gaffney Award was been won two consecutive years by Bill Calnen for his papers on "Astronomy at King's College, Windsor, Nova Scotia" and "Designing a Helical Antenna for Radio Astronomy". With the first article, Bill went on to win the Simon Newcomb Award in its first year.



CENTRE LIBRARY

The Halifax Centre has a library located at the Nova Scotia Museum for the use of its members. A number of books are outstanding and should be returned ASAP. Some are also outstanding in their content! Why not drop by after a meeting and take a couple home with you.

The library has been developed primarily from contributions from Centre members. If you have one or one dozen books which you no longer wish to keep on your shelves, why not pass them on to us--we have lots of eager budding astronomers who would love to read them!

WEATHER, FACT AND FICTION

The weather is of continuing significance to all, astronomers and non astronomers alike and especially those who live in a land as subject to its frequent and unpredictable changes as Nova Scotia. Astronomical endeavour has always been subject to the weather as it goes through its many moods, from the calm, tranquil "good seeing" near the center of a high pressure system to the savage forces unleashed by a severe summer thunderstorm or a blinding winter blizzard.

Weather lore may be divided into two categories. There are those rough set of rules which were formulated by people who live in intimate association with their environment and who come to recognize a relationship between the meteorological phenomena of one night and those that follow. Then there are other sayings, usually concerning the weather of a particular calendar date or the attribution of psychic powers to the lower animal kingdom but these are usually the result of imagination or superstition.

Only in the late nineteenth century did the science of meteorology begin to develop with governments undertaking to provide weather forecasts and warnings prepared by specialists with refined equipment. Although sometimes I feel they might just as well be flipping a coin. Yet one cannot argue that with technology at his side the professional meteorologist has established a worldwide network of weather observing stations including satellites, radar and computers which have certainly increased the long range average of forecasting accuracy.

The astronomical observer has to keep track of the weather and watch for that perfect night when the sky finally clears. The perfect night is also good for the formation of dew; especially this time of the year. It is easy to explain why the dews in autumn are heavier than those in summer. The days are shorter and the night are longer so that there is a greater difference in day and night temperatures. It's as simple as that.

I hope everyone in the centre has had a chance to see the aurora borealis (northern lights). Although primarily an astronomical phenomenon, the atmosphere is essential to its production and is therefore of interest to weathermen as well.

It is believed that the sun bombards space with emissions from solar flares. When these ionic (electrically charged) particles shoot at high speed from the surface of the sun, strike the atoms of the gases that make up the earth's atmosphere, they excite and cause them to glow, much as the gas in a neon sign glows when the electric current is turned on. These ions are drawn toward the magnetic poles of the earth with sub-arctic Canada lying in the northern area of the auroral displays. These magnificent displays do not affect our weather in any known way however.

When talking about the weather, and much has been left unsaid, I can do no better than to quote everyone's favorite philosopher, "Winnie the Pooh":

If I were a bear,
And a big bear too,
I shouldn't much care,
If it froze or snow.

Glenn Graham

TELESCOPE DATA

Model	Type	D _o	f#	D _s /D _o	Finder
Unitron 3	R	3	16	0	8x30
Questar 3½	M	3½	14	.35	4x15
Celestron 90	M	3½	11	.33*	5x24
Quantum 4	M	4	15	.33	6x30
Celestron 5	SC	5	10	.40	5x24
Maktomkus 1	R	5	4	0	1x7
Dynamax 6	SC	6	10	.33	6x30
Quantum 6	M	6	15	.33	8x50
Questar 7	M	7	14	.35*	7x23
Celestron 8	SC	8	10	.34	6x30
Dynamax 8	SC	8	10	.34	8x50
Quantum 8	M	8	15	.33	8x50
Maktomkus 2	N	8	6	.19	7x50
Celestron 14	SC	14	11	.32	10x40
Maktomkus 3	N	17½	4.5	.18	7x50

* Estimated

Type: This refers to the optical configuration: R = Refractor, M = Maksutov, SC = Schmidt-Cassegrain, N = Newtonian. Generally speaking, the Maksutov and Schmidt-Cassegrain designs are the most compact and are relatively rugged and dust-proof. The Newtonian gives the most performance per dollar, has the least number of optical surfaces, is perfectly achromatic, and is the only configuration that provides both an unreversed image and a comfortable viewing angle.

D_0 is the diameter of the objective (in inches). Other than optical and mechanical quality, D_0 is the most important parameter regarding a telescope. Light gathering is proportional to D_0 squared, and resolving ability to D_0 (assuming that the atmosphere is steady enough to permit the full resolving power to be realized).

$f\#$ equals F_0/D_0 where F_0 is the focal length of the objective. A low $f\#$ means that for extended (non-stellar) objects the telescope is "fast" photographically, while for visual use the $f\#$ determines the range of eyepiece focal lengths that can be used with a telescope. The magnification available with an eyepiece of focal length F_e is $F_0/F_e = f\# D_0/F_e$, but this must fall within the range of approximately $4D_0$ to $50D_0$ (with D_0 in inches), the lower limit being set by the maximum aperture of the human eye, the upper limit by the wave nature of light.

D_s is the diameter of the secondary mirror. Thus D_s/D_0 is the fraction of the aperture obscured by the secondary mirror. A small D_s/D_0 is desirable since the larger it is, the more light is diffracted by the secondary obstruction. This, in turn, degrades contrast and detail in the telescopic image. Two other negative aspects of a large D_s/D_0 are the loss of light and the difficulty of using low magnifications when observing bright objects (In the latter case the size of the secondary obstruction imaged in the exit pupil is approaching the size of the eye pupil).

Finder: e.g. 6x30 means that the finder provides a magnification of 6x and has a D_0 of 30 mm. For astronomy, finders should

have magnifications of about 0.2 for each millimetre of aperture and should have a D_0 of at least 50mm. It is surprising how few manufacturers provide adequate finders as standard equipment.

Roy L. Bishop
Baktomkus Observatory

MOONLIGHT

As a pale phantom with a lamp
 Ascends some ruin's haunted stair,
 So glides the moon along the damp
 Mysterious chambers of the air.
 Now hidden in cloud, and now revealed,
 As if this phantom, full of pain,
 Were by the crumbling walls concealed,
 And at the windows seen again.
 Until at last, serene and proud
 In all the splendor of her light,
 She walks the terraces of cloud,
 Supreme as Empress of the Night.

Longfellow



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