

FROM

HALIFAX CENTRE R.A.S.C.
1747 SUMMER ST.
HALIFAX, N.S.

TO

Marie Fidler,
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252 College St.,
Toronto 2B, Ont.



Apr 71



SECRETARIES
WEEK
NSA

NOVA NOTES



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THE ROYAL ASTRONOMICAL
SOCIETY OF CANADA
252 COLLEGE ST.
TORONTO 2B

44° 38' N
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HALIFAX
CENTRE

EDITORIAL

Greetings. Congratulations are in order for the Humphrey's on two counts. During our executive meeting this month, we were privileged to look through Roy and Eileen's new homemade 6" reflector. It is a beautiful piece of engineering and we hope to soon get the specifications from Roy. The other congratulations are not, strictly speaking, Roy and Eileen's, but Rusty's, their golden labrador retriever, who was busy having pups in the basement (5 when I left) during our meeting.

Mr. David Levy's article, "The Art of Comet Hunting" from Nova Notes, December, 1970, is soon to be reprinted in the R.A.S.C. Journal. We knew it was a good article, David, but it's nice when they know it too.

We received a letter from Mr. Rick Lavery who is in charge of the program for variable star observing. We are just starting our own observing programs and this would be an ideal project, and nation wide. These are the more essential details as outlined in Mr. Lavery 's letter:

1. Binoculars are needed.
2. Know how to find the constellations of Hercules and Orion.
3. There are 2 sets of variables, - a summer set (g Hercules, X Hercules, RR Corona Borealis) and a winter set (W Orionis, CK Orionis, RX Leporis).
4. The whole kit (including charts and instructions, etc.) is available for 30¢ (the actual cost of the 2 charts from AAVSO).

Walter (our own variable star observer) will have more to say about this later, but please come to the next meeting and tell us in which observing programs you are interested. The kits are available from Rick Lavery, 1227 Morrison Drive, Ottawa 6, Ontario, or you can give us your orders.

We have just received word Mr. David N. Griffiths has moved to Toronto. We wish him good luck in Ontario.

Smidt is spelled Schmidt.

JMS

The regular meeting of the R.A.S.C. Halifax Centre was held (for the month of March only) at the Tupper Building. The reason for the change in location was in order for members to take advantage of hearing Prof. J. A. Wheeler of Princeton University speak on the subject - Our Universe: The Known and the Unknown. This lecture was excellent.

NOTICE OF MEETING

Date: April 19, 1971.
Place: Audio Visual Room - N.S. Museum
Time: 8:00 p.m. sharp
Speaker: D. J. Hook
Subject: Satellite Tracking

Printed: Thanks to the goodwill of the Nova Scotia Museum.

Satellite Tracking

This talk is concerned with 2 aspects of satellite tracking. Those techniques that are not available to the amateur astronomer (radio, radar and photographic methods) and those that are available i.e. visual tracking.

Radar is used extensively in a bookkeeping role to obtain fairly rough orbital elements to keep track of objects primarily for defence purposes. Radio tracking, available only with those satellites carrying radio transmitters can be classed into two groups; interferometric methods and doppler methods. The NASA MINITRACK network is an example of the interferometric method and is used extensively for scientific purposes.

Photographic methods are also used extensively for professional purposes, especially the Smithsonian network of Baker Nunn satellite cameras. Tracking by means of theodolite is also quite extensive. These last two methods are of course limited by the visual magnitude of the satellite and the fact that the satellite has to be illuminated by the sun and this is often in the earth's shadow and not visible.

Amateur observers can play quite an extensive role in orbit determination and observation of critical stages in a satellite's life e.g. re-entry. Centres for sending out predictions and receiving observations both for professional and amateur purposes are present both in North America and Europe. The Smithsonian Astrophysical Observatory in the United States and the Radio and Space Research Centre at Slough in England are examples of such centres.

For the amateur astronomer, apart from a source of predictions the equipment required is a pair of binoculars, a stop watch a star atlas and access to a time standard eg. WWV or CHU.

From the predictions the rough track of the satellite can be calculated and after searching for and observing the satellite a position and a time are observed. Usually the magnitude of the satellite is estimated together with any unusual features (eg. flashing).

The observations are then sent into the reporting centre and together with other observations an orbit can be calculated, or corrections to an already known orbit can be made.

The necessary calculations to predict where a satellite can be observed from the ephemerides sent out by the prediction centre will be discussed.

D. J. Hook.

Maffei 1 and 2
Two New Neighbouring Galaxies.

Two years ago an Italian astronomer, Paolo Maffei, found two strange objects on infra red plates he had made of a region of the sky between Perseus and Cassiopeia. Now these two objects are said to be galaxies, not much farther away than Andromeda (our nearest neighbour) at about 3 million light years.

The two galaxies are visually invisible because of obscuring dust clouds in the way. Maffei 1 is thought to be elliptical while Maffei 2, the smaller of the two is probably spiral. The two galaxies together weigh something like 100 billion suns.

If you want to see the two "new" galaxies, all you have to do is wait 100 million years when our galaxy will have rotated enough for us to see them.

Ref. Wiley, John P. Jr.,
Natural History
Vol. LXXX No. 3 Pg. 62.

N.S. Museum Astronomy Activities.

On April 24, the Natural Science Activity of the Nova Scotia' Museum will be Astronomy. We will have the small planetarium set up as well as slides, and a mirror grinding display. We would like very much to have some of our members (2 or 3) to point out constellations in the planetarium, demonstrate the grinding and show any pictures or slides they have taken. This will be on a Saturday from 9:00 to 10:30 and 10:30 to 12:00.

On May 15 the Museum will hold another Museum - GO- Round. We will do essentially the same thing as above and would like 2 volunteers, preferably different ones to demonstrate. Please let us know at the meeting on the 16th of this month.

JMS.

The Alcan Total Eclipse of July 10, 1972.

It is time we started making plans for observing the total eclipse of July 10, 1972. We are in a privileged position because the moon's shadow passes through very sparsely settled country until it reaches, Quebec, New Brunswick, Prince Edward Island, and Nova Scotia. There are only 2 good sized towns near the centre of the shadow, Antigonish, N.S. and Charlottetown, P.E.I. Inverness, N.S. is near the Northern boundary of the shadow and Truro is near the Southern edge. The shadow leaves land at Nova Scotia between Sheet Harbour, and St. Esprit.

Observing centres will be set up in Nova Scotia and P.E.I. If you intend to participate, please fill out the form at the end of the newsletter and send it to us or bring it to the next meeting.

April Meteors.

This year provides a favorable opportunity for viewing the April Lyrid meteor shower. Since the peak of the two day display will come during daytime on April 22nd, observations should be planned for both the night of the 21-22 and the 22-23, when approximately eight shower members per hour may be seen. The radiant is at 18h 16m +30° about 6° southwest of Vega. Since this point is low in the sky during the first half of the night, most Lyrids will be seen after midnight. The moon will not hinder observers, being a thin waning crescent that will rise near the beginning of astronomical twilight, when Lyra is almost overhead.

The Lyrid meteors are debris from the Comet 1861 I (Thatcher). They have been characterized as brilliant and moderately swift. Although ordinarily the Lyrid shower is not particularly spectacular, a brief flourish of 96 members per hour was recorded in 1922.

Quasars' distance measured.

Pasadena Calif. A young astronomer at the California Institute of Technology has discovered long sought evidence that mysterious quasars - intensely bright, star like objects - really are as distance as they seem.

The discovery by Dr. James E. Gunn, 32 besides answering the distance question, that has plagued astronomers since quasars were discovered in 1964, provides new evidence supporting the "big bang" theory that the universe originated in an ancient explosion.

Gunn's work also reaffirms some cosmologists' belief that the physics of matter, known to be constant on earth and in the solar system, apply to the very edge of the universe.

A quasar, or quasi-stellar radio source is 100 times brighter than an entire galaxy and emits strong radio waves. Neither stars nor galaxies, quasars have baffled scientists.

Using the 200 inch Hale telescope at the Palomar Observatory in Southern California, Gunn located and photographed a quasar in the midst of an unnamed cluster of galaxies a known distance away and compared the light spectra they gave off. It was the first time this had been done.

His study confirms that quasars vary in distance from one billion light years from earth to almost 10 billion light years. A light year is the distance light travels in a year, about 6.9 trillion miles.

Gunn's work was reported in Astrophysical Journal. Gunn found that the spectra of the quasar and galaxy cluster were similar. Light from both had been shifted the same amount to redder, or longer wavelengths.

This red shift has been interpreted by astronomers to mean the object emitting the light is distant; and receding from earth at a great speed. Since most distant bodies in the universe exhibit the red shift, cosmologists have theorized that the universe was created billions of years ago when some gigantic explosion sent matter hurtling into empty space in an outward movement that is continuing.

Others have challenged this idea, with the "steady state" theory, which says the universe now is not much different from the past and that matter is continuously being created and destroyed.

When quasars were discovered and their large red shifts noted, astronomers were puzzled at how such apparently distant objects could be so bright. Steady state proponents suggested that quasars appeared so bright because they weren't far away after all and that the red shift is not a correct tool for measuring cosmological distances, although the red shift can be used to measure distances comparatively.

Since the distances of galaxies are accurately known by their brightness among other methods, what was needed was a comparison of red shifts between a galaxy and a nearby quasar. This is what Gunn did.

But Gunn said his work is just another piece in a vast jigsaw puzzle. Remaining unanswered are questions about what causes quasars and what accounts for their enormous energy.

Eclipse, July 10, 1972.

1. Do you plan to observe the eclipse from Nova Scotia or Prince Edward Island.

(Please state where) _____

2. Do you own suitable property in either Province which other observers could use?

(Please state where) _____

3. Would you be interested in viewing the eclipse from a pasture on a farm, about 10 miles from Charlottetown and the centre of totality.

4. What equipment do you plan to use:

5. Do you fly, or know someone who would be willing to fly some observers above obscuring clouds?

(Fold, staple and stamp).

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