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NOVA

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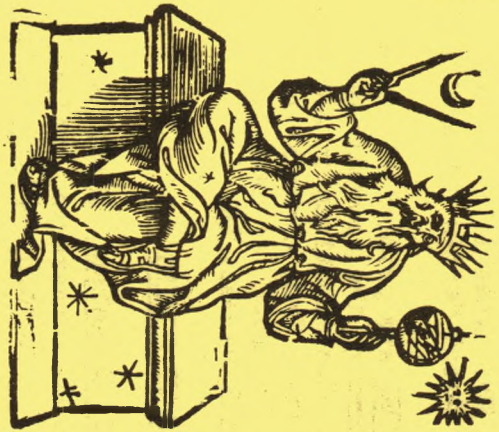


Officers of the Halifax Centre, 1975

Honourary President; Dr. Michael W. Burke-Gaffney S.J.

Pres.; Dr. Roy Bishop, Dept. of Physics,
Acadia University, Wolfville, N.S.

V-Pres.;Mr. Peter Edwards, 8 Sullivan's Hill
Bedford, N.S.

Sec'y; Dr. Peter Reynolds, Dept. of Physics,
Dalhousie University, Halifax

Treas.; Mr. Bill Sheppard, 1122 Tower Rd.,
Halifax, N.S.

Editor; Mr. Randall Brooks, Dept. of Astronomy,
Saint Mary's University, Halifax

NOVA NOTES are printed six times a year (Jan. March etc.) through the courtesy of the Nova Scotia Museum. Contributions on any aspect of astronomy are welcomed from members and non-members of the Halifax Centre. The dead line for the Jan/Feb issue will be Dec. 19.

MEETINGS UP COMING

Friday 21 November. (8:00 pm, N.S. Museum)
Dr. B. Loncarevic, Bedford Institute of Oceanography--Plate Tectonic Revolution

Friday 19 December. (8:00 pm, N.S. Museum)
Dr. L. Bogan, Acadia University--A Cylindrical Astrolabe. A home made paper and plastic analog computer for calculating rising-setting times, meridian crossings and horizon co-ordinates.

CONTRIBUTORS:

MINUTES OF THE SEPTEMBER MEETING

The September meeting of the Centre was held on Friday Sept. 19, 1975 at 8:00 P.M. in the N.S. Museum. The President, Dr. Bishop, opened the meeting by reminding the assembly that the Treasurer was now actively seeking next year's membership dues. He also announced that orders would be taken after the meeting for official RASC crests and pins. Since this was our first meeting following the summer recess, Dr. Bishop gave the final wrap-up to the General Assembly '75, certainly our major effort last year. The membership was reminded that nominations for next year's executive are now being received in preparation for our annual elections in November. Finally, Dr. Bishop announced that there would be an observing session at his home on either October 3 or October 4.

The main speaker for the evening was Dr. David L. DuPuy of the Department of Astronomy, Saint Mary's University. Dr. DuPuy gave a concise and very interesting summary of current research being undertaken in astronomy and astrophysics at st. Mary's. Most of the names were familiar to us from past talks here at the Museum: Dr. Gary Welch who is interested in the ultraviolet energy emitted by certain galaxies and by globular clusters; Dr. George Mitchell (presently on sabbatical leave) who is now active in the interstellar molecule field; and of course Dr. DuPuy himself who is concerned with the pre-main sequence evolutionary models and the observations of young star clusters; finally, Dr. Ted Bednarek, a recent arrival from the Univ. of Toronto, has been working on models of pulsating stars (e.g. Population II Cepheids).

Following a brief question period and a vote of thanks to Dr. DuPuy, Dr. Bishop adjourned the meeting and refreshments were served.

P.H. Reynolds,
Secretary

MINUTES OF THE OCTOBER MEETING

The October meeting of the Centre was held on Friday, October 17, 1975 at 8:00 p.m. in Room 135 of the Sir James Dunn Science Building, Dalhousie University. The President, Dr. Bishop, opened the meeting and called for final nominations for next year's executive. The following were received:

for president, Roy Bishop (nominated by P. Reynolds)
for Vice-president, R. Williamson (R. Brooks)
for Sectretary, David DuPuy (W. Sheppard)
for Treasurer, W. Sheppard (P. Reynolds)

and for Editor of Nova Notes, R. Brooks (C. Purcell)
The following had previously been nominated:

for Sectretary, P. Reynolds
for Vice-President, P. Edwards
for Vice-President, Debby Burleson

Dr. Bishop reported that the observing session at his home on the evening of October 3 was highly sucessful despite the fact that the turnout was relatively low. Miss D. Burleson of the N.S. Museum brought two matters to the attention of the membership. The first of these concerned the Department of Lands and Forests and their interest in obtaining a brochure entitled The Summer Sky for use in provincial parks next summer. The secretary agreed to contact the Department with an aim to obtain the contract for the Centre or for a member of the Centre. The second item concerned the N.S. Museum itself. Miss Burleson pointed out that a relatively large display area could be available to us. It was clear that members present felt we should take full advantage of this opportunity.

At this point the meeting was turned over to members of the Dalhousie Physics Department who proceeded to tell us about the newest observatory in Nova Scotia, the one atop the Dunn Science Building. P. Reynolds began by pointing out that this structure, designed by Dalhousie staff and students, was for the benifit of undergraduate classes in astronomy, in experimental physics and in the history of science. Forest Fyfe continued the presentation by illustrating the various design features by means of diagrams, slides and a scale model. Last but not least, Dr. B. Paton showed a film. Inspired by the film presented by the Ottawa Centre at this year's

General Assembly (concerning the restoration of a tired old telescope), Dr. Paton, ably abetted by students (and the departmental chairman!), painted a not-too-reverent picture of the Dunn (locally known as the Bruce) Observatory. Following the film, the audience now suitably intrigued and amused, retired to the roof for some actual observing with the department's Questar. In addition to the visual observing, Chris Purcell instructed and entertained with some photometric measurements. Meanwhile, coffee was served in the Lounge and the meeting gradually adjourned.

P.H. Reynolds
Sectretary

THE OCTOBER OBSERVING SESSION

--Mike Edwards

Maktomkus Observatory, at the home of Halifax Centre President, Dr. Roy Bishop in Avonport, was the setting for a highly successful observing session on October3-4 1975. Those present agreed that it was the best observing session they had ever attended. The sky was very clear with only two short duration cloudy periods.

The observed objects included Messier objects, NGC items which carry no Messier number, double and multiple stars, Jupiter and the presence of auroua of arc and curtain form was observed. As you may realize, the location of Maktomkus Observatory is almost ideal due to the noticably black skies. There were so many stars (compared to the skies of the Halifax area) that it was almost difficult to pick out the three stars of the "Y" configuration around M57. A sampling of the items observed is found below.

Planetary nebulae and nova remments; Helix, portions of the Veil, Omega (Horseshoe), Dumbell

Globular clusters; M13 (Hercules), M22 (Sgr), M 15 (Peg) M 2 (Aqr)

Open clusters; double cluster in Perseus (h & χ), M11 (Sct)

Galaxies; M31, M32 and NGC205 in And, M33 (Tri), M51, M101, M82 and M81 in UMa, NGC891 with the central lane easily visible.

M8, Polaris, Gamma Andromada, the'Mexico' region of the North America Neblua and Jupiter filled out the night.

NEW OBSERVING AID

I have a beautifully clear Friday night; the new moon has just set; my 6" mirror has just been realuminized and re-installed, and I finally got the variable drive and slow motions working! But I've looked at M31 and M13 until I'm tired of them. Sky & Telescope's Ramblings are just too rambling and Walter Scott Houston is just too faint for me. What shall I look at next?

Does the above sound familiar? The best solution to this problem that I've seen is a product called Astrc Cards, by George R. Kepple* The subtitle is "Deep-Sky Objects -- Set 1, The Messier Objects." On 3 x 5 inch index cards, Kepple has assembled all the data you need in order to observe all 109 Messier objects. The cards are arranged in order of Messier number, and you simply pull out the objects on your list for that evening.

The layout on the cards is convenient. A complete title on each card gives the messier number, name, position, size, magnitude, month for 9:00 transit, and constellation. Two finder charts are shown on the front of each card: on the left is a wide-field finder chart showing constellation outlines and bright stars, along with the Messier object. On the right half of the card is shown a detailed finder chart with fainter stars; ie what you can expect to see through a wide field telescope. Unfortunately, the scale of the finder charts is not given, and Kepple states that it would have been impracticle to make all of the finder charts to the same scale (I agree). Nonetheless, the diagrams are clear and easy to read and very convenient to use at the telescope.

In addition to the set of 109 cards, one card gives a handy chart which lists for each month the Messier objects which transit around 9 pm, and around midnight. There is also an explanation of how to use the cards, and hints for observing (which RASCers certainly won't need). An illustration of the cards for M11 and M80 can be seen in back pages of recent Sky & Tel (e.g. pg. 240, Oct 1975). All in all, the Astro Cards are useful if you enjoy observing.

David L. DuPuy

*available from George R. Kepple, 156 Beale Road, Sarver, Pa. 16055. $5.95 + $1 outside U.S.A.

PRESIDENT'S REPORT

In January 1955 the four year old Nova Scotia Astronomical Society became a Center of the R.A.S.C. Hence 1975 was the 21st year for the Halifax Center and it came of age in a very significant way by hosting the annual General Assembly of the national organization.

Approximately 140 persons (91 registrants) from St. John's to Victoria converged on our little 45 member center from June 27 to June 30. We have received several favourable comments on the success of the Assembly. Credit for this success is due primarily to the Chairman of the Assembly Committee, Dr.Peter Reynolds, and to the members of that committee. Seldom have I worked with such a pleasant and hard-working group. For posterity I should mention some of the highlights of that weekend such as the wine and cheese party, the members' slide show, the papers sessions, the banquet, the tour to Peggy's Cove, the Bluenose cruise, and Dr. Mac Rae's concluding talk on the CFH telescope.

The banquet given by the Provincial Government at the Chateau Halifax was enjoyed by all and I wish to record here our thanks to Premier Regan and his representative, the Honourable Glen Bagnell, for honouring both the Halifax Center and the Province with this well organized event. Even the weather cooperated during that memorable last weekend of June!

Our total revenue for 1975 was approximately an order of magnitude greater than in 1974. (Approximately $4400. as compared to $460.) (Astronomers should be very satisfied with two significant figures). The reason for this, of course, was the Assembly. Your Assembly Committee,

having proceeded with the caution and care characteristic of true scientists, was able to keep the books in the black to the tune of more than $500. Several unforeseen factors combined to produce this happy result; however, it represents a modest 12% of the Assembly budget. It would have been far more embarrasing had this sum been negative rather than positive!

Another significant event of the past year was the addition of another member to the executive of the Center. Father Burke-Gaffney accepted the position of Honourary President of the Halifax Center. A formal announcement of the appointment of the kindly and legendary gentleman was made at the Assembly banquet on June 28.

The National Council decided in June that centers can set their own fees provided that the National Office continues to receive 60% ($7.50) of the national fee schedule per member. The executive of the Halifax Center decided at its September meeting that any full time student could pay the student rate of $7.50.(The national regulation is that to qualify as a student a member must be under 18 years of age.)

Below is a list of the regular meetings held during the year:

January: M. Zatzman - Space Craft
February: Dr. R. Roeder (U. of T.) - Black Holes, White Holes, and Worm Holes
March: Members night - Slides & Movies
April: Reid Dexter - Why the Weather
May: R. Bishop & P. Edwards - Mirror Optics & Grinding
June: 1975 General Assembly
Sept: Dr. D. DuPuy - Astronomy at St. Mary's
Oct: Tour of the new Dalhousie Observatory

Nov: Dr. B. Loncarevic (B.I.O.) -
Plate Tectonic Revolution
Dec: Dr. L. Bogan (Acadia U.) -
(Topic to be announced)

Although the president of an organization is usually the most noticeable person to other members and to the public at large, most of the work associated with the smooth running of any organization is the responsibility of the other members of the executive. In full awareness of this, I wish to express my sincere thanks to Randall Brooks (Editor of Nova Notes), Peter Edwards (Vice President), Peter Reynolds (Secretary), and Bill Sheppard (Treasurer).

Roy L. Bishop
President
Halifax Center
October 20, 1975

NOTICE

In the March/April edition of Nova Notes (6,2,pages 24 & 25) I lavished praise on a particular eyepiece. However, the company whose address appeared in that article has apparently gone out of business. I have since discovered that the same eyepiece is sold by:

Telescopics
6565 Romaine Street
Los Angeles, CA 90038

Order:Galoc ocular
16.3mm, $1\frac{1}{4}$" O.D. (Erfle type)
$31. (US) plus duty

It is more expensive now (Only calculators drop in price!), but is well worth the money.

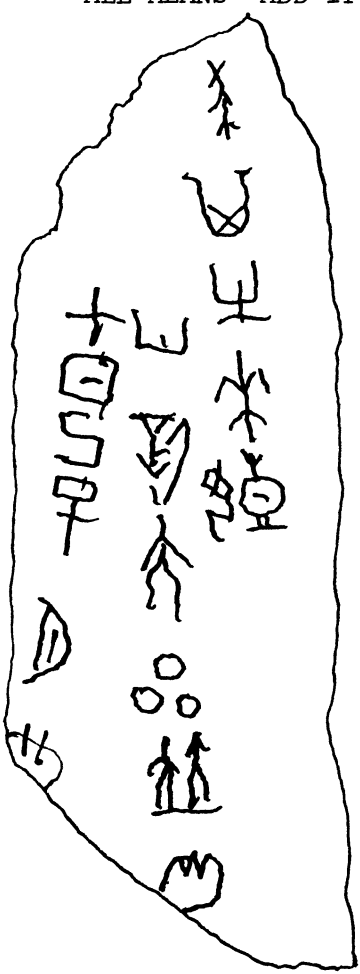
Roy L. Bishop

INDEX FOR VOLUME 6, 1975

HAVE YOU READ:

NATURE, August 21, 1975. DID YOU KNOW THAT IN ANCIENT TIMES THE CHINESE HAD A CONCEPT OF THE VASTNESS OF EMPTY SPACE AND EVEN ESTIMATED THE CREATION AT 97 MILLION YEARS AGO APPROXIMATELY. THEY ALSO CONCEIVED OF SPACE-TIME. THEY CALCULATED THE ORBIT OF HALLEY'S COMET AND NOVA'S WERE DESCRIBED AND ONE IS WELL WRITTEN ABOUT IN 1300 B.C.

SCIENTIFIC AMERICAN, September 1975. THIS ISSUE IS A MUST FOR ANYONE INTERESTED IN OUR SOLAR SYSTEM. THE COMPLETE ISSUE IS ON THE SOLAR SYSTEM WITH ALL THE LATEST DATA FROM SPACE PROBES, ETC. THE PICTURES ARE GORGEOUS AND IF YOU CAN GET HOLD OF A COPY BY ALL MEANS ADD IT TO YOUR LIBRARY.



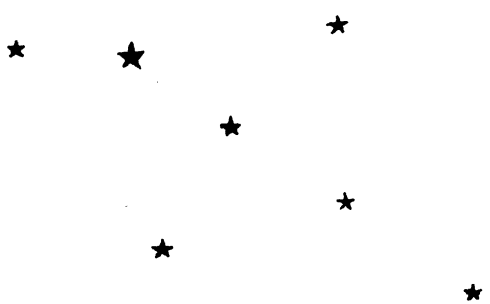
Oracle Bone of ~1300 BC
Telling of a Nova

Murray Cunningham

TELESCOPE RAMBLINGS

Saturday August 30 was cloudy and wet, and as I listened to the rain drops patter on the roof of my cottage I cheered myself up by browsing through the September issue of Sky and Telescope. A news note on p.156 is entitled "Our Next Supernova", and quotes our friend Dr. Sidney van den Bergh of Toronto as saying: "Modern estimates of the supernova frequencies in galaxies show that there is a better than even chance that the next galactic (Milky Way) supernova outburst will take place within the lifetimes of the present generation of astronomers."

The next evening, Sunday August 31, fell dark and clear over the forests of central Nova Scotia. Comet Kobayashi-Berger-Milon(1975h) was low in the north-west with its thin tail caught under the feet of the Great Bear, and the Milky Way sparkled overhead. However, among those thousands of stars something was wrong . . . . the familiar pattern of Cygnus had an extra star!



A short look in binoculars confirmed that this 2nd magnitude object was fixed amongst the stars, i.e. it was not a satellite. Was this the next supernova ???

Star charts which I consulted a long 24 hours later confirmed that, yes, I really did know what Cygnus looked like and that, yes, there simply should not be a star in that position; however, by that next evening (September 1) Cygnus was nearly back to normal since the interloper had faded approximately a whole magnitude to about 3.5 . This suggested that the star was a nova, not a supernova. I was somewhat amused to realize that, here, with the first nova I had personally discovered and the brightest nova in 20 years of observing, I felt rather disappointed.

The star has continued to fade. By September 10 it was down to about 6.5 . If it is not too much dimmer by the time you read this, you will find it at about α = 21h 10m, δ = +47° 52'. In Norton's (16th edition) it is almost exactly at the 90° position on the galactic equator and has a distinctly reddish colour. When August departed this star was as bright as γ Cygni and made a dark starry night very memorable.

Roy L. Bishop

HP - 45 OWNERS TAKE NOTE

-BK

Thanks to David DuPuy us Hewlett-Packard HP - 45 owners do not have to take a back seat to 55 owners. He found in a "ham" radio magazine that if you follow the following instructions you have a timer a la 55 mode. Try this: hit RCL, hit 7,8 and CHS at the SAME time,(timer is ready) hit CHS again and watch the timer zip off 100ths of seconds. To stop timer hit CHS again. If you don't want the tenths or hundredths push EEX,to get them back hit EEX. To clear timer mode hit ENTER. to reset timer hit CLX. And for you occultation observers you can split the time and have it stored for later recall simply by hitting 1,2,...9, to recall hit RCL plus the appropriate storage register. I should have mentioned above that after you hit 7,8,CHS $^{8}_{\wedge}$ "0's" appear.

NOTES FROM THE MUSEUM

The Museum Education Section is taking a few small steps to encourage naked-eye astronomy in the schools and among the public:

— We have an 8 page information pamphlet called "Beginning Stargazing", available free, intended to help teachers or youth leaders conduct a ½ hour observing session. 300 have been distributed this summer, and a revised version (thanks to comments from Roy Bishop and David DuPuy) is now available.

— This past summer I attempted three public naked-eye sessions (termed "Naked Stargazing" by CBC Radio). I now claim the new Nova Scotia record for Frustrated Observer - all three nights had thunderstormes. But the interest is certainly there - all three saeeions were booked to twice their capacity.

— I did give several instructional sessions this year: 2 for Girl Guide Leaders, one to elememtary school teachers at Wentworth, and most recently (Oct 21) with an enthusiastic group from Canadian Youth Hostels Association. I would like to find out if anyone is doing similiar sessions, or if anyone wants to help me.

— I bought 50 of Edmund (Pop! Bang!) Scientific's star-finders which I loan to school or youth groups. Following the observing session in October, CYHA asked to buy several of these for their members; a small number are now loaned to members through the Trail Shop; CYHA is also distributing the Stargazing Pamphlet.

Christmas is coming, and parents will be combing the catalogues choosing a Super-Delux $13.95 telescope for a starry-eyed child. We could save a lot of people a lot of disappointment by writing a simple page of guidelines in selecting children's telescope. A word about tripods binoculars, all those things we have learned about through experience, is all I have in mind. Specific suggestions for good devices are also needed - for example, Roy Bishop favours a Unitron 2,4" refractor at abought $260. If you have a comment, contact me at the next meeting or at the museum, 429-4610.

Each year the Museum offers the Societies that use its facilities space to show their wares, in the Societies Show during March and April. Bird, Stamp, Coin, Railroad,

Photographers show every year, but never us. (Ed. note- sorry Deb, but to my knowledge we have never received such a request, at least in written form, in recent years) Surely RASC isn't that dull. Could we produce a display of telescopes (especially home builts), photos, books charts. Display cases are usually available when needed. During the show, Sundays are demonstration days, when society members stay with their exhibits. We could steal the show with somebody grinding a mirror around a barrel. We could give out a one page hand out on "How to get started in telescope building." Give this some thought, please, and we'll talk at a future meeting. What could you contribute?

Debby Burleson

Debby was also wondering what other Center Newsletters we receive and where to find them. If your wondering as well, I repeat this once more--you'll find the newsletters, star charts, a few books, old Sky & Tels etc. in the Center's locker in the Societies Room of the Museum. This is just to the left of the entrence off the parking lots and you'll find them all neatly arranged according to Center. Ottawa, Montreal, Edmonton and Hamilton always send us copies and other groups send them occasionally. Back copies of Nova Notes are also to be found. Just be sure to bring them back-some day.

SATELLITES OF JUPITER

The moons of Jupiter have now all been named — except for the suspected fourteenth moon discovered by C. Kowal of the Hale Observatories on the night of 30 Sept. You will remember him from the discovery of the 13 th moon a year ago. The new moon was reobserved on Oct 1 and 2. The object was discovered on photographs with the 48" Schmidt telescope and was at magnitude 21.

The names of the satellites are: V - Amalthea, VI - Himalia, VII - Elara, VIII - Pasiphae, IX - Sinope, X - Lysithea, XI - Carme, XII - Ananke, XIII - Leda. Those ending in 'a' have direct or prograde orbits and those ending in 'e' have orbits that take them in retrograde directions. The final acceptance will be made at the 1976 International Astronomical Union meeting.

ICARUS 1965:

W.K. Hartmann of the Lunar and Planetary Labatory, Tuscon has calculated the rate of infall of large meteoric material on the Canadian Shield. The shield can be divided into 3 sections where mountain building stopped 1.0, 1.7 and 2.5 x 10^9 years ago. The extensive photographic survey of the region has allowed him to determine the number of craters 10 km or larger in each area, this size crater being large enough to survive erosion for the required period. Within a factor of 3, the rate of flux he calculates is $12/10^4$km/10^9yrs. This he says is about twice the lunar rate. This work is then used as the basis for a study of the age of the lunar maria. Using ground based and Ranger 7 photos of the lunar surface Hartmann has determined crater counts in the maria. The work assumes that most of the lunar craters are not volcanic in origin. Since the crater density of lunar maria is nearly uniform from one to the next, he also assumes the maria are about the same age. The crater counts and flux rate calculated in his first paper indicate to him that the maria are about 3.5 x 10^9 yrs. old. Counts of the highlands areas would indicate that the first half of the moon's history saw the formation of 90% of all crater features. Implications to be drawn may be the following: high pre-mare meteor flux may represent 1) the final stages of accretion and dissipation of early solar system material 2) higher rate of ejection of asteroidal material in past times 3) sweeping up of depris in the Earth-Moon neighborhood as tidal friction moved the Moon outward from the Earth. He suggests that crater counts on other planets or the back of the moon will provide the answer.

SKY AND TELESCOPE, 1955

Ian McLennan and Franklin Loehde report the sighting of a very bright fireball by residents of Alberta, Montana and Saskatchewan. On Dec. 19, 1954 this meteor appeared brighter than the full moon and prompted many calls to local radio stations. Their analysis indicats the object was seen for 140 miles of its path starting 300 mi. to the north-northeast of Edmonton. The path points to an impact area near the Drumheller badlands. No recovery has been made, but .....

FROM THE CENTRES—OTTAWA

GIANT PERSEID RECOVERED

While other meteor observing groups opened up their gates for the numbers game, the Ottawa group startled all with the first recorded capture of a live giant Perseid. The big surprise was that this bright fellow came quite late in the season, on the morning of August 21. With a full moon still up and the sun just rising, the magnitude of the meteor was estimated to be -18.3. The train, which lasted well over 6 hours, was also recorded on film. Automatic choppers at both Quiet Site and North Mountain broke up the trail so that triangulation could be carried out. With the help of the famous Rip Dock developing system, the films were ready for anayysis the same day. A modern Rapidman 500 enabled us to quickly calculate the exact position of where the meteorite should have landed.

The search area was confined to an area about 76 meters a side, on a fram located just north of South Gower. A group of sleepless enthusiasts raced out to that point to conduct a search. Near the periphery of the area, a shallow depression was found containing a small quantity of liquid. Much to our amazement, a chunk of ice of about 10 kg in weight was still floating about in the fluid! Evidently the early cool weather was responsible for preventing our entire meteorite from melting away.

Samples were quickly taken, and the chunk of ice wrapped in a Glad garbage bag. This and other data were taken from this site are now being analyzed in the Buchanan part-time public labatory.

Local farmers told us they, too, had often been visited by UFO's.

The meteorite will be officially known as the "Esnesnon Meteorite", after the area of its discovery. It is hoped that it will confirm the theory that most shower meteors result from icy cometary depris rather than stoned material, and hence are 'all wet'. A complete summary of this interesting discovery will be presented as part of a display at the Calgary General Assembly next year.

Rolf Meier

OBSERVING REMINDERS

Tues 18 Nov -Full moon and total eclipse of the moon
Moon enters umbra about 4:39 AST with totality begining at 6:03AST. Totality lasts some 41 minutes. The above times are in the afternoon and with sunset being roughly 4:45 you won't miss too much to the daylight hours.

Sun 30 Nov --Uranus will be found just 2° N of moon in the early morning sky.

Mon 1 Dec --Minor planet Ceres at opposition. Through Nov this asteroid will be moving towards the Hyades open cluster. Proximity to the Hyades will make it simple to locate after 9:30 PM. Its magnitude is close to 6th. See pg. 71 of the Handbook for chart of path.

Thur 11 Dec--Venus 2° N of Uranus shortly after midnight.

Sat 14 Dec --Geminid meteor shower. Shower lasts a day or so either side of this date. Moon is at first quarter so you may be able to count close to the hourly rate of 50. Velocity of these beasts is a slow 35 km/sec which will give you time to adjust your bi-focals.

Mon 15 Dec --Mars at opposition. Mag -1.5, distance 52,575,551 mi.

Mon 22 Dec --Winter begins--at least the solstice indicates this is the first day of winter. My rheumatiz told me it started around Halloween! 7:46 AM is the awful hour.

Tues 23 Dec--Ursid meteors. This one's under a last quarter moon and I bet it will be a cold wait for those 15 meteors/hr. Their speed won't burn up the sky either--34 km/sec.

Tues 30 Dec--Neptune 0.4° S of moon

Fri. 3 Jan --Quadrantids. Moon is near new phase and you probably won't get bored waiting for 40 meteors/hr. Max is just at sunset.

FROM:
RASC
1747 SUMMER ST
HALIFAX NS

BAR HARBOUR
N.S.

TO:

ROYAL ASTRONOMICAL SOC OF CAN,
252 COLLEGE ST,
TORONTO,
ONT M5T 1R7

June 75
Dec