

BI-MONTHLY JOURNAL OF THE HALIFAX CENTRE

# NOVA

# SCIENCE



THE ROYAL ASTRONOMICAL SOCIETY OF CANADA  
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Officers of the Halifax Centre, 1975

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NOVA NOTES are printed six times a year (Jan., March,  
through the courtesy of the Nova Scotia  
Museum. Contributions on any aspect of astronomy are  
welcomed (pleaded for even?) and should reach the  
editor by Mon. 27 Oct in order to make the printing  
dead line.

CONTRIBUTORS:

UP COMING MEETINGS

Friday 19 Sept. We have invited Dr. David DuPuy,  
Director of the Burke-Gaffney Observatory, to give  
us a description of the research being carried out  
in the astronomy department, new equipment aquired  
for research and teaching and the new programs and  
courses being offered. And perhaps he'll give us  
an idea where Saint Mary's hopes to go in the future  
in the field of astronomy.

Refreshments will be served following.

Friday 17 Oct. Annual General Meeting and Centre  
elections.

PS Bring your Kobayashi-Berger-Milon photos to  
either meeting!

Summer Update

WITH fall upon us it is time to back into the swing of things and this includes supporting your friendly neighbourhood chapter of the RASC. As always meetings will generally be the third Friday each month for the older folks and the Junior Astronomy Club will be meeting the first Friday each month both at the Museum. It is also time to pay membership fees--for those tardy people who payed last years in June this may seem to be a bit soon but remember our year runs from 1 Oct to 30 Sept. We would appreciate it if you would send in as soon as possible to the treasurer, Bill Sheppard, Apt 209, 1122 Tower Rd., Halifax. And PLEASE include your postal code whether you like them or not! Early remittance will simplify the treasurer's work considerably and will ensure that you receive all the publications on time.

Other Centre business includes coming up with a list of candidates for the prestigious and lucrative executive jobs of our learned society for the new year. Elections will be held at the annual general meeting in Oct.; remember to keep 17 Oct. free so you can attend. If you think you would like to run, drop a hint in the ear of one of the out going exec or have a friend nominate you at the General meeting. Get your name in early--we will cut off nominations at five for each post--the competition for these jobs is cutthroat!

Activity in the Astronomy Department at SMU continues through the summer and this year Dr. Welsh started the activity with a 3 week observing run at the U of Toronto's Las Campanas site in Chile, while Dr. DuPuy had a run at Kitt Peak, Arizona in August. Both resulted in the acquisition of photometric data for the young open cluster studies being carried out as one of the prime observing projects. Also three graduate students arrived and are presently undertaking research under direction of the faculty. They are Colin Calnen, Doug Forbes and Curt Nason. A total of 7 graduate students are expected for the coming year. Dr. Mitchell has left for a years sabbatical at the Hahn-Meitner Institut in Berlin where he will continue work on the interstellar molecules program. He will be replaced by Dr. Ted Bednarek who has recently completed his PhD at Toronto.

SUMMER UPDATE

By now you are probably aware of Comet Kobayashi-Berger-Milon and may have seen it near perihelion which occurred Sept. 5th. The earliest observations were made about 2 July and since that time the brightness has risen from estimates of  $9.5^m$  to a high of  $4^m$  according to Tamita on the 18 and 24 July. At present (21 Aug) it seems to have steadied out at magnitude 5 with small variations from day to day. On 24/25 July however, Tamita observed a drop of  $4^m$  in 24 hours! By the 26th it had risen again by  $3^m$ . Reports in up to 6 Aug. have stated observation of a tail up to  $11^\circ$  in length measured from long exposure photographs; however my observations with bins and a 3" refractor have thus far failed to detect a tail with certainty. The orbital elements are:

T	Sept. 5.3367 ET	$\omega$	$116^\circ.9808$
q	0.425533 AU	$\Omega$	$295.6519$
		i	$80^\circ.7741$

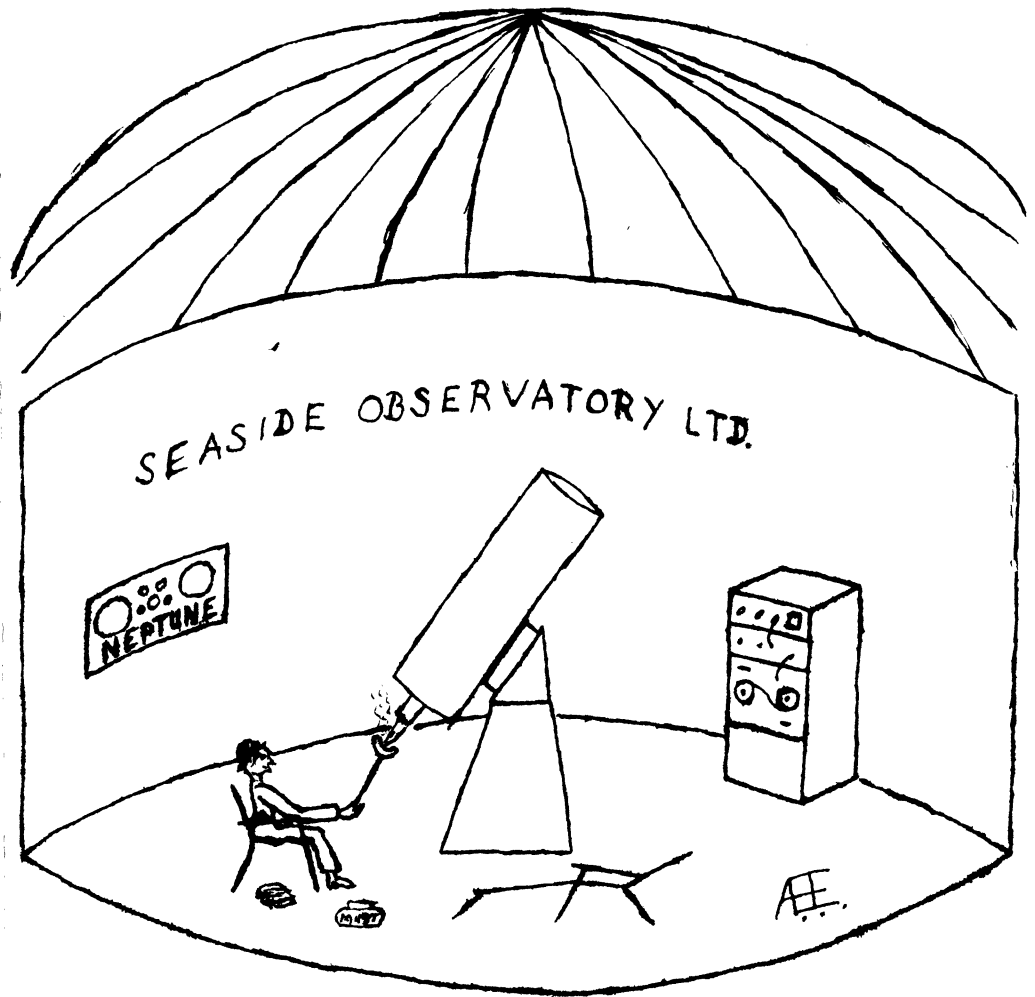
The comet will be observable for several weeks following perihelion passage and here are the predicted positions.

					Mag.(predicted)
Sept.	10-10 <sup>h</sup>	38 <sup>m</sup>	+22°	40'	
	15-10	32	+16	45	5.0
	20-10	29	+10	50	
	25-10	28	+ 5	06	6.4
	30-10	28	- 0	25	
Oct.	5-10	28	- 5	41	7.6
	10-10	30	-10	45	
	15-10	32	-15	37	8.5
	20-10	33	-20	18	
	25-10	35	-24	50	9.3

Another new object appeared on the scene about 15th of June, Nova Sct 1975. Its position is  $18^h 52^m 44s$  -  $7^\circ 47.0$ . Prediscovery plates show the nova as early as May 10 when its magnitude was about 6.1 but at discovery it had faded to 8.3-8.4. And on 13 July a nova was discovered in Sag when at mag 8.4.

-84

# FROM THE LITTLE OBSERVATORY IN THE SUN



I HAVE THE HOT DOGS AND  
MUSTARD, HIGGINS. YOU BRING IN THE  
ROLLS. GLAD IT'S SUNNY TODAY!

STEADY STATE ASTRONOMY

Back to our usual format this issue, with a 1954 test of general relativity and some 1965 problems with steady state postulate of continual creation--ten years later this still isn't solved satisfactorily.

August 1954, Sky and Telescope

Einstein's general theory of relativity predicts that one of the effects of GR is that certain processes will appear to proceed slower in the presence of a very massive body. Dr. Daniel M. Popper of the Mount Wilson Observatory has succeeded in verifying this incompletely checked test of relativity. In such bodies as white dwarfs where surface gravity is high, spectral lines will be observed shifted to the red, however the problem is to separate the gravitational effects from motions of the star. First attempts to observe the effects in the famous binary Sirius has not proven successful because of the disparity in luminosity of Sirius and its companion, Sirius B, which is a white dwarf. Dr. Popper has attempted the same study on 40 Eridani B which is a 9 magnitude star only about 15 light years from the sun. The companion has a period of 250 yrs. and thus they are well separated and the light from the main component is only slightly brighter than the white dwarf and interferes little with the measurement. After measuring 37 spectroscopic plates, he has found the red shift component of the velocity shift to be  $21 \pm 2 \text{ km s}^{-1}$ . Theory predicts a  $17 \pm 3 \text{ km s}^{-1}$  so agreement is satisfactory but Dr. Popper points out the errors are internal and realistic estimates would make the uncertainties considerably larger.

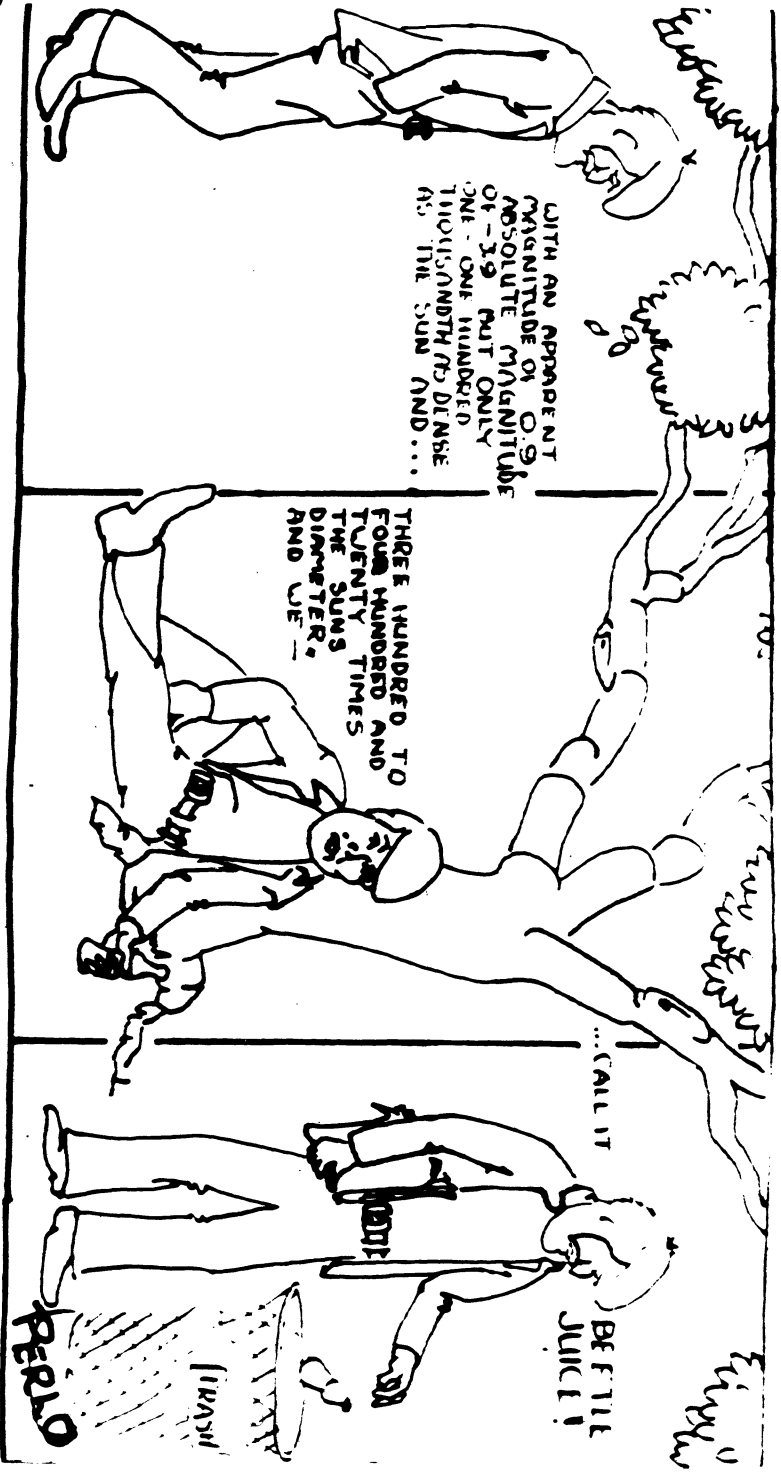
January 1965, Monthly Notices of the RAS

In the steady state cosmology of Bondi and Hoyle the large scale properties of the universe are considered to be unchanging in time and space. For instance the density is constant averaged in large volumes anywhere in the universe but you will remember that one postulate also states that the universe is expanding which would mean that the density is slowly dropping. But this obviously violates the first statement.

To reconcile this problem the present version of the SS theory is that matter is being continually created in space at a rate just sufficient to account for the observed expansion. A difficulty has been pointed out by W.H. McCrae of the University of London. To account for the formation of the galaxies about 100 times the mass of the galaxies must be found in the form of extragalactic gas. Observationally there is no positive evidence for the widespread occurrence of such intergalactic matter. McCrae suggests the contradiction could be removed if one assumes that the matter is not everywhere uniform in its production. If the new matter were to be produced in galaxies themselves then they would simply grow to a limiting size with occasional fragments breaking off (take M51 for example-ED). The new theory does not require the existence of any significant amount of intergalactic material, nor does it require its absence. One of the problems encountered in earlier steady state theories was how to create condensations in uniformly distributed intergalactic matter to start galaxy formation. McCrae's proposal avoids this problem and requires less departure from conventional thinking.

Watch out SKY & TEL--your days are numbered

By now you have found a copy of SMOG and TELESCOPE in your Nova Notes and this comes from the Montreal Centre. They sent me a copy sometime ago and after reading it myself and listening to Walter laughing hilariously as he thumbed through it, I decided that I should attempt to get some for our Centre. I hope you enjoy this spoof of its less illustrious counterpart. Send favorable comments to David Levy in Montreal--he'll be glad to hear from you. His address is in S & T somewhere. Please note that the 60MM Fiasco refractor has been purchased and is no longer available through the STAR-GAZERS EXCHANGE--however I may be able to engineer a deal you can't pass up on this finely crafted only slightly damaged (3 cracks in the lens) instrument. Would make a fine ash tray for you chain smokers!



WITH AN APPARENT  
MAGNITUDE OF 0.9  
ABSOLUTE MAGNITUDE  
OF -39 PUT ONLY  
ONE - ONE HUNDRED  
THOUSANDTH AS DENSE  
AS THE SUN AND...

THREE HUNDRED TO  
FOUR HUNDRED AND  
TWENTY TIMES  
THE SUN'S  
DIAMETER.  
AND WE --

...CALL IT

BETILE  
JUICE!

PERILO

LIVASII

BOTTLE



Rand McNally's Atlas of the Universe by Patrick Moore isn't exactly a steal at \$40. but if one is seriously committed to astronomy and feels inclined to invest in a comprehensive, entertaining "encyclopedia" of astronomy he will not be disappointed in this choice.

This volume is primarily a "picture book" for the coffee tables and young or old, experienced or amateur will derive a great deal of pleasure leafing through the more than 1300 colour and black & white photographs, diagrams maps and charts. If the cost was not so prohibitive, the Atlas of the Universe would make an ideal text book for almost any grade. It should, at any rate, belong to every school library.

Patrick Moore has assembled a staggering array of facts figures and photos with the co-operation of the U.S. Geological Survey and NASA. Indeed, the epilogue was contributed by Dr. Thomas O. Paine, Administrator of NASA. Sir Bernard Lovell has provided the forward.

The Atlas of the Universe is in fact, a collection of several atlases which focus on the Earth, Moon, solar system and stars. Opening the volume, Moore has included a history of astronomy, a synopsis of instruments and a run-down of space probes and man's lunar excursions.

The atlas of the Earth examines our planet's phases, magnetosphere, atmosphere, weather patterns, contours, interior, crust and geology. Gemini and Appollo have provided revealing vistas of land masses, oceans and even cities. In addition, there is a section on the evolution of life demonstrated by a two-page time chart. The first atlas has something to offer, not only to the astronomer, but also the geographer, geologist, meteorologist and biologist.

The atlas of the Moon provides a wide-eyed close-up look at our nearest neighbour. If the six double paged maps were fitted together, they would make a panorama approximately 40" x 40". The poles have also been

mapped and the far side has been exposed by Orbiter and Appollo shots. There are several infrequently seen photographs including microscopic views of samples from Mare Tranquillitatis but also includes such now familiar photos as the footprint in the sand.

The atlas of the solar svstem introduces the sun's family by identifying its location in the Milky Wav by showing the relative sizes of the planets to the Sun and distances from each other and by portraying the ecosphere. The Sun and each planet are featured in turn. The most advanced photographs of Mars are however those of Mariner 7; all other planetary photos are Earth-bound rendering this volumn slightly out of date on this topic. (The Atlas of the Universe was published in 1970) Data on comets, meteors and 36 asteroids complete this atlas.

The atlas of the stars, in summary, offers information on the motions and distances of stars; stellar spectra and evolution; variable, exploding, binary and multiple stars; star clusters, nebulae and interstellar matter; and radio sources and maps. Charts of the sun's position in the galaxy, the local group of galaxies, galactic clusters and the limits of the Universe are presented. Clever diagrams demonstrate the major theories of the origin of the Universe. The final atlas is concluded by maps of the celestial sphere, constellations and seasonal star maps. These become more useful when used with the material in the appendices--the Atlas of the Universe is topped off by a catalogue of stellar objects, a glossary of astronomical terms, and a beginner's guide which offers tips on how to observe the objects which have been presented before and what features to look for when purchasing a telescope.

Need I sav more?

Diane Brooks

Congratulations are due to Dal Physics Dept on the completion (nearly) of their new observatory. Design is the slide-off roof type and contains a Questar on a very sturdy pier. Watch for the offical opening in Sept. and a report in the next issue of NN's.

OBSERVING REMINDERS

- Sept - Oct - Comet Kobayashi-Berger-Milon. See page 83.
- Thur 11 Sept - An occultation of Neptune by the Moon is possible but not likely. Will pass very slightly to north of Moon.
- Sat. 13 Sept - Mercury at greatest eastern elongation which means it will appear in the evening sky  $27^\circ$  from the sun. Best opportunity for observation this year.
- Thur 18 Sept - Minor planet Vesta at opposition. See page 72 of Hdbk for details.
- Sat. 20 Sept - Pallas at opposition--see Hdbk page 72.
- Tues 24 Sept - Autumn equinox at  $00^h 55^m$  ADT
- Fri. 3 Oct. - Although Venus does not reach greatest elongation until Nov. it will be brightest on this date and will be visible in the morning sky as a crescent.
- Wed. 8 Oct. - If you missed the close approach of Neptune and the Moon, then here's a chance to see an even closer approach. Passage will be only  $0.04^\circ$  south of the Moon.

## Meteor showers---

- Mon. 22 Sept - Alpha Aurigids--RA  $4^h 56^m$  Dec  $+42^\circ$
- Thur 2 Oct. - Quadrantids--RA  $15^h 20$  Dec  $+52^\circ$
- Thur 9 Oct. - Giacobinids--RA  $17^h 28$  Dec  $+63^\circ$
- 18 - 23 Oct. - Orionids--RA  $6^h 8^m$  Dec  $+15^\circ$
- Tues 4 Nov. - Taurids--RA  $3^h 32^m$  Dec  $+13^\circ$
- 14 - 18 Nov. - Leonids--RA  $10^h 00^m$  Dec  $+22$

Question Time

How many RASC members would be interested in forming an observing group to meet on a regular or irregular basis? Format, time, location etc open to suggestions. Halifax members aren't active enough observationally as a group so if you're interested give me--the Ed.--a call or button-hole me at the next meeting.

FROM:  
RASC  
1747 SUMMER ST  
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TO:

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252 COLLEGE ST,  
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ONT

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*Handwritten signature or initials in blue ink.*