R E G U L U S
THE NEWSLETTER OF THE
ROYAL ASTRONOMICAL SOCIETY OF CANADA - KINGSTON CENTRE
January, February, 1983

An Editorial

The year, 1983, bodes well for the Kingston Centre. Besides having a new president, Terry Hicks, a man of enormous enthusiasm for astronomy, we also have a number of new members of widely varying ages and we look forward to sharing our interests with them and learning from them as well.

A number of members of our centre have been in the news lately and it is always a distinct pleasure to read their writings or to read about them in the astronomical literature. Dr. A.V. Douglas, our Hononary President, was mentioned a number of times in the latest issue of the journal, Mercury, in a major article on Sir Arthur Eddington, who was born one hundred years ago. No article on Eddington and his enormous contribution to astronomy and astrophysics could be complete without reference to Dr. Douglas and her 1956 biography, The Life of Arthur S. Eddington, a book which remains the definitive treatment of the great cosmologist. David Levy, our very active member in Tucson, is to be congratulated on having two important articles published in the most recent issue of the excellent and expanded publication, Deep Sky. Observations made at Jarnac, David's summer cottage in Quebec (and made under very unusual circumstances) have also been referred to by Walter Scott Houston in a recent article in Sky and Telescope. The latest issue of The Strolling Astronomer, the Journal of the Association of Lunar and Planetary Observers reports that another one of our Tucson members, Rik Hill, has just been named the head and recorder of the Solar Section of the A.L.P.O. The publication also mentions the fact that Rik "has been a very active observer of the sun for more than 15 years." Perhaps as the year goes by we will be reading much more about these and other members of our centre.

David Levy's book, The Joy of Gazing, which is a very fine introduction to observing the night sky, remains very popular with members of our group and is a publication which, I hope, will soon be on the bookshelf of every member of our centre. In fact, I hope it is soon owned by hundreds of other amateur astronomers.

As happened several times last year, our current newsletter has interesting letters from members in several far-flung places. There is a delightful letter from Rik and Dolores Hill in Tucson. We hear from Gus Johnson, our amazing observer in Maryland. Finally our librarian, David Stokes, began the year 1983 under the starry skies of far-off Pakistan, and the story of his adventures there is most fascinating.

It is easy to see that the account of what our members have been and are doing is a very interesting story. All this in the first month of 1983! It looks like a good year!

The Annual Report of the R.A.S.C. - Kingston Centre, 1982

At our Annual Meeting for 1982, an excellent report of the year's activities was submitted by our secretary, Gerald Schieven. This report is to be included in the Annual Report of the R.A.S.C., but to insure that it is available to our centre members as soon as possible, it is a pleasure to include it here in its entirety.

1982 has been yet another eventful year for the Kingston Centre and its members. Leo Enright became the recording Secretary of the National Council of the RASC, and was also awarded a Messier certificate. Another member, Gus Johnson, has become eligible for this award, and other members are working toward it. Leo has continued to publish a highly praised newsletter, and has gone to numerous scouts, cubs, camps, etc., to introduce them to astronomy. Several members visited a scout group and later the St. Lawrence Islands National Park for the same purpose, and were very well received. Three members visited with the Tucson branch of the Kingston Centre, Ruth and Terry Hicks in March, and in May, Gerald Schieven, who also spent time observing at the Lowell Observatory in Flagstaff, Arizona. David Levy, in Tucson, remains a major figure in amateur astronomy with his many observing projects, his far reaching teaching programmes, and several books: his recently released guide for the beginning amateur published by the Montreal Centre, a book on Variable Stars to be published soon, and the biography of his good friend, Dr. Dart Bok, the noted Milky Way astronomer, a book on which David is currently working.

Astronomy Day, May 1, did not go unnoticed. A number of members brought telescopes, pictures, displays, astro-games, etc., to Kingston's Frontenac Mall where many people had the opportunity to view them, and three new members where acquired. That evening on the waterfront by the Murney Tower, over fifty people were treated to only slightly hazy skies through lots of telescopes. Later in September, another display was made for Clubs Night at Queen's University, which was directly responsible for doubling the regular turnout at the next few meetings, and adding some new members.

To take advantage of the wealth and variety of talents of the membership it was decided late last year to have short talks by our own members at every meeting, in addition to invited speakers when they were available. This has turned out to be an enormously successful venture. The following is a synopsis of our meetings.

27 November, 1981	- elections, Gerald Schieven onP.D.Q. Messier
11 December, 1981	- Angelika Hackett on Basic Sunspot Observing
8 January, 1982	- Leo Enright, Observatory Building Project
22 January	- David Stokes,Scandinavian Eclipse of 1954
12 February	- Leo Enright, memorable aurorae
26 February	- Gerald Schieven, stellar formation
12 March	- Leo Enright, Comet Bowell
2 April	- Dr. Vibert Douglas,"Astronomy in the Bible"
16 April	- Dr. Ian Halliday, "Canadian Contributions to the Field of Meteor Research"

Annual Report, R.A.S.C., Kingston Centre, 1982, cont'd

30 April	- Terry Hicks, determing latitude
14 May	- Leo Enright, astrophotographs
28 May	- Peter Jedicke, RASC events
11 June	- Members' Night, recent scouts and campground visits
25 June	- Gerald Schieven, recent observing in Arizona
9 July	- Leo Enright and Andrew Skelly, astroslides
23 July	- David Stokes, Arabic Star Names
13 August	- Leo Enright, public group slide show
27 August	- David Levy, "Observing in the shadow of Kitt Peak"
10 September	- David Levy,"Astronomical Experiences
24 September	- Leo Enright and Jeff Fret,astroslides
15 October	- Leo Enright, "A Tour of Astrophotography"
29 October	- Leo Enright, "Useful Math Formulae for Amateur Astronomers"
12 November	- Terry Hicks, "Calculating the Position of the Sun"

In addition there were the regular observing reports by all the members. It is fitting, I believe, to close this report with probably the most memorable quotation from a speaker of ours this year, expounded by David Levy during our 27 August meeting. "The telescope is not a tool; it's a telephone link with the universe

(signed) Gerald Schieven, Secretary

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Correspondence From Members In Far-off Places

It was a pleasure to receive a beautiful Christmas card and the following letter from our friends Rik and Dolores Hill of Tucson.

4632 E. 14th St., Tucson, Az, 85711, Dec. 12, 1982

Hi!

The big news this holiday season is the new address. It is also the reason why you haven't heard from us in a long while, and why the card was so late. This move has been pretty complicated, even tho' it was only a mile. But, the house is now ours and we are in it. It's a 3 bedroom, 1 bath home of 956 square feet. There is a large shed out back where we will keep the 12" telescope after I modify the roof so that it will open. The yard in back is walled and the southeast corner of the wall is truncated such that it creates a triangular shed. This shed will be the observatory for the solar telescopes. Additionally, there is a seven foot square concrete pad on which we will build an observatory for the 6" telescope. I even have a workshop. It is only 8 feet square but it’s all mine. Dolores likes it because its detached from the house. All in all, a perfect home for us.

This year has been very good for us. Though financially we fared less well, many exciting things have been happening. Dolores has had her name in print a number of times due to her meteorite work. In fact, she is about to get a piece of a meteorite that they found in Antarctica that is believed by some to have come from the moon! Within the last month I got appointed to head the newly formed Solar section of the Assoc. of Lunar & Planetary Observers.

Our feline population has remained at the all-time high of 5 though the tonnage has increased!

We all wish you happy holidays and a good New Year!
Rik and Dolores (Hill)

I hope that some members of our centre will be able to contribute in some way to the new Solar Section of A.L.P.O. Perhaps good drawings of sunspots, or photographs, or carefully tabulated sunspot numbers would be useful kinds of data to submit to Rik. We certainly wish him the best of luck in this venture.

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This is the sixth consecutive newsletter in which I am most pleased to report having received from Mr. Gus Johnson a letter, part of which I wish to share with our readers. As can be seen from the following excerpt, Mr. Johnson maintains a close interest in the topics that concern the members of the Kingston Centre, as witnessed by the very interesting contributions he has to make to the topic of the "huge mirrors in space" - a concern raised by Warren Morrison in the letter that appeared on pages four and five of our last issue.

The copies of Mr. Johnson's file cards containing his Messier observation reports (and referred to in the first paragraph) were received with the letter and were displayed at our centre meeting of January 14th. All our members were quite amazed at the care and precision with which Mr. Johnson's observations had been recorded - literally hundreds of observations meticulously entered because many of the objects had been observed quite a number of times. This Messier Report deserves to have a very special place in our centre's library and a copy may be presented to our society's national library; certain parts of it may appear in future newsletters for it is a splendid example that we could all emulate when recording our observations.

RD 2, Box 67, Swanton, Md. 21561. Dec. 30, 1982

Dear Mr. Enright,

At last I have completed my observing of all the Messier objects. I would like to have made, as I have said, written record of the details of a few, like M95 and M96, in addition to just date, telescope and magnification. Having had my file cards copied, they are a bit weighty; so I hope to send them at a lesser class than first. You need not return them. My last needful observation was in the dawn hours of December 18th. Increasing light hindered my getting additional observations; so although I again saw M53, I couldn't make out nearby NGC 5053.

Last night I read the latest "Regulus". When I read of those suggested mirror or microwave stations in the sky, it gives me an almost sick feeling inside. How far will an enlightened (?) and benevolent (?) government go in the despoiling of our planet's environment? At least that mirror satellite idea came during a former admistration, and the present one has been cutting the budget of the space effort, and in spite of bad economic times it seems to regard the taxpayers' bank accounts to be unendingly bountiful.

(cont'd)

Mr. Johnson (cont'd)

The end of taxpayers' patience may be coming. Last night I got to thinking about just how a half mile mirror satellite would affect us who observe. In my sleepiness I may have overlooked something, but I concluded that it wouldn't be overly disastrous. Optically plane mirrors are harder to produce than parabolic mirrors, and the biggest of that kind we have made is 6 meters across. A ½ mile mirror satellite almost surely would be sectional, consisting of approximately plane mirrors, hardly more perfect than poor window glass. Even if it was perfectly plane, that tremendously expensive satellite would illuminate with aprox. solar intensity a mere ½ mile area of some city - hardly productive. Since it won't be perfectly plane, let us assume that it produces a blurry beam 20 miles across, in which case, the intensity is down to about eight magnitudes less than solar intensity, yet about 250 times that of full moon! That would illuminate one city like Toronto or Pittsburgh with a semi-day type of illumination, but what about dozens of other cities? Hardly practical, but certainly useful for military illumination, to light the other side, but not yours. We have infra-red night viewers which gives a limited number of us night vision. In the Vietnam War the other side was not sophisticated with such hardware, but not all potential enemies are unsophisticated. Sophisticated enemies also would find shooting down a huge mirror satellite rather easy, perhaps like shooting at the side of a barn, so again a mirror satellite is a risky investment.

How would the mirror satellite appear if the observer was not in the main beam? Close to it the reflection would be of the corona, and not terribly bright and some distance away the dark of space alone would reflect off, except for risidual reflections from corners, etc, but large as it would be, most of the reflected light would come down the beam, unlike the usual small satellites we see. I don't know how high it would have to be. It seems the Shuttle Columbia was at 133 miles, and that would seem too low for a giant mirror with all of its potential atmospheric resistance. If at, say, 240 miles, or 1/1000 the moon's distance, it would subtend an angle of about 8.3' or between 1/3 and ¼ the moon's diameter. At that altitude it would he overtaken by the earth's shadow in early evening, at which height it would continuously have to be tracking its target area, due to its rapid orbital speed.

To put a huge mirror satellite in a synchronous orbit would be vastly more costly than at 240 miles. If in a synchronous orbit, at apx. 1/10 the moon's distance, its diameter, if round, would subtend a mere 5" of arc! The perfection of its plane surfaces would need to be better. Assuming an equatorial orbit, the earth's shadow at that distance is about 12° across. Even the target area would enjoy about 3/4 hr. of full darkness. Away from the target area only the residual reflections would make the satellite visible, but since at a much greater distance, it may not be too obstructive to observers, perhaps.no worse than Sirius or Jupiter. In conclusion if my thinking is not amiss, such a mirror satellite may not be as disastrous to observing as it at first seems, but still I hope none is ever attempted.

Mr. Johnson (cont'd)

But there may be others who would like such a huge satellite in the sky. Certain may want to re-wire it to their political guidance and then paint that moon red. Some would like to convert it into a huge neon sign advertising "GOOBER BARS, the Nutty Chew" or EL SINKO, the scouring power with sex appeal". By night and day commercial advertisers affront the eyes with signs and if you close the eyes the ears are assailed from television and radio. Is there no escape? Perhaps if we clean up down here on earth, the sky will improve on its own. Perhaps I'm just a radical conservationist.

May the stars oft shine on the Kingston Centre in 1983.

(signed)Gus

Mr. Johnson also informed us that he enjoyed Christmas Day with relatives in Pittsburgh, but had cloudy weather for the lunar eclipse on December 30th.

Also from Mr. Johnson there was a beautiful Christmas card which I received on December 2nd and a note pointing out an error in his report on observing the small globular cluster NGC 6441, which is located east not west of the Scorpion's sting as he said in the letter published on page 5 of the Oct.-Nov. issue of Regulus.

Our third letter is from our librarian, David Stokes, whose recent travels have taken him first, to southern Texas, and secondly, to Pakistan. It is a pleasure to print his interesting and amusing letter in its entirety.

Ahmed pw East Pakistan, 15 December, 1982

Dear Leo,

I thought you might like to have a short newsletter from the other side of this terrestrial sphere, even though there is nothing spectacular to report.

I have been in northern India for over a month now, after a 2-month job in San Antonio, Texas. While there I was asked to give a course in Astronomy at the American Institute for Quranic Studies. So I took up the challenge and put together a course suitable to Muslims who were there to study Quian and Arabic. It is quite a task when you have no text books, but I certainly enjoyed job, and when eventually I got my hands on some books I improved the course content in many ways. I may yet find time to put my notes together as a small book "Introduction to Astronomy for Muslims".

We did get to visit Austin (Texas) University where the demonstrator was showing the public the Mira double, and views of the moon in first-quarter phase. Downtown Austin is no place for and 11-inch refractor (of uncertain origin). We had to wait 15 minutes until the moon cleared the top corner of the local 30-storey building! The instrument was easy to use but one had to perch on a mobile step ladder and sit awkwardly at certain elevations.

I did not get time to contact the San Antonio amateurs but perhaps next time David Levy can give me some names and phone numbers.

(cont'd)

David Stokes (cont'd)

The rest of my astronomical life is very brief to tell! I've watched the dawn break over the cold, grey Atlantic as we flew eastward toward Europe and then a few days later I watched the dawn as we flew across the Arabian Desert, approaching Dubai on the Persian Gulf. Orion and Sirius are really high at that latitude but Ursa Major is lost near the horizon in the evenings now, though it's overhead in the early morning.

I journeyed all through the long night by train from Karachi (30°C) to north Pakistan crossing the Sind Desert and arriving in the Punjab at this place Ahmadpur, close to the western edge of the Ragistan Desert. The air here is clear and steady, at least to the naked eye, but I've no way to check it from the desert at night because no one wants to go there at night, especially just to look at the sky! And I don't think I can manage a camel on my own after my experience on one during the day - it kept looking around and leering at me as though intent on biting foreign flesh! Very disconcerting!

I've been able to point out some of the major constellations visible in the night sky to people here who never seem to look up for long, though they are well aware of the clear starry nights they have. Pakistan is mostly well irrigated land, settled and developed along the Indus and the five rivers (Punjab) that flow from the distant Pamirs and Himalayas. Rich in sugar cane, rice, fruits, and vegetables each in their season, it should be good living, but it's not. People are sick, suffer malnutrition and have "western" diseases, mainly, because of ignorance and because of the state in which the British left India in 1946. It's a military state with an archaic beaurocracy that reminds me of pictures of Victorian England! Even the railway system has a few coal-burning steam engines and a quaint signalling system.

The greatest compensation being here is in the quality of the Pakistani people. They are simple, warm, and friendly, and will go out of their way to please and to serve one. For example, the train conductor liked a group of us so much he phoned ahead from one stop to have tea and biscuits ready at the next stop for all of us, and then insisted on paying for this himself! There is just that kind of quality among the best of the Muslim people here.

However, this is not the easiest country for tourists and will be a cultural shock for anyone from the west.

I expect to return to England within the month, where I will do some work at the British Museum looking over Arabic manuscripts and books. I will likely be back in Canada before March, possibly much earlier.

I hope my membership in the RASC is paid up; I look forward to reading up the Handbook and a stack of Sky and Telescope issues.

Please give my best regards to everyone there. Season's Greetings! Wishing you all an eventful and Happy New Year.

(signed) David M. Stokes

The letter from Mr. Stokes is very much appreciated and we look forward to seeing him in person again and hearing more about his long trip half way around the globe. Since he is our resident expert on Arabic star names and gave us an excellent presentation on that topic last summer, we can be sure that David has picked up a few more fascinating tales to pass along, if not on Arabic astronomy, perhaps on Texan or Muslim astronomy. We will all be sure to enjoy them, if we can hear of them at a future meeting, just as in the past we enjoyed hearing about David's 1954 and 1973 solar eclipse expedition

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For Your Compendium of Esoteric Facts

Many people know of the belief popularly held in ancient times that the bright star Sirius, rising as it does with the sun in July and August, added to the scorching heat of that season and produced the Dog Days which were said to bring forth "fever in men and madness in dogs".

Many people, however, do not know that another bright star was similarly regarded as contributing to the intensity of the late summer sun. Did you know that Regulus (alpha Leonis) (and perhaps some other bright stars of the constellation Leo)was also believed to add to the heat and storms of summer? Aratus, a Greek writer of the third century B.C., who was well known for his long poem on astronomy called Phaenomena, says:

"Most scorching is the chariot of the Sun
When he begins to travel with the Lion.
Turbulent north winds then fall on the wide sea
With all their weight; no time is that for
Oar-sped barques".

Reports, Notices, and Other Items

1. There were many cloudy nights in the Kingston area during the months of December and January. However, a few nights did bring chances for some interesting observing.

Although the Geminid Meteor Shower and the Ursids were generally clouded out, and that was a serious disappointment, especially for the Geminids, we did manage to have very good weather for the Quadrantids and I saw a number of bright ones on the evening of January 3rd.

In spite of the fact that we had snow the previous evening and the weather threatened to be anything but good, there were excellent conditions at the time of the early morning total lunar eclipse on December 30th. I was able to observe and photograph from 5:00 a.m. to 7:15 a.m. E.S.T. at which time the moon was very low in the northwest and morning twilight had dispersed the stars. During totality the moon appeared very dark with a hint of orange in the lower southern hemisphere and a strange white glow in the area of the north pole. Unfortunately, neither David Levy in Arizona nor Gus Johnson in Maryland has such good weather for this interesting eclipse.

Reports, Notices, etc. (cont'd)

Two nights in December the 9th-10th and the 17th-18th, afforded excellent opportunities for astrophotography. The only discomfort was the extreme cold but it gave me a chance to do what amounted to "cold camera" photography without the dry ice. The emulsion was certainly chilled; in fact,'chilled' is a euphemism for how things felt to the touch on those two nights.

Your editor observed a number of interesting Auroral displays over the past two months, notably the ones of December 17th and 18th and the spectacular night-long one of January 9th-10th. The latter one was so intense and widespread as to rank with the incredible displays of April 11th and 12th, 1981 and July 13th-14th, 1982. Though its colours could not compare with those of two years ago, its flaming coronal activity and massive curtains from horizon to horizon made it one of the most overwhelming displays I have seen. I am certain that those who had a chance to see that display under good conditions must have been very impressed by it.

Venus has returned as a bright object in our western evening skies. I first observed it about 5:40 p.m. E.S.T. on January 4th, and have seen and photographed it quite a few times since.

2. It was pleasant to have Bob and Angelika Hackett with me for an observing session on January 4th. The very cold weather may have given them a foretaste of observing conditions in Edmonton.

Our congratulations go to Bob on the successful defense of his doctoral thesis at Queen's on January 12th. To both Bob and Angelika we send our best wishes as they head toward the skies of Alberta.

3. The contest to see who can spot any errors or inconsistencies in the Observer's Handbook is still open. As I mentioned in the last newsletter, I would appreciate hearing about any that you find.

4. I hope that as many people as possible will consider attending the General Assembly in Quebec City from May 20th to May 23rd. I have a schedule of events and other information about what promises to be an excellent gathering of hundreds of amateur astronomers.

Bring your "G.A. plans and ideas" to our centre meetings so that we can discuss them.

5. Tuesday, December 28th, 1982 was the centenary of the birth of Sir Arthur Eddington, one of the great astronomers and cosmologists of modern times. Our honorary president, Dr. Douglas, herself the greatest authority on the life of Eddington, has suggested that we mark the occasion by having a talk on his work or some aspect of it. She was even able to suggest a person who would be very capable of talking about Eddington and his contributions to astronomy and physics, namely Dr. John Coleman of the Department of Mathematics at Queen's.

We certainly look forward to Dr. Coleman's talk on March 11th.

6. In the near future there are a number of events that our observers should plan to see or photograph:

(1) In the evening of February 15th the young crescent moon moves past Venus and Mars low in the western sky. If weather allows, the configuration of the moon and two planets should make an interesting photograph. Similar interesting configurations also occur a month later on March 15th and 16th.

(2) In the morning sky on February 17th, Jupiter is due north of both Antares (alpha Scorpii) and the planet Uranus. With the latter less than a degree away from the giant planet, the two will make a very interesting pair in binoculars. In fact, for those who have never followed Uranus, this should be a good time to find it and start recording its movement in the constellation Scorpius.

(3) As Venus moves higher up to dominate our western sky throughout the coming spring, it passes the planet Mars on February 18th, and for a few days at that time, the two planets will make an interesting and close configuration in the evening sky.

(4) There are a number of asteroids that may be observed in small telescopes during the month of February. Thyra, at magnitude 10.3, moves through Cancer and is within a few degrees of M44 on February 15th. Europa, magnitude 10.3, moves through parts of Cancer and Gemini in February and is extremely close to the star 85 Geminorum on February 14th.

Eurynome, at magnitude 10.7, moves across the border from Cancer into Gemini on February 14th and should be detectable on that date because it is almost precisely at the point where the border between these two constellations touches the constellation Canis Minor.

(5) An event which is not observable from our location but which we certainly hope can be observed and maybe photographed by our members in Tucson is the lunar occultation of the planet Jupiter on April 2nd. With a waning gibbous moon, the event will occur on the bright limb of the moon, but from our position in eastern North America it will happen after sunrise, and so be scarcely noticeable. In the west it will be well before sunrise and may be quite spectacular in a good telescope. (Good luck, David!)

7. The following is a schedule for talks to be presented at future meetings.

Jan. 14th - Organizing the program for 1983
- Leo Enright: Astrophotos

Jan. 28th - Leo Enright: The Various Modes of Astrophotography

Feb.11th - Gerald Schieven: T.B.A. (Stars)
Feb. 25th - Brian McLean: Close Binary Systems of Stars
Mar. 11th - Dr. John Coleman: Eddington: Astronomer and Theoretical Physicist

Programmes (cont'd)

Mar. 25th	-	Peter Jedicke:	London-Kingston Centres' Speaker Exchange Program
April 8th	-	Terry Hicks:	T.B.A.
April 22	-	John Hansen:	T.B.A.
May 13th	-	Mark and Knight Sorensen:	T.B.A.
May 27	-	Reports from G.A. '83	

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Remember that the meetings are at 8:00 p.m. in Room 222 in Ellis Hall on University Avenue.

8. Your editor would be very happy to receive material for these pages. Our address is:

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Box 141, Station A,
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K7M 6R1

Clear skies!
Good Observing!

Leo Enright.