R E G U L U S

THE NEWSLETTER OF THE

ROYAL ASTRONOMICAL SOCIETY OF CANADA - KINGSTON CENTRE

JANUARY, FEBRUARY, 1984

LOOKING FORWARD TO 1984

The year, 1984, promises to be a good one for the Kingston Centre of the R.A.S.C. A new Executive Council, armed with enthusiasm and numerous ideas, has already begun to lead the centre in a very positive way. The coming year holds exciting possibilities for amateur and professional astronomy. Observers among us can look forward to a number of interesting planetary conjunctions, a rare planetary occultation, and an annular solar eclipse. Plans are under way already for International Astronomy Day in May, and in July our Society's General Assembly takes place not far from here; in fact, its being held in Southern Ontario is the first time that has happened since 1979. Our schedule of meetings, too, for the coming months presents us with a number of welcome guest speakers and some unusually interesting topics.

Your editor has good reason, also, to look forward to 1984. As you will see in these pages, several worthwhile pieces of writing have already been received. Especially welcome to this newsletter is David Levy's tribute to the late Dr. Bart Bok. There is also a letter from our member in Maryland and a thought-provoking article by Martyn McConnell, our new Centre President. If submissions such as these continue, the task of being editor may become considerably easier, and it may be possible to keep a resolution to have the newsletter in your hands much earlier (in the two-month period) than was possible in the last two years.

With this issue goes a wish that all the potential promised us for 1984 may be realized by all of us.

FAREWELL TO A FRIEND

by

David H. Levy

(Prepared for Mercury Magazine and for Regulus)

(Editor's Note: Those of you who have read Richard Berry's comments on page 33 of the January 1984 issue of Astronomy magazine know that both he and David Levy will long remember Stellafane 1983 as the occasion on which they received the news of the death of Bart Bok — but David for a special reason since he had been his friend and biographer. I am very pleased to publish the following thoughts which David is sharing with us.)

When Bart Bok died at his home in Tucson on Friday, August 5, 1983, science lost one of its most colorful representatives, astronomy lost its main propagandist for the Milky Way, and I lost someone who had become a dear friend and teacher. Four days earlier, Bart and I had finished a series of interviews that now stretch for some 50 hours, discussing

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his life, his ideas, his career, his opinions of other scientists and of the course of astronomy during his 77 years, the observatories he had built and directed, the students who had learned to love the stars under his wing, the music he loved, and the family for which he cared so deeply.

Science was not a set of calculations to Bart. He would always tell his students to ensure that, in the middle of a long observing night, they should at least once put the controls down, leave the telescope, walk outside and look up at the stars -- "just to make sure you're making bloody sense!"

Bart Bok challenged death with the same vigor. Knowing that his heart was weakening, he insisted on keeping up his hectic schedule of travelling, lecturing, and writing. Bart joked about death: "This is David, my biographer," he would say. "He wants to interview me until we get all the stories. And he'd better finish before I pop off!"

In a sense, Bart Bok's life is a point of view, held up to the great mirror of one of the several telescopes that exist today because of him. First, there was Bok, the scholar, who was much moved by his award of the Russell Prize of the AAS last year. "When you get such recognition ten years after you retire, they must think you haven't lost your mind yet." Just before his death he gave me a copy of his plans for a trip to Europe, during which he was to address a Magellanic Cloud symposium. He had been looking forward to that trip with enthusiasm and he was hoping that it would help keep him at the front line of astrophysics, which was where he was sure he belonged.

In another direction, Bart was an amateur ("so to speak," he would add with a wink.) "I started out as an amateur, and then became a professional, and now that I am retired I am an amateur once more." Perhaps more than most professionals, Bart knew how to look up at the stars and planets. "Have you seen Jupiter rising yet?" he would challenge me. Then he would jump right in, enthusiastically answering himself. “Yes, yes, I did. Yesterday morning, at 5 a.m.!"

But turn the telescope mirror to see yet a different side of Bart Bok, the side that prompted his visit to one of Arizona's prisons to lecture. He visited prisons in this manner several times, enough to get himself into trouble with Arizona's governor for writing a letter on behalf of one prisoner, asking for her release on humanitarian grounds.

When it shows Bart's devotion to his beloved Priscilla, who passed away in 1975, the mirror is turned in yet another direction. Many of us remember lectures during which Bart would begin to talk about the Eta Carinae Nebula, and then pause. "I know that Priscilla is up there," he would say. "She had told me, 'Bart, when I go, I want to be there.'" And then, with a turn of expression and a gesture of his hand, he would add, "but when I pop off, I don't think I will be able to join her in that nebula; I'll have to go the other way!"

During his last two years, Bart and I worked steadily on collecting material for his biography. We met at his home for an hour or two each week, usually over drinks. "You can't do a biography if you don't drink, David. Boswell did Johnson's in a tavern. So you have a choice. Wine or sherry."

Fortunately, the tape recorder stayed sober, and I now have many hours worth of stories that describe a pattern of greatness, the story of one of the finest people I have ever known.

At the end of each interview, Bart would come to the front door to wave goodbye as I drove off. On Monday, August 1, Bart saw me to the door. "Don't forget to watch me wave goodbye at you," he said, "it's what I always do."

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MIRRORS IN SPACE

by Martyn McConnell

(Editor's Note: The following article was written by Martyn in response to a recent article in Maclean's magazine. However, it is not the first time the subject "Mirrors In Space" has been discussed in Regulus. Warren Morrison was very concerned by the possibilities they presented after he read an article about a year ago; his reactions appeared in the December 1982 issue of this newsletter (see pages 4 and 5), and further concerns and other ideas on the topic were subsequently expressed by Gus Johnson (see January-February 1983 issue, pages 4, 5, and 6). One sentence from that letter from Mr. Johson summarizes the feelings of many amateur astronomers (or what surely they would be if they were aware of the possibilities), and it is this: "When I read of those suggested mirrors or microwave stations in the sky, it gives me an almost sick feeling inside."

Martyn's article is very much appreciated. All astronomers should become more knowledgeable and probably more vocal about the possible threats from man-made mirrors. Perhaps, too, societies of astronomers should be articulating their concerns.)

It was late last year when the idea of using mirrors in space became serious enough to make the newspapers. It was September 1982 when John Allen and John Canady, two NASA engineers at the Langley Research Center in Hampton, Va., published the results of their study on the possibility of using mirrors in space to light up cities at night. When I read it, I thought that this was stuff of the near future.

An entire year had passed with no more coverage by the media; thus, I assumed the subject was put on the back shelf. After reading the December 12, 1983 issue of Maclean's, I realized that the near future may arrive a lot sooner than I had hoped.

The Maclean's article entitled "Mirrors in the Sky", reported that the Soviet Union was hinting that it was seriously considering putting mirrors in orbit to reflect sunlight down upon Siberian cities during winter. Commented John Allen, "I am delighted that the Soviets are seriously considering orbital mirrors." It was his belief and hope that such a proposal by the USSR will spur the USA into action in the same context as was the case in the moon race. Let's hope such will not be the case.

The basic idea behind the orbital mirrors is as mentioned. It is the notion of saving electrical power and money that have scientists like Allen and Canady working on the concept. The NASA plan would be to deploy a bank of 16 mirrors — each a half-mile in diameter — in orbit some 22,000 miles above the equator. This would enable the mirrors to reflect sunlight down upon the Earth in a 320 km. wide path, giving extra hours of sunlight to large cities, thereby reducing their electrical consumption and bills. According to Allen and Canady's study, this would be a savings of about $2.85 billion over a 15 year period.

Is such an adventure worthwhile? The cost of manufacturing and deploying the mirrors could reach over $1.34 billion according to

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Allen. This means that the mirrors would have to give over 7 years of trouble-free service, which is a lot to ask for, before the initial costs could be recovered. The entire article is one-sided, as nothing is mentioned about the possible negative side-effects the mirrors would cause environmentally. The extended daylight could wreak havoc on nocturnal wildlife and change the growth patterns of natural vegetation.

With the high initial costs and the nonmilitary role of the mirrors (after all, with today's technology, you don't have to see your enemy to destroy him), the two main concerns of the Reagan adrninistration's funding policies seem to be paramount, and could lead to their defeat. I certainly hope so, for who wants an object shining with the brilliance of 56 full moons in the sky night after night, even if only for an hour or two? Not I, for one.

LETTER FROM MARYLAND

(Editor's Note: In early December, barely too late for the last newsletter, we received a beautiful Christmas card and the usual, very interesting letter from Gus Johnson. We apologize to him for not having it in the last newsletter and are pleased to print part of the letter here.)

Swanton, Maryland,
November 28, 1983

Dear Mr. Enright,

Best Christmas wishes to you and the other members of the Kingston Centre.

Winter seems to be trying to come early this year. The dry spell ended and so did the good observing. Rain and snow have been rather frequent this month. About 8-in. of snow has come and the inlet of the lake has had a skim of ice at least twice already, a bit early, it seems to me, the first coming on Nov. 13th, just five days after I had my motorboat pulled out.

I appreciate the RASC award certificate you sent me and have been proud to show it.

There is so little to report observation-wise. The bright dwarf nova, SS Cygni, made a brief appearance around the time of the full moon. Its previous brightening in late Sept. was a long maximum.

I ordered and received a Lumicon Deep Sky Filter, hoping to at least see the California Nebula. Either the light pollution around my home is of a kind not filtered by this particular filter or perhaps there is no serious light pollution, for I have not found much of an improvement. The view is a pleasant dark aquamarine and even Albireo loses its contrasty qualities. I used my 5-in. at 30x on M 57 and M 31, seeing no significant improvement, both being quite bright. M 31 was so bright that the bluish hue from the filter was quite apparent. The two Veil Nebulae were visible without the filter, but were enhanced with

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the filter. I saw no noticeable loss to stars' magnitudes, apparently due to an improvement in the overall background. Then at 15x I sought 7293 in Aquarius. The haze at lower altitudes made it very dim, yet detectable. Without the filter it was so very near the brightness of the background that had I not already found it with the filter I would have passed right over it. By then the soon-to-rise moon was brightening the eastern sky and it was useless to seek the California and Merope Nebulae, both not too high in the sky. I had hoped the filter would so darken the background that very low powers (with large exit pupils) would bring in very dim objects. The background, even higher up, was not black; so some of the background gets through. Maybe the Ultra High Contrast of the "Horsehead" Filter is what I need. When rare skies permit my seeing both Veils with my 2-in. f/12 refractor at 21x, likely this filter is not really needed, just patience until the next really clear sky occurs.

Clear skies to you all, Gus.

FOR YOUR COMPENDIUM OF ESOTERIC FACTS

During a time when sunspots have appeared very scarce and generally quite small, you may ask your friends if they know that it is only about 37 years since the appearance of the largest sunspot ever recorded. It was during a time of considerable solar activity, in April of 1947, that a truly enormous sunspot appeared. This single huge spot with its surrounding group of smaller spots covered an area of six billion square miles! It was an area large enough to swallow up 100 Earth-sized objects placed side by side. Pictures and drawings made of this famous 1947 sunspot are indeed spectacular; they show a darkened area covering more than one percent of the total solar sphere.

REPORTS AND OTHER ITEMS

1. Most of December was a continuation of November's very unpleasant weather with a succession of stormy nights, often with great quantities of snow or freezing rain. The peak nights for the Geminid and Ursid meteors were completely clouded out.

   By some stroke of good fortune, the night of the Penumbral Lunar Eclipse (Dec. 19-20) was clear and the seeing was also quite good—a remarkable combination for mid-December and in view of our recent experiences with the weather. For a penumbral eclipse this was a remarkable one and one of the best I have ever observed. For well over an hour the darkening of the lunar disc was easily visible to the naked eye and its extent could be detected in binoculars. By 1:05 U.T. (Dec. 20, i.e.: 8:05 p.m. E.S.T. on Dec. 19) a greyish band appeared in the Southern Hemisphere and by mid-eclipse at about 1:49 U.T., binoculars showed it clearly extending up to an area north of the equator in the region of the Mare Tranquilitatis, though on the other side the darkening was not as pronounced in the Oceanus Procellarum. The monochromatic grey was still visible at about 2:20 U.T. In all, this eclipse which was unusually dark for a penumbral eclipse gave evidence that the moon was very close to the earth's umbra.

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2. We congratulate Terry Dickinson on the reappearance in the Toronto Star of the excellent astronomy column which was discontinued in July 1982. We certainly look forward to this column and hope it has the continued support of amateur astronomers.

3. It was good to receive Christmas cards and notes from many members of the Centre. Angelika, our past president, informs us that she is now working as a translator in Edmonton, and is looking forward to a February holiday at the southern tip of the Baja peninsula in Mexico where she will try to do some observing and maybe catch a glimpse of the Southern Cross. Paul and Elwyn Brown, and daughter Lindsay, are doing well in Calgary. Warren Morrison said he had been able to observe eight different comets over the past year, a couple of them at only twelfth magnitude. Our observer in Europe, Lt.-Col. William Anderson, sent along a photograph he took while vacationing in the mountains of Switzerland.

4. In our last newsletter we omitted extending a welcome to Basil Buffam. Hope he enjoys 1984 in the Kingston Centre and continues as a member for many years to come!

5. Remember the "Spot The Errors In The Handbook" Contest is still open. Send your entries to Regulus at the address given below.

6. Our list of events which we suggest you observe will be quite short this time, but we will hope for good weather occasionally so that at least we may see something.
   1) The large collection of planets in the morning sky will be a treat for "early-risers". In addition, the waning crescent moon moving among the planets will be an extra delight for those who can observe during the last few days of January and again the last few days of February.
   2) There are three nights in these two months when it should be possible to observe the minimum of the famous variable star Algol — nights when the minimum occurs in a moonless sky or after moonset. Those nights are Jan. 4-5, Jan. 27-28, and Feb. 19-20.

7. The list of upcoming meeting dates with the proposed list of speakers and topics is as follows:

Jan. 13:	Martyn McConnell	The Possibilities of Interstellar Travel
Jan. 27:	Franklin Loehde National President, R.A.S.C.	The new Space Sciences Centre in Edmonton
Feb. 10:	Leo Enright	Lunar And Planetary Conjunctions (a talk and slide show)
Feb. 24:	Mark Sorensen	The Shape of the Universe
Mar. 9:	Leo Enright	Lunar Astrophotography
Mar. 23:	Martyn McConnell	Frank Drake's Equation For Extra terrestrial Civilizations
Apr. 13:	possible speaker exchange with another centre, and plans for Astronomy Day 1984.	

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Apr. 27:	Dr. Hendriksen (possibly)	Topic to be announced
May 11:	Sue Sorensen	Famous Women Astronomers
May 25:		Plans For Observing The Partial Solar Eclipse
June 8:		Last Minute G.A. Plans
June 22:		-To be announced
July 13:		General Assembly Reports
July 27:		-To be announced

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

8. We would be happy to hear from you. The address is:

R.A.S.C. - Kingston Centre,
Box 141, Station A,
KINGSTON, Ontario,
K7M 6Rl

Clear winter skies!
Good Observing!

The very best in 1984.
Leo Enright.

LAST MINUTE NEWS FLASH: There is a tentative 'confirmation' of the Centre Exchange mentioned for April 13th. It will be with the LONDON CENTRE, and will probably have PETER JEDICKE speaking to us on a topic of his choosing.