R E G U L U S

THE NEWSLETTER OF THE
ROYAL ASTRONOMICAL SOCIETY OF CANADA -- KINGSTON CENTRE

NOVEMBER, DECEMBER, 1988

IN MEMORIAM

DR. A VIBERT DOUGLAS

Shortly after the time of our Society's General Assembly this past summer, most of us learned of the passing of Dr. A. Vibert Douglas, the founder of our Centre and its Honorary President for the past twenty-five years. On July 2, 1988, we lost someone who was a great supporter of our Centre, a scholar in the world of astronomy, and a personal friend to many of us.

During her ninety-three productive years, Dr. Douglas lived through an age of incredible advances in all of the sciences, especially astronomy, and she was always, even in her final years, keenly interested in all of the latest developments. She lived through an age uniquely filled with pioneers of the science; she was one of them and she associated with many others. She worked at Yerkes Observatory at a time when its instruments were doing state of the art measurements. She was associated with Sir Arthur Eddington when his research was the foremost of its kind, and she understood it as few others have. Little wonder that she was Eddington's official biographer. Her influence as a teacher at several Canadian universities, particularly here at Queen's, will long be remembered; she influenced in a powerful and positive way the lives of thousands of students.

Our Centre has always been more indebted to her than to anyone else; in 1961 it was through her efforts that the Centre was founded and through her efforts the Centre was guided through its early years. Several decades before that she held several position at the national level, including National President in 1943 and 1944.

Though a scholar and astrophysicist by profession, she was always interested as an amateur in the night sky and in the things that amateurs did. I remember being impressed at her description of a trip to see the 1929 total eclipse. I marvelled even more at her journey to central India to view the 1980 eclipse at a time when she was in her mid-eighties and showing more energy than many in the Centre who were less than a quarter her age. Her travels alone - her numerous eclipse expeditions, as well as the trips she made to almost all of the IAU's triennial conventions of the pest half-century would make stories to fill a book. She spoke at our Centre meetings on a number of occasions over the past decade; her topics included Astronomy In India, and Astronomy In The Bible as well as reports of various solar eclipse. David Levy and I will always remember her hospitality - how on a number of occasions she was so pleased to have us visit her before a Centre meeting and more than once she even served a hearty home-cooked meal - at a time when her health prevented her from going out as much as she would have liked.

Dr. Douglas may no longer be there to take delight in the accomplishments of our Centre's members, but her spirit of dedication to astronomy will always be an inspiration to those who belong to the Centre she founded.

A TALE OF TWO MIRRORS

by DENISE

[**EDITOR'S NOTE:** The editor thanks a first time contributor for an interesting article and expresses the wish that it not be her last contribution.]

On the tour of the David Dunlap Observatory at the 1987 General Assembly in Toronto, I was in awe as I looked at the huge mirror of the DDO's mighty telescope. My mind went

back about seven years to what was to become the standing joke of the astronomical society that I belonged to. In the early 1980's I had decided to pursue astronomy as a hobby, and had enrolled in a course at a nearby community college. I found myself desperately needing to do something that would improve my chances for a higher grade. In a flash of brilliance (!) I told myself that I needed to do something for extra credit. I decided to grind a mirror.

The DDO's tour guide went on speaking about the main telescope's mirror, and I began to draw a number of comparisons between it and my humble efforts. The first difference was the size. That mirror was 1.88m in diameter; mine was 8 inches. The DDO mirror was housed in an 18.6m dome with a mount that allows it to be used either as a Newtonian or a Cassegrain. Mine was in a 12-inch box, and wrapped in a purple towel so that it could be used as a paperweight or a doorstop.

There were also some similarities. The DDO mirror was used for theoretical research. It gathered data relating to the evolution and structure of galaxies and star clusters. Mine was used for theoretical research, too - establishing whether a man or woman can grind a mirror to the same f-ratio with the same number of strokes. The DDO hosts educational tours and demonstrations of the telescope. I host educational sessions. I demonstrate how **not** to grind a mirror. The Richmond Hill mirror has its imperfections. The guide pointed out that in it there were gum wrappers, bolts, and bubbles. My mirror's imperfections are bubbles and a depression in the center!

Now here is the most striking similarity of all! Neither of the mirrors is being used for visual observation. Mine is not even completed. The Richmond Hill mirror is north of Toronto where light pollution from the city has made the telescope almost useless for most serious research. The problem is getting worse day by day. Telescope users have to face the problem of light pollution, whether it is a huge scope or a tiny one. But we have to work together at solving this dreadful crisis. That is one thing we have in common, and I hope we all together can somehow find a solution. We have to, no matter what the size of our telescope.

AN INCREDIBLE ANNUAL PUBLICATION

About this time of year every member of our Society receives his copy of the **OBSERVER'S HANDBOOK** for the coming year, and, if he has been a member during the previous year, he probably glances through it to see if there are any major changes from the one he has used to guide his observations over the past twelve months.

This is a perfect time for us to think about just what the "**HANDBOOK**" contains and to congratulate its editor and a couple of members of our centre for their contribution to its continuing excellence. At 224 gages, the 1989 edition, which I received on November 18, is the largest one yet produced, and thanks to the enormous effort of the editor, Dr. Roy Bishop of the Halifax Centre, this publication continues to become more useful, more informative and generally better year after year.

Our first special offer of congratulations goes to Hein van Asperen of our centre for his splendid cover photograph - one showing a night-time migration of seven Canada Geese seen against the face of the Full Harvest Moon. It is a very remarkable photograph, and not a composite as is often the case with such unusual pictures.

Secondly, our hearty congratulations go out to our new Honorary President, David Levy, for his preparation of a section that is appearing in the **HANDBOOK** for the first time, the one called **Observing Comets**, which appears on pages 162 and 163. It should be noted that the tributes paid to David by Dr. Bishop on page 163 and by Dr. Hogg on page 3 are most deserving. This new section should encourage more amateurs seriously to consider comet hunting as a regular part of their observing.

Glancing through the gages one notices new and updated information in many places. The new names for the ten moons of Uranus discovered in 1985 and 1986 appear on pages 14 and 15, and the reader will soon realize that these satellites are called after female character in Shakespeare's plays. The sections devoted to astronomical and physical data and "The Sky Month By Month" contain more information than ever before. The variable star section with the detailed information about "the variable of the year", P Cygni, should entice many who have never before seriously observed variables. The map for P Cygni (on page 190) also includes the variables, Chi and RS Cygni, which are two other bright stars that deserve the attention of any variable observer.

Deep Sky observers will be able to notice a new listing of 110 of the finest N.G.C. objects on page 201, and a list of 45 challenging deep sky objects on page 204. These two lists should stimulate those who have observed all or most of the Messier objects to

other projects relating to galaxies or clusters of stars that not everyone has seen. The list of deep sky observing hints on page 200 has very useful reminders for Alan Dyer, an experienced Edmonton Centre observer, about how we can improve our sky exploring ability. A totally new section is one which lists the proper names of many distinctive galaxies. It is found on page 210.

An esoteric object known as the **Black Hole Candidate: Cygnus X-1** is explained on page 195. Many observers who read about the object will be amazed to know that there is a star at ninth magnitude shown on the accompanying map, and therefore bright enough to be seen in binoculars or a small telescope, that is associated with a powerful x-ray source that may be a companion to this star and probably a black hole. Even beginners should be able to locate this star in the constellation Cygnus.

Planetary observers have their favourite section loaded with vital information. Terence Dickinson's always excellent section is updated and has a longer than usual bibliography (pages 130 and 131) for those interested in observing within our solar system. In no other publication anywhere will you find a "corkscrew" diagram to assist in observing and identifying the satellites of both Jupiter **and Saturn.** The one for the Jovian Galilean satellites is given in the Month By Month section and the one for the four brightest satellites of Saturn (Titan, Rhea, Dione, and Tethys) is given on pages 147 to 149.

There is an incredible wealth of astronomical information to be found within the covers of the **OBSERVER'S HANDBOOK.** Scan it frequently, not just when you are planning a night's observing, and you will be amazed at what you can and will learn about the heavens.

FOR YOUR COMPENDIUM OF ESOTERIC FACTS

Many people have heard a tale of a totally fortuitous discovery of a comet but are unable to substantiate it. It is true. It did happen and to a very well-known astronomer. The year was 1896 and the astronomer was Charles D. Perrine who was working at the Lick Observatory. The discovery was actually made as a result of another comet that Perrine had earlier discovered **himself.** Perrine requested updated information from a fellow astronomer about a previous comet discovery of his. The reply which came in a telegram was somewhat garbled, and the position given was wrong by more than two degrees. Unaware of the error, Perrine proceeded to use the information, pointed the Lick 's telescope to the coordinates as he read them and viewed a totally new comet right in the middle of the field of view of his eyepiece!

REPORTS AND OTHER ITEMS

1. During the months of October and November I had a number of excellent observations of Jupiter and Mars. On Mars the shrinking South Polar Cap has been easily observed, as well as the dark ring that surrounded the cap, and there were many other dark features. The most spectacular observation was a bolide of magnitude about -8 which split the heavens at 00:05 UT on November 4 breaking up in the constellation Aquila and leaving a trail that lasted for two and a half minutes. It was a member of the Taurid Meteor Shower. Another meteor, very bright but not nearly as bright as that one, was seen four nights later. Solar observers have noted that the sunspot number were very high in both early October and early November. On October 6, I observed 12 groups comprising 63 spots; on November 6 there were 61 spots in 8 groups.

2. For those who wish, in the next month, to get the most out of observing the planet Jupiter which is currently near opposition and is very bright and large in the telescope, there are two articles that are **must** reading. They are found in **Sky and Telescope** in the November issue on page 524 and the December issue on page 664.

   Also, of considerable interest in this magazine are numerous articles about the history and importance amateur astronomy in the November issue. In the event that anyone doubts that a amateur of modest means art with limited equipment can quickly learn to make a significant contribution to the science of astronomy he should read the story of Dan Kaiser on page 662 of the Decenber issue. Dan did not even own an eight-inch telescope until 1985; yet he has discovered a number of "new variable" stars.

3. Over the next two months there will be a good number of events worth observing. May I suggest the following list which I think will be very interesting?

(1) Try to locate and check regularly the "new variable' (NSV 3005) discovered by Dan Kaiser. It is shown on the map on page 662 in the December issue of **Sky and Telescope.**

(2) The Geminid meteor shower which peaks on the night of December 13-14 should be excellent for observing after the young five-day-old moon sets. Try to record numbers and see if there is an increase or not after midnight.

(3a) This will be the "month of the year" to observe Jupiter. Try to read the magazine articles mentioned earlier and to observe some of the many features on the disk and as many as possible of the phenomena of the Galilean satellites. Since our solar system's largest planet is near opposition, it will be in the sky almost all night, and long periods of observation will be possible.

(3b) The night of December 17-18 will be a special one for those who wish to observe phenomena of a single moon of Jupiter. At 12:59 am. E.S.T., you may observe the occultation disappearance of Ganymede, the third Galilean moon, as it moves behind the western edge of the mid-northern section of the disk of Jupiter. About two hours later, watch closely as this satellite reappears at the eastern edge of the disk (at 3:02 a.m.) watch it closely for just twenty-seven minutes Later (at 3:29 a.m.) it disappears again going into eclipse in the planet's shadow. It will emerge from the shadow over two hours later at 5:42 a.m., about ten minutes before the beginning of morning astronomical twilight.

(3c) Many observers enjoy seeing the various changing features of Jupiter as they swiftly glide by on a planet that rotates at a speed of once every nine hours and fifty minutes at the equator. Since, as previously mentioned, this is an ideal month for observing these Jovian features, I wish to publish a list for the next month and a half of the predicted times in the evening (from 7:00 p.m. until 1:00 am. E.S.T.) when the **Great Red Spot**, often the most predominant feature of all, **will be on the Central Meridian of the planet**, and therefore best situated for observing. The Spot, or the "hollow" in which it is found, is located on the southern edge of the South Equatorial Belt which is the first large belt below the equator. It should be noted that the Spot or the Spot Hollow usually may be seen without much problem up to an hour or so before or after the time of its Meridian Passage. Let's try to see how many times we will be able to observe the G.R.S. or its "Hollow".

Date	**Time in U.T.**	
Dec. 1	5:35	(Note this is 12:35 a.m. E.S.T..)
2	1:26	(Note this is 8:26 p.m. E.S.T. on December 1.)
4	3:04	
6	4:42	
7	0:33	
9	2:11	
11	3:49	
13	5:28	
14	1:19	
16	2:57	
18	4:35	
19	0:26	
21	2:05	
23	3:43	
25	5:21	
26	1:12	
28	2:51	
30	4:29	
31	0:20	

Date	**Time in U.T.**
January 2	1:59
4	3:37
6	5:15
7	1:07
9	2:45

(4) At least one other meteor shower besides the Geminids is worth considering. Because of the full moon, the Ursids of December 21-22 may be less than spectacular, but the Quadrantids, peaking under a near-new moon on the night of January 2-3, deserve our attention. In recent years I have found this shower much more interesting than most people realize. Probably it is the cold weather in early January that prevents its being observed as it should be, but if you can invent or discover a way to overcome the effects of a plunging thermometer and have a clear night, your may be left in awe at the number and brightness of the "shooting stars".

(5) Another planet to plan to observe in the evening sky is Mercury which appears low in the west in late December and early January. It reaches greatest elongation from the

sun on January 9.

(6) There will be an occultation by the ten-day-old gibbous moon of a bright star on the evening of December 19-20th at about 8:05 p.m.. The star is the 4.6-magnitude binary star system, Epsilon Arietis. This star is one that can be split in telescopes of four-inch aperture or greater. The disappearance should be easy to observe since it is on the dark side of the lunar disk. Try to see whether the disappearance is observed in two stages, if you are observing with a larger instrument.

4. We have been honoured to have two great talks at recent Centre meetings. On Friday, October 14, we heard from John W. Griese III who talked to us about his variable star proram - one that is amazing because it reaches to what are called "inner sanctum" variables, ones that are **extremely** faint. He came all the way front Rocky Hill, Connecticut, and we were thrilled to have him. On November 11, Walter MacDonald talked to us about his observatory building project which took place near Thomasburg, Ontario.

5. Please remember that DUES ARE OVERDUE. Your annual membership fees for 1989 were due on October 1 and must be paid before December 31, if you wish to continue uninterrupted membership. Please submit the required amount to Murray Anderson, our treasurer. Regular membership is $30.00; youth membership is $20.00: life membership is $500.00.

6. Larry Manual who has been looking after our Centre's telescope for some while now has asked if something could be done about increasing use by our members of this very good instrument. A great deal of work has been done on this telescope over the last five years. Members who have plans for using it should contact Larry or another member of the Centre's Executive.

7. We welcome the members of the Society's newest Centre. At the last meeting of National Council approval was given for a Centre in Thunder Bay, Ontario. It is great to hear news like this, since it has been quite a number of years since a Centre was added to our Society.

8. Here are the dates for upcoming meetings:

December 9 - Annual Banquet (6:00 p.m. at Smitty's Pancake House)
- Anual Meeting
January 13
February 10
March 10
April 14

Remember that all our meetings begin at 8:00 p.m. and are held in Room D-214 in MacIntosh-Corry Hall at Queen's University.

9. Your editor invites correspondence and contributions. Here is our mailing address:

R.A.S.C. - Kingston Centre,
P. O. Box 1793,
Kingston, Ont.
K7L 5J6

Good wishes to all our members for a Happy Christmas Holiday!
Clear skies!
Good observing!

Les Enright