R E G U L U S

THE NEWSLETTER OF THE

ROYAL ASTRONOMICAL SOCIETY OF CANADA - KINGSTON CENTRE

MAY, JUNE, JULY, AUGUST, 1987

ANOTHER SUCCESSFUL ASTRONOMY DAY IN KINGSTON

On Saturday, May 9th, over a dozen members of the Kingston Centre took part in two memorable Astronomy Day events, a display at the Frontenac Mall and a public star night in MacDonald Park. Both activities were undertaken with enthusiasm by the participants who began to arrive at the mall at 8:00 a.m. and did not leave until after 5:00 p.m. Hour after hour we were busy meeting the public, discussing our projects, talking about the Society and its activities, and generally being ambassadors for astronomy in the true spirit of International Astronomy Day. The equipment on display included two eight-inch Schmidt-Cassegrain telescopes, a pair of 11 X 80 binoculars and five other telescopes. On display also were award-winning photographs, large posters, a book exhibit, and a planisphere made by Hein. Dozens of pages of information were distributed free of charge: pages explaining the benefits of membership in the Centre and details of our upcoming activities, information on the problem of light pollution, and star maps for the months of May, June, and July. A special feature of the display this year was a computer with a variety of programs such as the one which gave the positions of the planets at any time and from any position on the earth.

In the evening the weather was less than ideal with intermittent cloud and a steady wind, but those who went to the park for the Public Star Night were rewarded for their efforts by the grateful and enthusiastic response from the people who came out to see celestial wonders. For over two hours the visitors had an opportunity to view an array of lunar craters and mountains, the planet Mars, M44, M13, and the double star Mizar. Though the number of objects that could be seen was limited, it was rewarding to hear many spectators exclaim with delight on having their first telescopic views of a number of objects.

A note of thanks for making our Astronomy Day venture a success must certainly go to Ruth Hicks, our president for her organizational efforts and contribution, and to all the others who contributed equipment and donated their time so generously: Hein and Jean van Asperen, Mark and Sue Sorensen, Arthur Covington, Murray Anderson, David Stokes, Terry Hicks, Leo Enright, Bruce and Erin Johnson, Mark Levison, Ivan Grabovac and Bob Sauvageau.

Above all it was the co-operation of all these members of our Centre which made possible our feeling that the long and eventful day had been a very full and rewarding one.

AN APRIL OBSERVING SESSION

by Mark Kaye

[EDITOR'S NOTE: I am very pleased to have received another report of an observing session from Mark Kaye.]

The lengthening of the days is one of the main features of the changing of the seasons in our northern latitudes. Almost overnight the days seem to go from ones of short sunlight hours, brief twilight, and almost sudden darkness to long sunny hours with extended twilight. The sunsets become more spectacular and the glow from the long set sun fades gradually in the north-west. Even so, the stars still make their nightly appearance. More serenely, granted, but by 2h UT (in April) the darkness is complete. Perhaps, as an astronomer, I should be annoyed by the shortening of the nights that

comes with spring each year, but I am not. The warm days give out at last and one by one the stars appear. This a good time to look at the stars themselves. Long before the heart of the Virgo cluster is visible, many of the double stars that are such a treat of the night sky can be observed. The winter constellations are being overtaken by the sun, but in the twilight, Castor is easy to spot. With this star the 127mm f/8 refractor was christened. With the 36mm Plossl giving 28 power, this star appears as just a single star; not until the 9mm, giving 113 power, is introduced does it split into two close stars. Norton's atlas gives a good list of double and variable stars, a number of which,in this area, can be observed as they emerge from the sky glow.

Larry joined us at 1hour UT at the sight of the new permanent mount of my observatory, and he quickly had his 81mm scope set up. I have cleared a patch of the low brust and set on the bedrock a steep-legged tripod holding one of Larry's mounts which the scope can be easily taken in and out of. This firm smooth mount gives excellent stable images. I have also cleared enough room for a couple of other scopes. Soon the skies were darkening and we turned our attention toward the galaxies that dominate the spring sky. though I have always used a finder scope in the past, the new one is equipped only with a Telerad, a device which I highly recommend, since all one has to do to find things is to look at the charts and then point the scope in that direction. Bingo, the object will be in the scope! Our first order of business was M81-M82. What, a pair! Spiral structure is easily seen and the irregular is very irregular. Lurking nearby are two more galaxies that are easy to find, an elliptical NGC2976 and nearby a smaller and fainter NGC3077. With Larry's 40mm eyepiece which offers over two degrees of field, all four are seen in one view.

Larry left me with the large eyepiece and went back to his scope to look for M95 and M96 in Leo, while I started to peruse the Virgo Cluster. Starting in Coma Berenices, I found a wealth of galaxies, all of different shapes and brightnesses. I pushed farther south galaxy by galaxy, approaching the heart of the massive group of galaxies known as the Virgo Supercluster. I stopped on what I thought was M87 or M86, and as I grew accustomed to the view, more and more deep sky objects appeared. "Look at this, Larry;" I said, "I can see five, no seven, galaxies at a time here."

Larry came over to have a look. "I can see eight, no nine!" By the time we went through Tirion identifying all of the galaxies visible without moving the eyepiece, we had counted fourteen, and since one of the galaxies should have been a pair, there may have been fifteen in the one field at 25 power. The brightest was M87 at magnitude 9.2; the faintest but not the hardest to see was NGC 4458 at magnitude 13.5. It is strange how those listed as fainter are not always more difficult; because of the size and the condensation, this object was easier to see than some of the larger, but more diffuse, twelfth magnitude ones. I was impressed at how the 127mm refractor worked compared to the old 200mm schmidt-cassegrain since the twelfth magnitude galaxies around Kingston were stretching its abilities. Some of the edge-on galaxies are fascinating sights, appearing to start from nothing, form a fine line, and stretch across the eyepiece into nothingness again. NGC 4216 and NGC 4388 in the Virgo Cluster are two good examples, as are NGC 3877 and NGC 4026 in Ursa Major, the latter bulging ever so slightly in the middle.

When Larry grumbled a bit, I gave back his 40mm and went on to his 22mm Plossl, an eyepiece that gives about 1.2 degrees of field at 46 power. I prefer about 50 power for general viewing, since it gives good detail but still a fairly wide field. Since Larry's 81mm instrument has about the same focal length as the 127mm, we started to compare the images. Now that the lens has been figured to near perfection, the images are very fine indeed. With over twice the light grasp, the 127mm gives images that are noticeably brighter. The colour may be a bit better in the longer focus achromatic than in the short focus apochromatic, noticeable however only when viewing double stars and such objects. While seeing objects near the zenith such as M51, M101, M106, M97, M108, and M109 and several NGC's, we trundled from scope to scope to compare the view at different powers. I concluded that refractors perform at a level over twice that of a comparable sized reflector, and so recommend that considering the purchase of a new scope, consider the purchase of a refractor despite their higher aperture-for-aperture cost.

We gradually worked our way down from the zenith. I looked at M13 while Larry started to hunt down 3C273, a quasar in Virgo. Then I found M65, M66, and nearby NGC3628 which make a very nice trio. Exhausted and in a state near collapse, I never did find out whether Larry located the quasar. I had hoped to last until Saturn rose, but as it was still just a bright spot low in the trees, I packed it in. Larry was also beginning to fade; however, he was still plugging through Virgo when I said, "Good night!"

All in all it was a very good night indeed. The first time out with a new scope is always exciting, and I was pleased with the performance of this one; all the parts worked well. The seeing also had been very good and the transparency was excellent. I can hardly wait for the next clear night. Until then ...

THE TORONTO GENERAL ASSEMBLY

On the Victoria Day Weekend this year the astronomers of our Society, both professional and amateur, gathered in Toronto for the series of activities that make up the big event know as the General Assembly.

On Friday, May 15, the weekend began with the Meeting of National Council which is reported elsewhere in this newsletter, and later in the evening a wine and cheese reception was held complete with its Murphy's Law Slide Contest and the Annual Song Contest. Our Centre had one entry in the former when your editor "braved the throng" to show what can transpire when one tries to observe in the mosquito or blackfly season, but it was disappointing that David Levy had not yet arrived in time for the Song Contest at which he and Peter Jedicke have many times represented the Kingston and London Centres.

On Saturday there were a number of excellent papers presented, including the invited paper from Dr. Garrison, the head of the University of Toronto's astronomy program in Chile, who told in considerable detail about the discover of Supernova 1987a by Ian Shelton. For relaxation in the evening, the Toronto Centre provided a boat cruise of Toronto Harbour on the "Mariposa Belle".

On Sunday there was a chance for all present to meet the astronomers who had presented entries in the display contest. This year David Levy presented some marvellous drawings of Halley's Comet. Your editor presented a project on the observation and photography of the April 14 penumbral lunar eclipse. The Annual Meeting of the Society was attended by over 100 delegates, perhaps more than have attended any such meeting in over a decade. There was also a special meeting at which any member of the Society had an opportunity to express ideas about the long-range direction that the Society should take, the ways in which the Endowment Fund could be put to use, and projects that might be appropriate for the 1980's. The Annual Meeting welcomed a new Secretary of the Society, Dr. David Tindall of the Halifax Centre.

A very fine banquet was held at the Park Plaza Hotel, followed by the presentation of the Awards including the Service Award to Mr. Peter Broughton and to Mr. Cyril Clark, both of the Toronto Centre. The Chant Medal was presented to M. Damien Lemay of the Centre de Quebec in recognition of the superb photographic atlas of the sky which he produced several years ago.

On Monday there was a chance to tour the David Dunlap Observatory in Richmond Hill. An excellent introduction to the facility was given by the director, Dr. Fernie, and other astronomers answered questions about the telescopes and the observtion programs that are being done there.

All to soon the weekend was over and it was time to leave, but we will have a number of fine memories of "G.A. '87".

From all those who attended a hearty "Thank you!" should go to the members of the Toronto Centre's Planning Committee; it was an interesting and pleasant event that reflected a great deal of organizational work.

FOR YOUR COMPENDIUM OF ESOTERIC FACTS

Many of us have heard of Stephan's Quintet, a grouping of faint galaxies in the constellation Pegasus, and some of us may have even observed it if we had access to a relatively large amateur telescope. Did you know that there is also a group of six galaxies that is even more challenging but is a "possible target" for the amateur observer. It is the grouping known as Seyfert's Sextet, also known as NGC 6027 found at R.A 15h 59.2m, Dec.+20° 45' (epoch 2000.0). It is in the constellation Serpens Caput and is marked on both Charts 7 and 8 of the Tirion SkyAtlas 2000.0, and is listed in Burnham's Handbook on page 1763 where it is described as a group of **five** galaxies of magnitudes 14 and 15, but the photograph in the same text on page 1793 shows a group of at least six galaxies.

While observing this group on a very clear night in June, using an instrument of 36cm

aperture, I was able to detect about four of the galaxies of Seyfert's Sextet, and possibly another with averted vision. If you are looking for a "deep-sky challenge" in spring or early summer sky, then try Seyfert's Sextet, and let me know how many you can detect.

REPORT OF THE MAY 1987 NATIONAL COUNCIL MEETINGS

The National Council of our Society held two meetings on the occasion of the 1987 General Assembly in Toronto, Ontario. Both were held on the campus of Victoria College in the University of Toronto, the first on Friday, May 15, and the second on Sunday, May 17, following the 1987 Annual Meeting of the Society. The National President, Mrs. Mary Grey, presided at both meetings, and seventeen of the twenty Centres of the Society were represented.

Meeting of Friday, May 15

The essential agenda items of the first meeting included reports from all the officers and standing committees of the Society, and a number of other important decisions.

The President's report noted the concern within the astronomical community for the continuing government cutbacks in funding, which had meant the virtual closing of the Algonquin Radio Observatory. The President thanked Mr. Broughton for his six years of service as National Secretary, and Council extended a welcome to the new Secretary, Dr. David Tindall of Halifax. The Treasurer, Dr. Cbou, reported a healthy increase in the assets of the Society over the past year, and the accumulated deficit of the Society had been totally retired and there was an operating surplus at the moment of about $20000. The Interim Income Statement for the first four months of 1987 showed that Journal subscriptions and Observer's Handbook sales were up, and overall there was a healthy balance with which to face the remainder of the year.

Approval was given to a motion from the Editor of the Observer's Handbook to have the price for the 1988 issue increased by $1. to $10. for a single copy and other bulk-order prices were increased by $0.50. Council approved a motion to allocate up to $5000 for advertising for the 1988 Observer's Handbook.

Mr. Beattie, the Librarian, noted that of the 253 books that had been removed from the Library shelves and were offered to Centres, 98 had been requested by five of the Centres and the remainder were still available if Centre Librarians wished to make a request.

The report from the Honorary Members Committee noted that Professor Hanbury Brown had accepted the Society's invitation to become an Honorary Member. The death of another Honorary Member was noted: Dr. Woolley of South Africa had recently passed away. Approval was given for the purchase by the Society of a computer software package, copies of which would then be distributed to the Centres.

The chairman of the Constitution Committee reported that the committee had completed the second draft of a revised set of bylaws for the Society; they would be presented to Council for discussion in September and presentation to the Society was anticipated at the General Assembly in 1988.

The Astronomy Day Coordinator noted that reports had been received from four of the Centres of a successful Astronomy Day the previous Saturday, and more reports were requested from other Centres. The announcement was also given that in 1988 International Astronomy Day would be celebrated on Saturday, April 23.

Captain Auclair of the Cape Breton Astronomical Society presented a formal invitation for the Society to hold the 1989 General Assembly on the Canada Day Weekend at the Canada Coast Guard College in Sydney, Nova Scotia. Mr.McCallum of the Ottawa Centre also made apresentation for the Ottawa Centre's hosting the General Assembly at the same time. Council approved the invitation from the Cape Breton Astronomical Society and Councillors were pleased with the amount of planning that had already taken place for theevent.

Meeting of Sunday, May 17

During the second meeting Council appointed its standing committees for 1987-1988. These were (with the chairman's name given in brackets): the Awards (Mr. Franklin Loehde), Budget (Dr. Ralph Chou), Editing (Dr. Alan Batten), Executive (Mrs. Mary Grey),

Finance (Dr. Ralph Chou), Historical (Dr. Peter Millman), Honorary Members (Dr. Roy Bishop), Library (Mr. Brian Beattie), National Newsletter (Mr. Ian McGregor), Nominating (Dr. Roy Bishop), and Property (Mr. Kim Rowe).

Council approved a motion to increase the amount given for a first prize for an astronomy-related project in the Canada-Wide Science Fair to $100. and a one-year membership in the Society.

Approval was also given to a motion to extend travel assistance to all officers of the Society to cover travel and accommodation expenses associated with attendance at a National Council Meeting.

Another motion also approved would allow one part of the Speakers' Exchange Grant to be given to a speaker who went to another Centre, if something unforeseen prevented the other speaker from completing the exchange.

The next meeting of Council was scheduled for Halifax on Saturday, September 26, 1987.

Complete details of all the items discussed at both meetings may be found in the Minutes of the meetings which have been distributed to our Centre President and our National Council Representative.

The Minutes of the 1987 Annual Meeting of the Society, which took place on May 17, will be published in the October issue of the Journal.

OBSERVING A PART OF THE COMA-VIRGO CLUSTER OF GALAXIES

[NOTE: I was recently asked to write out my "pathway" through the Coma-Virgo Cluster of Galaxies. Obviously telling someone directions is not the essence of great literature; it is much like directing the tourist to the nearest grocery store. While observing in the region of this cluster of galaxies, with a telescope of modest aperture, one must procede, I have found, in a systematic way, or the number of galaxies will prove confusing, and one can quite possibly become "lost" amid the great number of both bright and faint objects. The "pathway" described below was used with a telescope of 355.6m aperture and a focal length of 3910mm. The eyepiece was a 32mm 2" Erfle. From these figures, those who wish may make a calculation of the precise field of view in the eyepiece.]

I begin my exploration of the Coma-Virgo cluster of Galaxies by going E from the star Beta Leonis to the group of 3 stars in a row running NW, beginning with the star 6 ComBer. Move W slightly to the spiral M98. Move E from the same star to the small but bright galaxy NGC4262.

I go back half-way to the star and N to second star in the 3-star row. Just north of this star is NGC4237.

Go back to NGC4262, go SW to a star, and then SW to M99 which is a large spiral. Go back up to the star (about one field) in the previous movement, and then straight E about one field to a pair of galaxies NGC4298 and 4302, which are very close and seem to appear as if one is almost encircling the other.

Go to the topmost star in the group of 3, and then due E to the faint galaxy NGC4312, and then slightly NE to M100 which is a spiral with a very bright centre. Then return to NGC4312, and move E to NGC4379.

Move back to the topmost star in the group of 3, and from it go N about 2 1/2 degrees past a group of 3 stars to the star 11 ComBer. NNE from this star is NGC4293. From a point just S of NGC4293, move E to M85 and NGC4394. (M85 seemed to have one very bright star in it, NNW of the central part.)

Return to the star 6 ComBer, and straight E to the star which is 15m R.A. E of 6 ComBer. Go S only 1/2 a field and E to 1488, and then further E to M91 (which is NGC4548). Then return to the former star.

Move S from it to the pair of galaxies, NGC4474 and NGC4459. The second one is very near a bright star. (There was also an unlisted galaxy between these last two.)

Then go further S (one field) to to NGC4477 and NGC4473. Move SSW in a line along these last two to one more NGC4461. One or two others are near it but are not marked on the Tirion SkyAtlas.

With NGC4461 centred in the field, move due E to M90. (Another galaxy unmarked on SkyAtlas can be seen in the southern part of the field during the movement E to M90.) Move back to NGC4461, and then go WSW to NGC4435 and NGC4438. Continue WSW to

NGC4402 and M86, and then go on WSW to M84 which is quite close and and can fit into the same field as M86. Another small galaxy is nearby, S on a line between M86 and M84. (It is unmarked on SkyAtlas 2000.0.)

Move back to M86 and centre it and move S to three fairly faint galaxies, NGC4425, NGC4413, and NGC4388. (See Jack Newton's B/W book, page 103.)

Move slightly further S and E to 3 galaxies, M87, NGC4478, and NGC4476.

Move all the way back to M90 via NGC4461. From M90 go SW to M89, and then due S to NGC4550. Another unnamed galaxy may be noted in the area.

From NGC4550 go SE to M58 (which is near a noticeable star.)

With M58 in the N part of the field, move E to M59, and E further to M60 which had the galaxy NGC4647 very near it on the NW side. Also in the field further W is NGC4638.

Move S to put M60 out of the field and then slightly E to NGC4660.

Thus ends one observing session in the Coma-Virgo cluster but there are many more galaxies to be seen in subsequent sessions.

REPORTS AND OTHER ITEMS

1. The months of April, May, and June each brought several clear nights in succession, and your editor was able to enjoy some deep-sky observing that was very pleasant. On the three nights, Apr. 30-May 1, May 1-2, and May 2-3, I saw respectively 24, 53, and 29 deep-sky objects. On each of those nights Pluto was seen as it moved fairly close to the star 109 Virginis and the galaxies, NGC 5740 and NGC 5746. During the months of April, May, and June, I made respectively 9, 12, and 14 solar observations. The largest sunspot numbers occurred in early April when there were numerous small spots; the smallest numbers occurred in early June, when I saw no spots over seven observations in the first 16 days of the month.

2. We offer a very sincere "Thank you!" to Dr. Gunter Wessel of the Syracuse Astronomical Society, who presented a very fascinating talk and slide show at our May monthly meeting. His video-tape showing the rotation of galaxies over enormous time periods was the best of its kind that I have ever seen.

   We also appreciated having Dr. Wessel and his wife join us at our Astronomy Day Mall Display the day after our meeting.

   Such an exchange was most beneficial for our Centre, and we hope that it can be continued in the future.

3. We thank David Stokes for an interesting two-topic presentation at our June meeting. His update on the observation of the April new moon was excellent, as was the report on his eclipse trip to the African coast for the very long solar eclipse of June, 1973.

   It is not every day that a member of our Centre receives international recognition, and it was great to learn that David Stokes had been invited to Washingto in May to conference of international experts on the subject on lunar calendars and the early sightings of the new moon. Congratulations, David!

4. Over the next two months the planets Saturn, Uranus, and Neptune will continue to be well-placed for observation. Jupiter will also be seen by more observers than have noticed it in the last few months.

   Meteor observers should begin watching for Perseids at any time now. This very famous shower may be slightly disappointing at the time of maximum on the night of Aug. 12-13 because that date happens to be shortly after full moon, but it is a shower that extends over at least a whole month and I think some have been observed already.

5. I must explain that, for several reasons, I have combined what is usually two issues of our newsletter. A paucity of materials received was only one reason. Such is a condition to which I have grown accustomed; however, with the recent load of work to be done on behalf of National Council, I simply did not have the time to devote to the writing of large sections of the newsletter in the last two months.

6. The dates for our upcoming meetings are:

July 10	Leo Enright	Several Topics: The G.A. The Venus Occultation
August 14	Stellafane Reports	
September 11	Open	

October 9	Possibly our National President
November 13	Open
December 11	Our Annual Meeting

Our meetings begin at 8:00 p.m. and are held in Room D-206 in MacIntosh-Cory Hall at Queen's University.

7. Contributions for REGULUS are more than welcome. The address is:
R.A.S.C. - Kingston Centre,
Box 1793,
Kingston, Ontario
K7L 5J6

Clear skies!
Good observing!

Leo Enright