R E G U L U S

THE NEWSLETTER OF THE

ROYAL ASTRONOMICAL SOCIETY OF CANADA - KINGSTON CENTRE

NOVEMBER, DECEMBER, 1987

SECOND COMET LEVY FOR 1987

David Levy has done it again in 1987, discovered his second comet of the year. On the Thanksgiving Weekend, when most Canadians were enjoying their feasts of turkey and the company of their families, our Centre's comet-hunter **par excellence** was perched on the roof of his house scanning the clear evening skies for indications of faint comets. During his searching session on the evening of Saturday, October 10, at about 8:00 p.m. local time and after he had been scanning the western horizon for about a half-hour, he spotted a faint patch of light in the northwestern sky. It was in the constellation Bootes, and east-southeast of the very bright star, Arcturus. In fact, it was not far from the double star, Pi (29) Bootis, and subsequent observations showed that the fuzzy patch was moving fairly rapidly eastward toward the star omicron (35) Bootis.

As David's excitement started to build and he became more sure, over the next day, that what he had seen was a comet and not a faint galaxy, he notified a number of R.A.S.C. members to obtain assistance in confirming his suspected discovery. Thus after sunset on the evening of Sunday, October 11, Terence Dickinson was able to see it in his refractor and to follow it for about an hour confirming motion and the fact that it was a comet. Rolf Meier of Ottawa, at the same time, was able to find and observe it for some time and, at least, to suspect motion. Unfortunately, your editor was away because of the Thanksgiving Weekend, and so was unable to receive the phone call from David that might have meant sharing in the excitement of the evening. Being far away from the telephone and observing with only 7X35 binoculars under very clear skies could not match the thrill of a possible early sighting of one of David's comets. Thus on Sunday evening, after several confirmations, David was able sent the confirming telegram to IAU Headquarters, since on the previous evening he had sent only a preliminary report of a suspected sighting along with a report of the magnitude of Comet Bradfield.

Each of David's comets has had a humorous anecdote associated with it. Knowing that this one would be "near the end of the alphabet" (See the next article.), David added in his reporting telegram to Dr. Brian Marsden of Cambridge, a few words of "apology in case this discovery should cause confusion as to how it should be numbered."

There was also an interesting event without which the comet might not have been discovered. Some time ago David noticed that from the observatory housing "Miranda", the sixteen-inch telescope with which he had made his previous discoveries, he was prevented by trees and other obstructions from seeing as low to the horizon as he wished he could. Therefore, he had arranged to have built on the roof of his house an observing platform big enough to hold "Pegasus", his eight-inch f/6 Cave telescope, which remains there permanently in a covered shelter. The final stage of the platform construction had been finished only on Wednesday, October 7, the date of the penumbral lunar eclipse when it was used for the first time. Just three nights later that platform was the scene of a comet discovery. Little wonder that David found the flow of adrenalin was almost overpowering. He says it was so great that he was almost ill, and a friend, Jim Scotti, assisted him in confirming the coordinates of the comet on Sunday evening.

Thus on Sunday night, after he made his final confirmation, there was no doubt that the object was indeed a comet, and the following day the IAU Circular carried the report of the discovery of Comet Levy.

Although, by the time this is read, the information will be quite dated, I include the following positions for Comet Levy, 1987y, at 0^hUT on two dates:

DATE	EPOCH 2000 R.A.	DEC.
OCT. 24	$15^h\ 14^m$	+14.7 degrees
OCT. 28	$16^h\ 08^m$	+13.3 degrees.

From all the members of our Centre, congratulations, David! Remember what I said in January about there being two future Comets Levy out there in the remote reaches of the solar system unseen and faintly glowing at twentieth and twenty-second magnitude. You see, one of them has now been discovered. We await news of the next one before too long. The very best of continued good luck to a most worthy comet discoverer who now has three comets to his name!

1987 - A BANNER YEAR FOR COMETS

Just when everyone thought that 1986 had been the greatest comet year ever, along came 1987 which proved to be an even greater year for comet-seekers. Comet Halley and all its attendant publicity, was with us last year, and there were the "fly-bys", and before that there was the bright comet Giacobini-Zinner and the excitement that it generated.

However, even 1986 with all its comet activity (or **any other year in recorded history,** in fact) was no match for the current year regarding numbers of comets discovered and recovered. Already, and it is only October as I write this, there have been no less than **twenty-eight** comets discovered and recovered since that first one was sighted in a backyard in Tucson, Arizona early in the morning five days after the beginning of the year. David Levy started off this unusual year, and with his October observing he is adding to it.

For a long time the International Astronomical Union has had a policy of giving names to newly discovered or recovered comets according to the letters of the alphabet. Thus, David's January comet became Comet Levy, 1987a, and the next one was 1987b, and so on. His October comet was Comet Levy, 1987y. With the corrent flurry of activity, there are now more comets for this year than there are letters in the English alphabet. There have been three discoveries already since David's "October event". As a result, the IAU has already adopted a new policy regarding the naming of its comets. The system will work like this: for this and future years, if there are more comets than letters in the alphabet, the comets after "z" will be "a_1", "b_1", "c_1", and so on with the attached numbers written as a subscript.

The recently discovered comets are Comet Shoemaker-Holt, 1987z; Comet Meuller, 1987a_1; and Comet McNaught, 1987b_1.

It has indeed been an exciting and bountiful year for those who both hunt for and observe comets.

REPORT OF THE SEPTEMBER 1987 NATIONAL COUNCIL MEPTING

The National Council of our Society held its annual September meeting during the afternoon of Saturday, September 26, 1987 at the Nova Scotia Museum in Halifax, Nova Scotia. The National President, Mrs. Mary Grey, presided, and ten Centres of the Society were represented.

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

The President's report noted that three asteroids had recently been named after prominent Canadian scientists. The President, who had recently spoken to several of the Centres of the Society, had plans to speak to five more of the Centres. The Secretary, Dr. Tindall, was able to report that twenty new unattached memberships in the Society had been requested since the time of the General Assembly. The Treasurer, Dr. Chou, presented the Interim Financial Statement As At August 31, 1987, and it was approved by Council; it showed a very healthy operating surplus, largely because of foreign exchange and because the sales of **The Observer's Handbook** had been better than expected. At the Treasurer's request, $10000 was transferred to both the Ruth Northcott Memorial Fund and to the Endowment Fund, in order to raise the principal in these funds to meet current and expected demands upon them. The Librarian, Mr. Beattie, reported that all 253 books that had been removed from the Library shelves had been either sold to Centres of the Society or to an individual member of the Society who would make use of them, and the next phase in the development of the Library would be a consideration of the necessary acquistions to make the facility a centre for the history of astronomy. The editor of the **Journal**, Dr. Batten, gave notice that, after seven years, he wished to inform Council that he would be resigning from that position in one year, and Council,

accordingly, established a committee to search for a successor. On the editor's suggestion, Council also approved a motion to share with the Canadian Astronomical Society one-half of the costs of the publication of the annual Hogg Lecture.

At the request of the Awards Committee, Council approved the awarding of nine Membership Certificates (to members of the Ottawa, Vancouver, and Windsor Centres) and five Messier Certificates (to members of the Halifax Centre). Dr. Bishop, the editor of **The Observer's Handbook**, reported that the 1988 issue, the largest one in the history of the publication, would be off the press within a monthy and it was being advertised, with the endorsation of nova-discoverer Ian Shelton, in a half-page colour ad in **Sky and Telescope.**

A recommendation from the Honorary Members Committee that Dr. Helen Sawyer Hogg become an Honorary Member of the Society was enthusiastically approved by Council. The report from the Nominating Committee urged members of the Society to consider the fact that five positions on Council would become vacant next year, and members should think about making nominations for these positions. A motion from the Computer Use Committee that the National Office of the Society join the NetNorth electronic mail network was approved. (This network is one which links over 1700 educational and scientific organizations around the world.) Mr. Watson, the Chairman of the Constitution Committee, reported that the presentation of the second draft of a revised set of bylaws for the Society would have to be delayed because there were still several major matters on which the members of the committee had not reached a consensus.

Council approved a motion to limit the Messier Certificate to those who find the Messier Objects without the assistance of computer-driven telescopes. Support was also given by Council to a motion of concern from the Calgary Centre regarding the proliferation of space debris and light pollution.

Mr. Enright, the Astronomy Day Coordinator, noted that, in 1988, International Astronomy Day would be celebrated on Saturday, April 23. The President noted that the centennary of the incorporation of the Society was approaching and members should begin to think about marking the occasion in a suitable way.

Complete details of all the items discussed at this meeting may be found in the Minutes of the meeting which have been distributed to our Centre President, Mrs. Hicks, and to our National Council Representative, Mr. Van Asperen.

TWO BOOK REVIEWS

Exploring the Night Sky with Binoculars by Patrick Moore. Pages 203; 17cm X 25 cm. Cambridge University Press, New York, N.Y. 1986. Price U.S. $19.95 (hard cover).

Observing the night sky with, not a telescope, but a good pair of binoculars can be a far more profitable and enjoyable experience than many beginning amateur astronomers believe. Caught up in a frenzy to own a telescope of a certain aperture, many beginners neglect "the basics of observing", and, never savouring the wide-field views of the heavens, soon become frustrated with the small field of view of their telescope, and may well turn away in diapppointment from their new-found interest. In Exploring the Night Sky with Binoculars the well-known British astronomy writer, Patrick Moore, tries to remedy this sad situation. He tries to show the binocular user, both the beginner and the experienced, that in almost all areas of the sky there are many fascinating objects to be observed with a low-power wide-field instrument -- the brighter stars of widely different colours, the open and globular clusters, the variable stars (at least, the many that for all or a large part of their cycles are above eighth or ninth magnitude), the brighter of the galaxies and nebulae, not to mention hundreds of features on the lunar surface.

After a dozen pages of introduction to the motions of the sky, a section that would have been better omitted and substituted with a reference to more extensive sections in other books, the author evaluates the various kinds of binoculars he has used, calling the 7 x 50's "an excellent choice for general viewing", and the 11 X 80's "very fine", and the 20 x 70's ones that can give "splendid results" including a wealth of lunar detail but with a field too small for comfort and to be used only if there is serious specialized observing to be done. Almost any experienced user of binoculars would have to agree with these evaluations.

By far the most important part of the book, and spread over 99 pages, is the chapter which considers all 88 constellations in the sky with regard to what can be seen in each

using only a pair of binoculars, from 7-power to 20-power. As would be expected there is more thorough treatment for constellations observed by northern hemisphere observers. The stars are generally listed, not according to the Bayer designation, as is commonly done in such texts, but according to magnitude, and interesting facts are given such as the relating of the spectral type of the star to the colour as seen in the binoculars. The accompanying map of the constellation, in most cases, shows the stars and other objects described, whether variable stars, clusters or relatively bright galaxies. In these maps a genuine effort was made not to clutter up the scene with too many stars and objects not visible or of little interest to the binocular observer, and for this, the author is to be congratulated. On reading this section the observer will probably find himself or herself jotting down or circling names of certain objects which must not be missed on the next observing session. The descriptions are brief and to-the-point and certainly realistic regarding what a beginner may hope to observe even with 7 X 50, or possibly 7 X 35, binoculars from a dark site.

If any fault is to be found in this key section of the book, it is with an excessive caution in some statements and in a certain carelessness in the use of some terms and in the relating the descriptions to the maps. On page 73, under the constellation Canes Venatici, the author says he has "never been able to see M51 with certainty even in 20-power binoculars." This reviewer has often found it an easy sight in 11-power binoculars; the same applies to the statement about M82 on page 150. In a similar vein is the statement on page 75 that the variable, S CMi, "is of no real interest to anyone without a telescope," since it does not rise above seventh magnitude. The binoculars being used are very capable of showing many interesting variables and other objects to ninth magnitude and fainter; on page 112, the section devoted to Lepus lists only one variable of interest, but I have found four or five of real interest to the binocular observer. In the last line on page 80 and the seventh line on page 139 and in many places elsewhere, the terms "power" and "powerful" are used incorrectly instead of the words "luminosity" and "luminous." More care should have been taken in relating the descriptions to the accompanying star maps, as evidenced on page 60 where the star labelled 57 Andromedae should be 56. The star R LMi is described on page 111 but omitted from the map; similar cases exists for 5 Serpentis on page 142, 9 Sagittae and 31 and 32 Vulpeculae on page 155, and 64 Tauri on page 144 (the latter of which could easily be confused with 68 Tauri which is on the map but also unlabelled). On the other hand it is occasionally puzzling to see fairly bright objects labelled on the maps but no mention of them in the description, as though they had been forgotten about - for example, R Vir and S Vir on page 153. Many readers will also notice that the word Cauda in the name Serpens Cauda should be translated "Tail", not "Body", as stated on page 142, and that the name of the lunar crater, Aristoteles, is misspelled on page 160.

Future editions of the book will probably correct the errors; doubtless there will always be those who disagree with the author's descriptions of objects he has observed or colours he has seen: such is as it should be. The main aim of the book is to have more observers use and enjoy using binoculars for the pleasant view of the heavens which they afford.

The chapter devoted to solar observing could have been omitted and the usual warnings about the dangers included at the beginning of the text. The section on the moon and the photographs of the moon at various stages in its waxing and waning cycle can be most helpful for a beginner. The chapter on observing the planets and the one called "Comets and Shooting-Stars" would have been better omitted; very little is added regarding the actual observation of solar system bodies. In fact, the suggestion in the paragraph on planetary conjuctions (page 183) that the Mars-Uranus event of February 22, 1988 and the Mercury-Mars event of August 5, 1989 last 40 and 47 seconds respectively can be very deceiving, for beginners trying to understand phenomena that can be observed as interesting in binoculars for many consecutive days.

Every binocular observer should have one of the currently available books on that aspect of observing. Patrick Moore's contribution to the field will help to make many amateur astronomers aware of what they have missed in the night sky by not using binoculars. This book, then, is well worth considering.

Astronomy, A Self-Teaching Guide. Third Edition by Dinah L. Moche. Pages 291; 17cm K John Wiley & Sons, New York, N.Y. 1987. Price U.S. $12.95 (soft cover).

Many simple textbooks of astronomy have quickly become dated over the past several decades. One basic textbook whose author has made a fine effort to keep it updated is

the one called **Astronomy, A Self-Teaching Guide** by Dinah L. Miche, a science popularizer and professor of physics and astronomy at City University of New York. This book first appeared in 1978, had a second edition in 1981, and now the third edition is one that incorporates some of the latest information on such discoveries as those relating to Halley's Comet, Uranus and its satellites, and distant galaxies and quasars.

Far from being an observing guide, this is compendium of basic astronomy for those who wish to learn the rudiments of the science in an interesting, carefully paced and systematic manner. The learner may choose to cover any amount he wishes at one sitting. There are review questions after each small section and also tests at the end of each chapter. The review questions may be answered quicky and informally and the expected answers, which should be covered up while one is progressing through them, are given a couple of lines below the question. They are not intimidating but merely tell the reader/learner if he is ready to move ahead to slightly store advanced material.

Most people will find this text much more interesting than the average standard programed text of an astronomy course. Much of the basic information is enlivened with simple drawings that should be easy to understand by those whose background in science or mathematics is limited. On the other hand, the reader never finds himself treated in a patronizing or condescending way. It is assumed he wants to know something about the topics of current interest to most astronomers, whether it be the findings of the Viking Orbiters 1 and 2 regarding the planet Mars or the theories of the origin comets and Giotto's discoveries about Comet Halley.

Unlike most texts which begin with the moon and planets and "move out" into the universe, this text starts ~~further~~ "further from home", but there is no reason why the reader could not choose to begin with almost any chapter. A listing of the chapter headings may be helpful: Understanding the Starry Sky, Light and Telescopes, The Stars, Stellar Evolution, Galaxies, The Universe, The Sun, Understanding the Solar System, The Planets, The Moon, Comets Meteors And Meteorites, Life On Other Worlds? The Introduction, entitled The Cosmic View,I found too short giving no hint of the existence of groups of galaxies which we now know to be a fundamental fact of the universe. Omissions such as this one are compensated for by the inclusion of practical experiments where possible to involve the learner and "bring home" ideas that otherwise might be found too difficult.

IN MEMORIAM

ENRICO KINDL

Members of our Centre were greatly saddened in mid-August to learn of the sudden death of Enrico Kindl. Enrico had been a very active member of our group for a good number of years, and had been known as a keen observer, telescope builder, and promoter of the science of astronomy. As a young student, he had joined our Centre in the mid-1970s and had taken part in numerous activities including many star parties. He became the Treasurer of the Centre and held that position for a number of years. His interest in science, and astronomy in particular, was maintained throughout high school and pursued more seriously at McGill University and at the University of British Columbia where he was a PhD. student in astrophysics at the time of his death.

Enrico is missed by all who knew him, certainly by many members of the Kingston Centre. We extend our sympathy to his family and relatives.

FOR YOUR COMPENDIUM OF ESOTERIC FACTS

Most astronomers have heard of Cassini's Division, the dark gap seen between rings A and B of Saturn, and some may even know that the seventeenth century Italian astronomer, Giovanni Cassini, who discovered this gap, was also the discoverer of four of Saturn's moons. But, did you know that this Cassini's son was **also a noted astronomer, and his name is also associated with the planet Saturn**? It is true. Jacques Cassini, who, in the year 1712, succeeded his father as the head of the Paris Observatory, was the one who compiled the first tables showing the orbital motion of the satellites of Saturn. The younger Cassini's astronomical studies led to the first publication of tables for the position of other planets, as well, and also those for the known moons of Jupiter, as well as for the sun and moon and many of the brighter stars.

REPORTS AND OTHER ITEMS

1. The months of September and October have brought many clear nights for observing. In the western evening sky, Comet Bradfield has been a bright binocular object, almost at naked-eye magnitudes, as it sailed through the constellation Ophiuchus. One evening, October 21-22, it was very close to the globular cluster M10 as it moved in a north-easterly direction. Planet observers cannot help being thrilled with the chance to observe Jupiter over the past few weeks. The giant planet has certainly dominated the evening sky because of a recent opposition that has brought it closer to earth than it has been in many years. Its disk is very large in the eyepiece and some nights of good seeing have allowed views of the bands that were quite remarkable.

   Solar observers may have noticed that Relative Sunspot Numbers have varied widely over the past two months; they were over one hundred on October 13 and 14; yet they were extremely low on certain dates, reaching only 12 on September 24 and zero an October 23.

   Unfortunately, the penumbral lunar eclipse of October 6-7 was totally clouded out from this area. What was interesting was that some reports from other parts of the continent have suggested that there was a slight indication at the moon's south pole of a partial eclipse. It seems that the earth's shadow was slightly larger than had been predicted, no doubt because of extensive cloud cover in some areas. Is there any consolation in imagining that the clouds that prevented us from seeing the event contributed to giving the earth a "larger effective diameter" and so they have helped others to see the event as a very slightly partial eclipse instead of the penumbral eclipse that had been predicted!

2. Over the next few months Jupiter will continue to be a delight for planet observers. Those who regularly watch meteor showers should plan to observe the Andromedids which peak on the night of November 14-15 and the Leonids which reach their maximum on the night of November 17-18.

3. Here is another reminder about renewing our memberships. The 1988 membership fees are now overdue; in fact, they were due on October 1. The amounts are as follows: $30.00 for regular membership and $18.50 for youth membership.

4. Please do not miss our upcoming meetings:

   - November 13

   - December 11 - Centre's Annual Meeting - Election of officers for 1988.

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

5. Contributions for this newsletter are always welcome.

   Send them to

   Royal Astronomical Society of Canada.
   Box 1793,
   KINGSTON, Ontario
   K7L 536

Clear skies!
Good observing!
Happy holidays!

Leo Enright