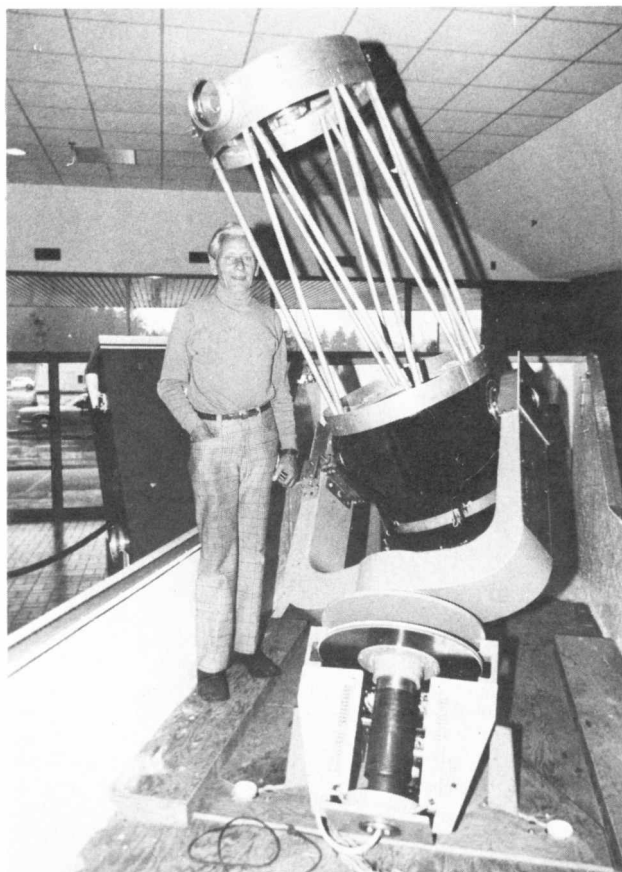


# NATIONAL NEWSLETTER

April, 1983

Supplement to the JOURNAL OF THE ROYAL ASTRONOMICAL SOCIETY  
OF CANADA

Vol. 77, No. 2



The Evans-Vander-Byl Telescope displayed by designer-builder Leo Vander Byl of Victoria Centre.  
Read all about it on page L29 of this issue!

*(Photo by Brian Whittaker)*

## NATIONAL NEWSLETTER

April, 1983

*Editor:* RALPH CHOU

*Associate Editors:* IAN MCGREGOR, B. FRANKLYN SHINN

*Assistant Editors:* HARLAN CREIGHTON, P. JEDICKE

*Press Liaison:* AL WEIR

*Redacteur pour les Centre français*

DAMIEN LEMAY

477 ouest 15ième rue,

Rimouski, P.Q., G5L 5G1

Please submit all materials and communications to:

Dr. B. Ralph Chou  
School of Optometry  
University of Waterloo  
Waterloo, Ontario  
N2L 3G1.

Deadline is six weeks prior to month of issue

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### Editorial

As I write these words, February is approaching its half-way point, and a light drizzle is falling over Toronto. Why do weather conditions this year seem to have shifted patterns by about 80° westward in longitude? In this issue, Richard Linkletter of Bremerton, Washington provides us with a possible explanation. This issue also contains some interesting observations from Winnipeg and Kingston, a description and history of the Society's library, the conclusion of Frank Shinn's article on tides, and Rob Allen discourses on the low-pressure problems of travel aboard the Space Shuttle.

This year's General Assembly promises to be a most interesting meeting, as it will feature joint sessions with the A.A.V.S.O. and the A.G.A.A. (see the February issue for details). The Quebec Centre is pulling out all the stops to make this a memorable meeting. This is an important event for you, the members, to gather, exchange ideas and information, and tell your Council and Editors how well we have performed in the last year. Have we provided the services you want? Have we managed the Society's affairs to your satisfaction? Are you satisfied with the publications, and if not, why not? Member input is an essential part of the decision-making process in the R.A.S.C. In this time of general economic hardship the Council needs your guidance and support in setting the direction which the Society will follow (see Leo Enright's report on Council's January meeting). Your representatives cannot read your minds – so come to the GA., and participate in all the activities and discussions; in short, get involved!

B.R. Chou

## Letters To The Editor

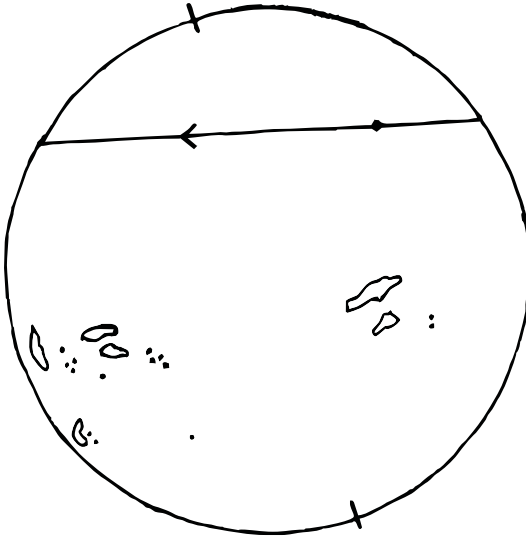
### A MYSTERIOUS OBJECT

On January 14, 1983, I observed a perfectly round black orb crossing the sun. It started at  $17^{\text{h}}54^{\text{m}}23^{\text{s}}$  Universal Time and ended at  $17^{\text{h}}54^{\text{m}}26^{\text{s}}$  Universal Time and lasted three seconds. On a projected solar disk with a diameter of 18 centimetres, the object had a diameter of one-half centimetre.

I was speaking to Mr. Ed Barker of the Manitoba Planetarium and he suggested observations from other parts of the province or country could assist in identification. I also wrote to Mr. Peter Taylor of the A.A.V.S.O. Solar Division who then reported it to the headquarters of the A.A.V.S.O. in Cambridge, Massachusetts.

I would appreciate the assistance of any R.A.S.C. members in identifying this object.

Todd Lohvinenko  
1836 Legion Avenue  
Winnipeg, Manitoba R2R 0A8



### BRIGHT FEBRUARY FIREBALL

While I was observing last night I saw what was the brightest meteor I have ever seen. At 9:06 p.m. E.S.T. (0206 U.T. Feb 9, 1983), I was startled, in fact terrorized, by an extremely bright and sudden glow that surrounded me. Turning away from my telescope and to the north, I saw an extraordinarily bright, green meteor descend through the sky from a point about 30 degrees in altitude and 345 degrees in azimuth. It took about five seconds for the object to descend to the northern horizon. I would estimate its brightness as between  $-10$  and  $-12$  magnitude. It could certainly be compared with the brightest full moon.

Radio and television reports announced bright celestial objects being seen in a number of places throughout south-eastern Ontario including Ottawa, Peterborough and Kingston.

Leo Enright  
Box 196  
Sharbot Lake, Ontario K0H 2P0

## Winter Activities of R.A.S.C. Centres

by Peter Jedicke  
Assistant Editor

HAMILTON: A magnificent aurora was witnessed at the Hamilton Centre Observatory on the evening of January 9, by Mike and Heather DeVillae. Heather called Mike's attention to "very strange streaky clouds," and Mike said these "began to shimmer and dance exciteably across the sky." Ten minutes later, "the sky seemed to be violently ripped by seemingly dozens of shimmering spikes of bright white light." This display was so widespread that it was also reported in Winnipeg.

WINNIPEG: Guy Westcott and Andrew Lawless enjoyed the same event as that seen near Hamilton, and called it "the brightest and most pronounced auroral display that we have ever seen." They said "it cast noticeable shadows on the ground and was audible. Colours were bright and easily distinguished by naked eye – vivid reds, purples, blues and greens, and, in one instance, the display burst overhead, a brilliant white, almost like a lightning flash."

The same two Centres shared another happy event when Mike and Denise Pendleton moved west from Hamilton to Winnipeg. Daughter Courtney Deanne predicted the aurora by entering this world exactly one week earlier!

HALIFAX: More than 30 members of the Halifax Centre participated in observations of a grazing occultation of Mars by the Moon on November 19. Observers in Dartmouth, 500 m outside the predicted graze path, saw an occultation for just over 2 minutes. Other observers located nearby, at Bedford and Halifax, also saw the event.

OTTAWA: At the Ottawa Centre's regular monthly Observer's Group meeting on December 3, Professor Preston Cloud from the University of California at Santa Barbara gave a talk on "Planetary Evolution: the Terrestrial Perspective." Brian Burke, Rob McCallum, Dave Lauzon, Gary Susick and Barry Matthews also made short presentations.

MONTREAL: Leo Nikkinen, a member of the Montreal Centre for 17 years, received his R.A.S.C. Membership Certificate at the annual Christmas Party, on Friday, December 17, at the Observatory. Dr. Fortier played Santa Claus, and presented gifts to the Centre, including a lens case kit and two books. Refreshments described as "generous" were provided by Debbie Boyle, Mrs. Widdop, Mr. Morton and Steve Cekovic.

LONDON: National President Franklin Loehde of Edmonton visited the new Children's Museum in London, and was the special guest at the London Centre's annual banquet, on January 28. The banquet was held at Fanshawe College, and Mr. Loehde presented R.A.S.C. Membership Certificates to Mike Flegel, Paul Clinton and Peter Jedicke. The Centre's Merit Award was won by Dale Armstrong.

TORONTO: The first printing of the Centre's *1983 Directory of Observers* edited by Brian Beattie was almost completely sold out at the Centre's February 25 meeting. The Directory contains information on almost 300 members interested in getting together with other members to observe.

NOTE – This section is a regular feature of the *National Newsletter*. Address your comments to the *NNL* Editor. Centres are encouraged to include reports of activities in their newsletters and to send one copy regularly to the writer, in care of R.A.S.C. London Centre, P.O. Box 842, Station B, London, Ontario, Canada, N6A 4Z3. Please – not all Centres are sending reports of their activities! If your Centre does not publish a newsletter or include activities in its newsletter, you should write or call with details. News received before April 1 will be considered for the June issue, and late items may be telephoned evenings to (519) 433-2992, after the long-distance rates go down.

## A Report of the January National Council Meeting

by Leo Enright  
National Recorder

The National Council of the R.A.S.C. met in the Society's Library in Toronto on Saturday, January 29, 1983. Our President, Mr. Loehde, presided, and twelve centres were represented by those who attended.

The agenda included reports from the officers and standing committees as well as a number of important items. The budget for the 1983 fiscal year was approved. After hearing a report from the Auditor, who urged an examination of the Society's financial structure, Council voted to establish a committee whose purpose would be to review the financial affairs of the national organization. The Secretary, Mr. Broughton, noted a letter from the Ontario Ministry of Citizenship and Culture informing the Society that its annual grant which had been received from the Province of Ontario for the past 90 years, and which last year totalled \$1,600 would probably be eliminated.

There was a discussion of the notice received from the Society's landlord informing us that renewal of the lease would mean a very substantial increase in the rent. Council decided to reactivate its Property Committee whose mandate is to renew the search for a suitable property for the Society's headquarters.

The Awards Committee presented its recommendations on recipients for the awards to be presented at the Quebec General Assembly in May. Council also approved a request from Quebec Centre for funds which will enable it to provide simultaneous translation services at the General Assembly.

Reports from the Editing Committee and the Editors of the *Journal*, *National Newsletter* and *Observer's Handbook* reflected their concern and efforts to provide high quality publications at a reasonable cost to all members.

Details of these reports and of the other items discussed at the meeting may be found in the minutes of the meeting which were mailed to all Centre Presidents and National Council representatives.

## Amateurs Affiliate with Professionals

by Ian G. McGregor  
Associate Editor

When in 1969 the International Union of Amateur Astronomers (I.U.A.A.) was formed, it was hoped that the new organization would not only serve to co-ordinate the activities of amateur astronomers around the world but also permit a better liaison to be achieved between amateur and professional astronomers. Last summer the mutual affiliation of the I.U.A.A. with its professional counterpart, the International Astronomical Union (I.A.U.), was confirmed by the two organizations.

The International Union of Amateur Astronomers is an amateur organization run by volunteers. Like the International Union of Astronomers, its work is conducted by Commissions (e.g. Variable Stars, Lunar) which focus on special areas of observational amateur astronomy and publish summaries of recent developments supplemented with extensive bibliographies. Every three years the I.U.A.A. holds its General Assembly. These have been held in Bologna, Italy (1969), Malmö, Sweden (1972), Hamilton, Canada (1975), Dublin, Ireland (1978), Brussels, Belgium (1981) and in the planning stage Bologna, Italy (1984). The I.U.A.A. publishes the *Proceedings* of its General Assembly and a quarterly newsletter *Communications*. There are two categories of Union membership, Corporate and Individual, and membership applications are available from Mr. C. Kilbride, Executive Secretary, I.U.A.A., 60 Laurel Pk. Laurel Lodge, Castleknock, Co. Dublin, Ireland. Congratulations to the Union on its new affiliation which should bode well for the advancement of astronomy.

## Brief History of the Library of the Royal Astronomical Society of Canada

by Helen Sawyer Hogg  
Past President of the R.A.S.C.

The library established by the Royal Astronomical Society of Canada has made a major contribution to the knowledge of astronomy held in Canada. The development and disposition of this library has been described in various issues of the *Journal*. The information carried in them, however, is not so well known as it should be. The principal items appeared in the *Journal* nearly fifty years ago and the word "library" does not appear in the titles. However, they are tabulated under the heading "Royal Astronomical Society of Canada, Library" in the General Index to the *Journal* compiled by Ruth J. Northcott, 1971.

Under the auspices of Dr. C.A. Chant, for the first three decades of its existence, a major part of the library was acquired through exchanges of the *Journal* for the publications of astronomical institutions around the world. This was patterned on the library acquired since the mid-nineteenth century by the Royal Canadian Institute, a real treasure trove of scientific publications.

With the establishment of the David Dunlap Observatory, however, under the Directorship of Dr. Chant, the character of the R.A.S.C. library changed. It had become obvious over the years that many of the publications in the library were more suited to observatory research than to reading room use by interested members of the Society. Furthermore the great influx of material was filling the shelves to more than capacity.

Accordingly in 1933 Dr. Chant, Editor of the *Journal*, proposed that much of the library material would be of greater use if housed in the new library of the Observatory. The proposal appears in the *Journal*, volume 28, pp. 122–124, 1934 in the report of the Annual General Meeting of the Society, January 9, 1934. It is headed *Memorandum Relating To The David Dunlap Observatory and The Royal Astronomical Society of Canada* and is signed by C.A. Chant, Director of the David Dunlap Observatory, November 1, 1933

This is followed by a note *Added February 26, 1934 Report of a Committee of the Council of the Royal Astronomical Society of Canada*. The committee had been appointed on November 23, 1933 to consider the Memorandum from Professor C.A. Chant asking the Council to assist in establishing a library in the new Observatory. The report signed by Librarian R.A. Gray, Convenor, concludes: "The committee thinks the Council should cordially co-operate with the University in providing a library for the observatory" and makes seven recommendations. The item itself concludes as follows: "The above report was sent to Dr. H.J. Cody, President of the University of Toronto, who presented it to the Board of Governors of the University at their meeting on February 22. The Board accepted the proposal."

Fuller details of the transaction are given by C.A. Chant in the following issue of the *Journal*, pp. 169–171. Titled *The University of Toronto and the Royal Astronomical Society of Canada* this article contains a reprint of the letter of acceptance from the Board of Governors of the University, signed by F.A. Moure, February 24, 1934, and a list of the publications which are to be transferred on loan to the David Dunlap Observatory. The list names 111 publications but notes that some series are incomplete and an effort will be made to complete them. When its own publication series began, the Observatory continued the exchange system, and gradually most of the *Journal* subscribers went on to a paying basis.

Many years later, in 1962 when Dr. J.F. Heard was both Director of the Observatory and National Treasurer of the Society, he was able to complete this transaction as a formal purchase. This is noted in the Supplement to Volume 56 of the *Journal*, 1962, page 3, in the Report of the Librarian, Leonard A. Chester. "A portion of the Technical library, on loan to the David Dunlap Observatory since its establishment has been sold to the University of Toronto for the use of the Observatory. This part of the library consisted largely of older series of astronomical periodicals and other publications". The proceeds from the transfer of Observatory library to University of Toronto are listed at \$2,000. on page 17 of the report of the National Treasurer. The actual location of this library is still the David Dunlap

Observatory, but legally it is part of the assets of the University. Much of the library of the Royal Canadian Institute was also acquired by the University.

Since its beginnings, the library of the Royal Astronomical Society of Canada has been a true cornerstone for both astronomical research in Canada and astronomical instruction for those who love the skies.

## **The R.A.S.C. Library Today**

**by Philip Mozel  
National Librarian**

As can be seen from the foregoing article, our National Library has had an illustrious past. It is today still making astronomical publications available to members of the R.A.S.C. and all members are encouraged to take advantage of the opportunity.

Both the library and National Headquarters are located at 124 Merton Street in Toronto, just a few minutes walk from the Davisville station on the Yonge subway line. Normal operating hours are from 9:00 am to 4:30 pm Monday to Friday. Members of distant centres may borrow books by mail. All loans are for a four week period with a four week extension available if the library is notified before the original due date. Return postage is to be prepaid. Unfortunately, periodicals cannot circulate but may be consulted in the reading room. A catalog of books available for loan may be obtained from the local centres. If a centre no longer has copies, they may be obtained by the centre or individual member by writing to the National Office.

While the Society would like to see the library used as much as possible, members should be aware that public libraries throughout the country will have holdings which are as up to date, if not more so, than ours. These should, therefore, not be overlooked. The R.A.S.C. does have, however, historical material not to be easily found elsewhere. This material includes books, back issues of the *Journal* and periodicals. Current periodicals coming in to the library include *Sky & Telescope*, *Astronomy*, *Scientific American*, *Journal for the History of Astronomy*, *Mercury*, *Journal of the British Astronomical Association*, *Quarterly Journal of the Royal Astronomical Society*, *Publications of the Astronomical Society of the Pacific*, *Southern Stars* (Journal of the Royal Astronomical Society of New Zealand) and many more. Up to date news can be gleaned from the BAA. Circulars and I.A.U. Circulars. Material is also received from such countries as Australia, South Africa, Russia and Japan, to name a few. Newsletters from the R.A.S.C. centres are also on the shelves so if you are interested in what your astronomical colleagues are up to, the National Library is the place to find out!

While many periodicals are received in exchange for our *Journal* and some books are purchased, the library also welcomes donations from members.

Merton Street is not the only place within the R.A.S.C. where books may be available. Some centres also have libraries and the National Librarian would be very interested in learning of these. This will better allow a determination of what needs are left to be filled and perhaps provide insight into the operation of libraries in general (the National Librarian being, after all, relatively new to the job). Points of interest would include rate of use, nature and size of holdings, budget, reference only or lending and location. Would a centre perhaps be interested in obtaining books to circulate among its members? Such information may be sent to the National Office and will be greatly appreciated.

Remember that the National Library is there to serve you. Why not drop by or write soon?

## The Lunar Eclipse – A Different View

by Richard Linkletter  
Bremerton, Washington

The barometric high gave Puget Sounders a rare midwinter chance to see the December 30th eclipse of the moon, as the clouds stayed their trek and the skies were clear. But several of us couldn't take a chance on such clearing; we journeyed to North Powder, Oregon, to insure clear skies in that semi-desert plateau and to observe stars that couldn't be observed with a full moon except for the eclipse. The incentive was the graze of C 3747, a tenth magnitude star. Its northern limit shadow would cross North Powder, and its southern limit the big island of Hawaii.

Paul Maley of N.A.S.A. in Texas journeyed to Hawaii for the graze, and our group (Joe Palmer, Ted Roscoe, Dave Becker, Tom Webber, Jere Felten and I) to Oregon. Jere and I are from Kitsap; the others from the Seattle area. We faced clear black skies and zero degree Fahrenheit weather, but set up our observing line in snow at the edge of US 30 the Old Oregon Trail highway. Last minute astrometry by Klemola of the Lick Observatory at Santa Cruz gave us precise positions for catching the proper timing of the moon's mountain shadows as they raced across the earth at 2800 miles per hour.

We got data; the tiny stars were difficult to spot, even with the blackness of the eclipse, but our team of top notch amateurs struggled with iced eyepieces, crystallized frost on mirrors, gloved fingers, tape recorders inside coats to keep grease from congealing and stalling, and barking dogs, to call out the disappearances and reappearances of the star as it ducked in and out between the mountains. Joe Palmer had electric underwear fed by the storage battery that operated the hair dryer for deicing his telescope. Jere Felten jogged to keep circulation up as he listened to the hairs in his nose freezing and cracking. Voices were queer and distorted by stiffened cheeks and lips as they spoke into mikes. And to complicate matters still further there were three stars almost in a line, not just the one essential to the graze. There were also some hundred additional stars from 6th to 13th magnitude being occulted by the moon at the same period of totality. And there was a second graze star of 7.8 magnitude whose southern limit path crossed this northern limit path of C 3747 almost exactly at our site. With all these distractions we managed to move four observers from one setup to the other, leaving two unchanged at the overlap of paths, to cover the second graze.

As to the results, Hawaii got great records, from two teams on opposite sides of the island. We are still milking our tapes trying to filter out excess WWV signals to hear what a voice muffled by a heavy coat and wind noise had to say about "IN" or "OUT" on C 3747. At the moment our analysis of the data cannot confirm that we have a firm record of the graze. BUT, if we have achieved this, then, with the data from Hawaii, it will be the most precise measurement of the polar diameter of the moon yet made by anyone. You can read more about it in the December 1982 *Sky and Telescope*, pages 574–576. We are proud of our effort, and a little wiser on cold weather observing of the hottest amateur sport in astronomy.

Reprinted from *The Web Footed Astronomer*  
Newsletter of the Seattle Astronomical Society

## El Chichon and the Umbra

by Richard Linkletter  
Bremerton, Washington

Did you join others in timing the earth's umbra crossing a crater of the moon, during the December 30th eclipse? *Sky and Telescope* for December 1982, page 618, carried a description of similar observations during last July's eclipse, and gave instructions for the December one. The article explained that the umbra is at least one arc minute larger than geometry predicts due to atmospheric refraction, and requested input from observers on transit times. If you did timings, or merely watched the event, you must have noted how very dark totality appeared – even darker than predicted. The following from the December newsletter of the IEEE Council on Ocean Engineering may explain the phenomenon.



The sulphur dioxide gas released by the Mexican volcano El Chichon which erupted in the spring of 1982 has caused false readings of ocean surface temperature from NOAA's National Earth Satellite Service. By photochemical conversion from sunlight, the gas has been turned into sulphuric acid droplets. The effect was detected by comparing satellite temperature measurements with direct shipboard measurements. The filtering action of the thin cloud of sulphuric acid produced satellite readings 3.4° C lower.

This effect may explain why the December eclipse appeared even darker than the July eclipse, and indeed made the moon hard to find during totality. We shall see another total lunar eclipse over western North America in 1986, and the cloud is expected to still be lingering to some extent. Could it also explain some of the violent weather plaguing much of the U.S. this winter?

1108 Lafayette Ave. North  
Bremerton, Washington 98312

*(Perhaps it could explain the quiet and mild winter experienced by most of Canada? – Ed.)*

## Sol-Lunar Forces and Tides – Part 2

by B Franklyn Shinn  
Associate Editor

*In Part 1, which appeared in the February issue, Associate Editor B. Franklyn Shinn recounted how a simple model illustrating binary star orbits fortuitously provided a graphic explanation of the tides experienced on earth.*

That much I appreciated in Winnipeg, but here in Nanaimo, I began wandering down to the shore at various times, and finding all sorts of variation in the tides. Tide tables gave the heights expected at various locations, the range of the tide for the date, and the times when high and low water could be expected. For instance, last summer the tide tables for Point Atkinson, my nearest standard port, read as follows:

Month of June					
Day	Time	Height metres (feet)	Day	Time	Height metres (feet)
20	0255	4.5(14.7)	22	0425	4.5( 14.6)
	1015	0.2( 0.7)		1150	-0.1( -0.2)
	1755	4.5(15.0)		1925	4.8( 15.8)
	2245	3.4(11.1)			
21	0340	4.5(14.7)	23	0035	3.4(11.2)
	1115	0.0( 0.0)		0515	4.4(14.3)
	1835	4.8(15.6)		1235	0.1( 0.2)
	2345	3.4(11.3)		2020	4.8(15.9)

I soon noticed that the time corresponding to low tide moved back about 50 minutes per day. Well, the moon comes by about 50 minutes later each day. In the above case, new moon occurred on June 20th. Then sun and moon would be both in phase and the bulges would be somewhere near a maximum. However, at new moon both sun and moon should be near my meridian at noon, yet the water was at its lowest level near that time. How come?

When one considers the motions of the various bodies in a bit more detail, one realizes that friction enters the picture rather dramatically. The moon takes about 29 days to orbit the earth. During that time old Mother Earth turns around 29 times *inside the bulges that sun and moon have created*. It isn't that the bulge flows over me as I stand on the beach, it's that the earth pushes me into the bulge, and if I keep

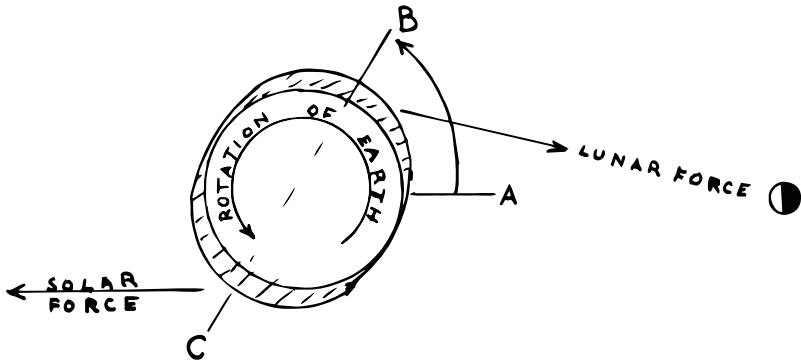


FIGURE 4. Lunar gravitation tends to create tidal bulge at point A, but friction with the rotating earth carries the peak around to a point such as B, where the lunar attraction restrains it. At full moon (as shown) the solar attraction on the opposite bulge assists the restraining force, acting at point C. The tidal bulges form “brake shoes” retarding the rotation of the earth.

my head above water, ten hours or so later pulls me out on the opposite side. This rotation of Earth within the ocean waters drags the bulge ahead with it, rather like a brake drum dragging the brake band around against the restraining mounting bolts. In the case of the moon-sun system which forms the restraining device in the case of the tides, the mounting isn't rigid, and the brake band gets dragged around considerably before enough restraining force is developed to hold it back. (see Fig. 4)

Of course a great many other factors alter the precise time when the bulge or anti-bulge will result in high or low water at any given point. If the Pacific Ocean rises on the west side of Vancouver Island, it will take time for the water to flow around to the east of the island and fill the basins around Nanaimo. When you turn on the tap you don't expect the bathtub to be immediately full, and when you pull the plug it won't immediately be empty. The water will wait until there is a sufficient difference in level outside the mouth of the inlet before the flow starts to fill the basin, and correspondingly it will wait until the outside level has dropped before it starts to empty, so that there will be a phase lag between various locations depending on the formation of the shoreline and channels. For instance, at Sooke, on the lower end of the island and near the outer coast, low water on June 22 (-0.1 metre) was at 0910, 2 hours and 40 minutes before the 1150 in the above table.

I purposely chose the above date as being the moment of highest tidal range last year. Why was that? The force of gravity varies considerably with the distance separating the moon and earth. On June 21 the moon was at perigee (357,300 km - *Observer's Handbook 1982* page 31). Summer solstice occurred on the same date. Both objects were north of the equator, as nearly overhead as I could expect, near noon on that day, when I could expect them to have the greatest effect on my particular bit of the ocean. Correspondingly I find the other time of the year with the greatest range is mid winter; last year the lowest tide then seems to be December 30th at .1 ft. at 2330 hrs. Then the sun is south of the equator, as would the moon be at new moon. But on December 30th the moon is *full*, and would be almost overhead, north where we are, *near midnight*, and that's when the range is greatest. It all adds up!

I always find it fun when I can relate some theoretical facts to my own local experience. There is one quite esoteric factor in this tide stuff that even I haven't lived long enough to authenticate by experience. It was pointed out to me by Dr. O'Keefe of NASA when he visited Winnipeg some years ago. To lead into it, let's go back to the brakeband analogy.

The earth drags the bulges forward as it rotates. The moon is hanging on to the nearest bulge, holding it back. (Fig. 5) But the bulge pulls on the moon just as hard as the moon pulls on the bulge, and that has a forward component tending to speed the moon up in its orbit, thus slinging it further out into space, which will lengthen the month (Kepler's third law). Meanwhile the drag of the tidal bulges, or at least the water that forms them, will slow down the earth and lengthen the day, hour, minute, second, though

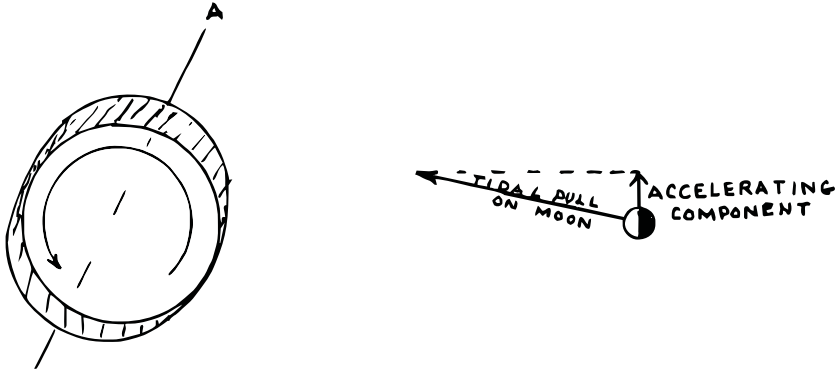


FIGURE 5. By a complementary action to the effect shown in figure 4, the tidal bulge creates a forward component in the direction of the moon's orbital motion, accelerating it and causing it to move to a higher orbit where it will take longer to complete a rotation, thus driving the moon farther from the earth.

we may still think it's 24 hours etc. Dr. O'Keefe asked me if I knew where the proof was. I suggested that perhaps records had been kept long enough that precise observations of such things as occultations might be confirming it. He said "No, that's the experimental evidence. The proof is in corals!"

He then explained to me that in tropical seas there are corals that are very sensitive to the depth of the water, probably because it affects the light reaching them. They produce growth rings similar to those in trees, but these vary in width with the range of the tides. Thus they have recorded the moon's influence on the earth from prehistoric times. When the ring sequences in prehistoric corals (I think he said fossil corals, but my memory is hazy on that point) are examined, the number of days between corresponding tidal ranges is more than at present; the earth was spinning faster, the range was greater, and the moon was nearer!

It's a marvelous universe! I wonder if we'll ever understand it all? I'm amazed at what we've managed to decipher up to now.

## International Astronomy Youth Camp

The 1983 International Astronomy Youth Camp for young amateur astronomers between the ages of 16 and 24 years will be held in the Black Forest region of West Germany between July 12 and August 2, 1983. The camp location, Schauinsland, is near the Kiepenheuer Institute of Solar Physics Observatory. The approximately 70 participants will work in seven groups on topics ranging from basic astronomy to computer calculations of asteroid and satellite orbits. Working language in the astronomy programme is English, and there is an extensive recreational programme as well. The registration fee is DM420 to DM490. Further information and application forms can be obtained from IAYC 1983, c/o Christoph Muenkel, R.-Koehn-Strasse 24D, 2080 Pinneberg, West Germany.

## Halley Bulletin

Comet watchers will be especially interested in the International Halley Watch *Amateur Observer's Bulletin*. It is intended to inform amateur astronomers on the organization and plans of the International Halley Watch. The *Bulletin* is prepared by the Jet Propulsion Laboratory of Pasadena, California under contract with NASA. For more information, write to the Editor, Stephen J. Edberg, Jet Propulsion Laboratory, California Institute of Technology, 4800 Oak Grove Drive, MS T-1166, Pasadena, California 91109.

## Venus? Hmm ..., fifty-fifty

By Marc A. Gélinas  
Société d'Astronomie de Montréal

Sometime in June, Venus will appear as a “half-Venus” when fifty per cent of its disk will be sunlit. There seems to be a discrepancy between the calculated and the observed time of “dichotomy” of Venus, and in order to study this discrepancy, I ask all interested amateur astronomers to report the date and time when they observe half-Venus. This task is easy. All you have to do is to observe Venus regularly, noting the percentage of the disk that is sunlit (visually, photographically ...) as well as the date and time of the “dichotomy”.

Evaluating the sunlit fraction of the disk can be made easier if you first trace a perfect circle on paper, then draw in the sunlit portion. Once you are satisfied that your drawing represents what you see, then you can evaluate the percentage that is sunlit. If your result is 50%, you have observed dichotomy. If two consecutive results are on either side of 50%, you can then interpolate in order to find the date and time of dichotomy. I am interested in *your* personal evaluation. Trust your eyes. Make it easy for yourself by using the same instrument and the same power every time. Results will be analysed and published (if enough results are received!).

Your report should include:

- Date and time of the “dichotomy” of Venus (UT, if possible),
- whether direct observation or interpolation,
- aperture and magnifying power used
- Evaluation method (visual, photographic ...)
- Name and address

If you do use more than one method (visual, photographic ...), you may obtain different results; please send me all results, indicating the method for each! I am also interested in dichotomy observations of Mercury.

Send your results to: Marc A. Gélinas, 1362 Holmes, St-Hubert, Québec, J4T 1P5

## La Mi-Venus

par Marc A. Gélinas  
Société d'Astronomie de Montréal

Vers la mi-juin, Venus devrait nous apparaître éclairée à 50%. Afin de comparer la date et l'heure où ce phénomène se produit (tel que calculées) avec la date et l'heure où un observateur évalue à 50% la partie éclairée du disque, je demande aux astronomes amateurs intéressés de me faire parvenir le résultat de leur observation de la “dichotomie” de Venus. Il vous suffit d'observer Vénus, d'évaluer la fraction éclairée du disque (par observation directe, par photographie ...) et de noter la date et l'heure de cette “dichotomie”.

Afin de faciliter votre évaluation, je vous suggère de dessiner un cercle parfait sur une feuille de papier puis de dessiner, dans ce cercle, ce qui vous semble être la partie éclairée du disque. Une fois que vous êtes satisfait de votre dessin, évaluez le pourcentage éclairé du disque. Si votre résultat est 50%, c'est la dichotomie (observée!). Si le résultat d'une observation est légèrement supérieur à 50%, puis que le résultat d'une observation suivante est légèrement inférieur à 50%, on peut alors estimer, par interpolation, la date et l'heure de la dichotomie.

Ce qui m'intéresse, c'est *vo*tre évaluation *personnelle*. Faites confiance à votre œil. Pour faciliter votre travail, utilisez toujours le même instrument et le même grossissement pour ces observations. Les résultats seront analysés et publiés, si un nombre suffisant d'observation me parvient.

Votre rapport doit présenter:

- La date et l’heure de la “dichotomie” de Venus (T.U. si possible)
- Observée directement ou interpolée?
- Diamètre de l’instrument et grossissement utilisé,
- Méthode d’évaluation (visuelle, photographique ...),
- Votre nom et votre adresse.

Si vous utilisez plus d’une méthode d’évaluation (visuelle, photographique ...), il se peut que vous obteniez des résultats différents. Dans ce cas, faites parvenir les *deux* résultats. Je suis aussi intéressé par des résultats d’observation de dichotomie pour Mercure.

Faites parvenir vos résultats à: Marc A. Gélinas, 1362 Holmes, St-Hubert, Québec, J4T 1P5

## Mobile in British Columbia

By Muriel Enock  
Victoria Centre

The Evans-Vander-Byl Telescope was unveiled to the public last October in a display at the new Tillicum Mall in Victoria. The 50-cm mobile reflector has not yet seen first light because the computer-guidance system is still being designed and installed by an electronics class at Camosun College. Besides, the cloudy winter months are not so good for observing here.

The project started with the gift of a mirror blank to Leo Vander Byl, our current President, by Miro Catipovic of New York, whom he met at the Riverside Convention of 1980. One of Leo’s professional activities is making telescopes, so he designed and built one for Victoria Centre, with some help from other members, particularly George Ball, Roger Williams and David Kopriva. The mirror was aluminized by our colleagues at the Dominion Astrophysical Observatory. The cost of materials was met by a bequest for the purpose from Robert Evans, a former Director of Telescopes of the Centre.

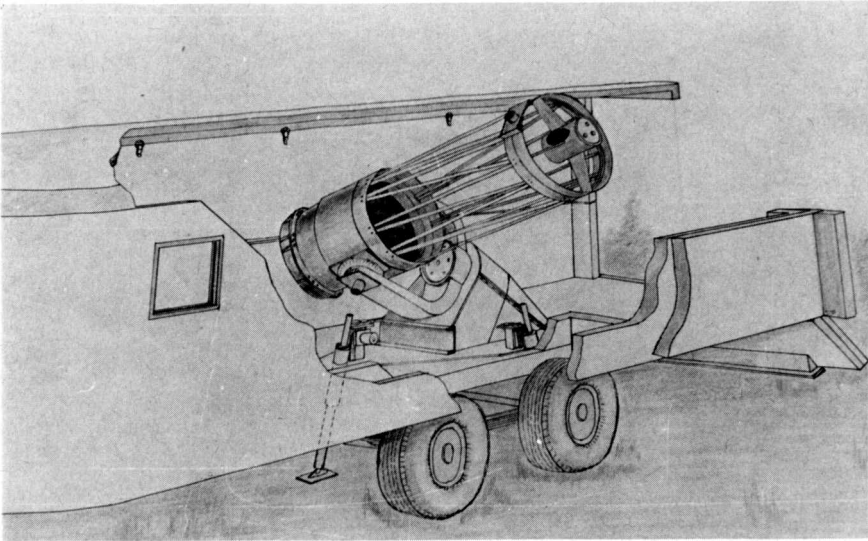


FIGURE 1. Designer Leo Vander Byl’s rendering of the Evans-Vander-Byl mobile telescope. (Photo by Muriel Enock.)

We had been unable to find a suitable inexpensive property to use for observing, so it was proposed that this new telescope should be built on a trailer, which would house the controls and equipment too. A desk in the forward end will store logs, records and references, and probably at least coffee-making supplies.

The telescope itself is mounted independently of the surrounding trailer, on telescoping legs; thus highway buffeting effects will be minimal and a firm base will be provided for the telescope in action. A towing vehicle has yet to be acquired, but meanwhile observers with heavy vehicles will be able to take the mobile observatory away from the city lights to dark-sky sites. We shall be able to go to occultations and eclipses in the region, but the biggest benefit will be the capability for getting out of the city, perhaps behind one of our hills (known here as mountains) to cut down on light pollution.

We have been invited to another show in the spring, so public interest in future star parties is likely to be even greater than the usual 50 to 200 people we now attract. In April, when the skies start to clear up again, the first observations will be made with the EVBT. It should be a momentous occasion because Leo Vander Byl's mirrors are known for their excellence.

## **Bends-O-Mania**

**By Rob L. Allen  
Hamilton Centre**

I'll bet you have always thought that if you were on board the Space Shuttle, and you somehow had to save the day by freeing a jammed cargo door, all you had to do was jump into your Space Suit, and – GO EVA –. Thereby saving the Mission, and the Ship in one action packed moment, just like in one of those old B-movie space adventures.

No Sir!! That would be a very tricky thing to do on board Columbia. For example, during missions 1 through 4, any emergency extravehicular activities would have involved depressurizing the cabin to 9 PSI for 12 hours of conditioning before the EVA could be started. Try and stay cool and breathe normally, during 12 whole hours of fear!

The bends have been a problem for those making prolonged deep-sea dives, as well as for pilots making steep ascents in high-performance aircraft. They are caused by a rapid lowering of air pressure, causing nitrogen dissolved in the blood to form bubbles, causing severe pain in the joints. NASA has acted to prevent astronauts on Columbia's next flight from suffering the bends.

NASA was forced to change Space Shuttle procedures that were to be used on the Mission 5 Space Walk (EVA). They were disturbed after results of ground tests showed that the original procedures caused a high percentage of subjects to get the bends. The original plan was to drop the entire cabin pressure from 14.7 PSI to 10.2 PSI for 12 hours of prebreathing. Hence, EVA astronauts W. Lenoir and J. Allen, could have continued their daily routine of work and sleep before their EVA. Orbiter cabin pressure of 10.2 PSI was selected as the lowest pressure to adapt to because problems with Avionics cooling and possible fire problems could occur at lower levels.

To ensure that astronauts Lenoir and Allen would not be stricken with the bends, NASA's new procedure required that the astronauts had to spend 3½ hours in their space suits in the airlock, breathing pure oxygen, before pressurizing their suits to 4.3 PSI. The use of the 3½-hour prebreathing routine is assured safe, based on previous NASA and U.S. Air Force experience.

This test of the new space suits, and the ability to work in the orbiter payload bay, are important goals which were to be completed on this flight, hence the extra precautions. At first, a walk-around bottle had been considered to provide the 3½ hours of pure oxygen before the EVA, but this had proved to be poor since it was too difficult to change from the bottle to suit air without breaking the breathing routine.

Why is there now a threat of the bends occurring aboard the Space Shuttle when there was no threat on earlier manned space ventures? Apollo, and earlier space ships, used a pure oxygen atmosphere while in space, but the Space Shuttle, if it is truly to become the world's first space transportation system, must have a typical earth environment (14.7 PSI: 3.2 PSI oxygen + 11.5 PSI nitrogen). Before

the Space Shuttle, only fully trained astronauts could go into space, but now, average people, like you and I, may someday gaze down on the jewel of the Earth from high above in the Shuttle.

Now, if only they would design a high pressure space suit for me so I can be a hero, but in a speedier unbent fashion!

## Canadian Astronomy News

By Ian G. McGregor  
Associate Editor

### *A Second Black Hole!*

Congratulations to David Hutchings and David Crampton of the Dominion Astrophysical Observatory in British Columbia who have apparently discovered the strongest candidate yet for a black hole. Their object is the X-ray source LMC X-3 located in the Large Magellanic Cloud about 180,000 light years away. The black hole is estimated to be about ten times the mass of the sun and forms a close binary star system with an ordinary star of about six solar masses. The first black hole reported was in 1975 and named Cygnus X-1. The Canadian astronomers were part of a three member team using the 4-metre telescope at Cerro Tololo in Chile.

### *Rocket Studies the Sun*

Last September 15, a Canadian Black Brant V sounding rocket was launched from the White Sands Missile Range in New Mexico. The purpose of the seven minute mission was to produce ultraviolet spectra of the inner corona and prominences of the sun. This was the first all-Canadian sounding rocket to be launched from White Sands.

### *The Place To Be!*

Observations made at the University of Toronto's Las Campanas Observatory in Chile between July 1981 and June 1982 had very good sky conditions. Out of a total of 3,650 dark hours in the period, 2,796 hours were usable for observations and 2,250 hours of these were suitable for photometric work.

(David Dunlap Doings, October 1982)

### *Target: the Northern Lights*

An international team of scientists under the direction of Brian Whalen of the National Research Council of Canada successfully blew a temporary hole in the aurora borealis and then sent an instrument carrying rocket through the hole on February 6. Operating from the Churchill testing grounds in northern Manitoba, Project Waterhole was begun four years ago and was set up to experiment with the earth's ionosphere and study the mechanism causing the aurora.

### *Professional Astronomers Gathering in Victoria*

The Fourteenth Annual General Meeting of the Canadian Astronomical Society will be held at the University of Victoria June 27-30, 1983. This will be a joint meeting with the Canadian Association of Physicists. The local committee chairman is Dr. Cohn Scarfe, Physics Department, University of Victoria, Victoria, British Columbia V8W 2Y2.

(Cassiopeia, Autumnal Equinox 1982)

### *Canadian Planetarians To Meet*

The 1983 conference of the Planetarium Association of Canada will be held during the week of August 8-12. Hosted by the Manitoba Planetarium, most of the sessions will take place at a lakeside resort on Hecla Island north of Winnipeg. Theme of this year's conference will be "The Nature of the Planetarium." For further information write to Edward M. Barker, Chairman, 1983 PAC Conference, Manitoba Planetarium, 190 Rupert Avenue, Winnipeg, Manitoba R3B 0N2.

## **Last call for 1983 General Assembly May 20–23**

A special feature of the 1983 General Assembly to be held in historic Quebec City, will be the gathering of three astronomical societies, the R.A.S.C., the American Association of Variable Star Observers, and the Association des Groupes d'Astronomes Amateurs. They will meet jointly for several events from May 20 to 23.

Most activities will occur on the campus of Laval University. There will be tours to "Old Quebec" on the afternoon of Saturday, May 21, and to Mount Mégantic Observatory on Monday, May 23.

Members are invited to participate in the Paper Sessions. Papers of ten minutes duration on any aspect of astronomy are welcome. Abstracts must be sent *before 23 April* to the Paper Session Chairman, Dr. J.-R. Roy, Dept de Physique, Pavillon Vachon, Université Laval, Ste. Foy, Quebec G1K 7P4. A display competition will be another feature of the 1983 General Assembly. See the 1982 October issue of the *National Newsletter* for details.

There are 200 single residence rooms available at Laval University at \$23 per night, breakfast included. The nearby Motel Universel has 75 double rooms at \$45 per night (\$40 single).

Registration forms can be obtained by writing to Assemblée Générale 1983, Dr. R. Dutil, Dépt. de Physique, Pavillon Vachon, Université Laval, Ste-Foy, Québec, G1K 7P4.

## **Assemblée Générale 1983 20–23 mai Dernière appelle!**

Une particularité spéciale de l'Assemblée Générale 1983 qui se tiendra dans la ville historique de Québec, sera le regroupement de trois Sociétés astronomiques. Elles s'uniront pour plusieurs activités conjointes du 20 au 23 mai 1983.

Cet évènement qui se déroulera principalement sur le campus de l'Université Laval, sera ponctué entre autres d'une visite dans le Vieux Québec, le samedi 21 mai p.m., et à l'Observatoire du Mont-Mégantic le lundi 23 mai.

En ce qui concerne les séances de travail, les membres sont invités à proposer des communications, d'une durée de dix minutes, sur tout aspect de l'astronomie. Des résumés des communications proposées sont à envoyer *avant le 23 avril* à: Dr J. R. Roy, Dépt de Physique, Pavillon Vachon, Université Laval, Ste-Foy, Québec, G1K 7P4. Comme d'habitude, il y aura également un concours de travaux d'amateurs, pour de plus amples renseignements, consulter les autres pages du *Newsletter* (Octobre 1982).

Afin d'obtenir l'information d'inscription, écrivez à Assemblée Générale 1983, a/s Dr. R. Dutil, Dépt. de Physique, Pavillon Vachon, Université Laval, Ste-Foy, Québec, G1K 7P4.