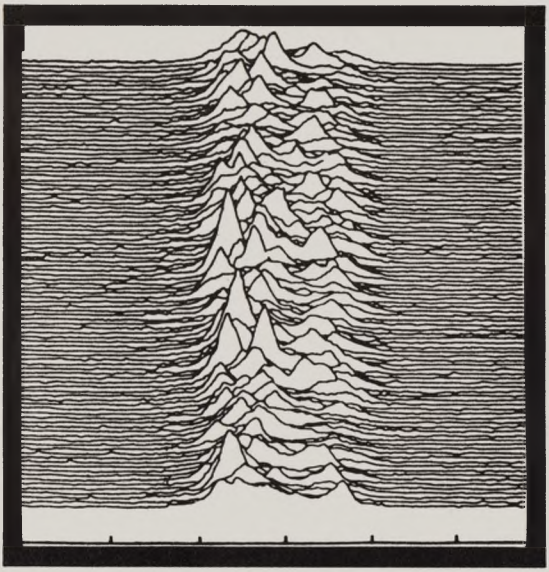
NOVA NOTES



Halifax Centre

Jan – Feb 1988
Volume 19
Number 1

1988 Halifax Centre Executive

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Notice of Meetings

Date: Friday, February **19th**, 1988

Place: Nova Scotia Museum. Access from the parking lot and side entrance. Meeting to be held in the lower theatre.

Topic: The **7:00** video presentation will be the a repeat of last year's extremely popular screening of the Kepler to Newton episode from James Burke's **The Day the Universe Changed.**
Our **8:00** speaker will be **Dr. Cameron Reed** of the Saint Mary's University astronomy department. He will be speaking on the subject of globular clusters. In addition we will be showing a short video on the debriefing for the Shuttle "Satellite Capture and Repair" mission which gives an interesting (and at times humourous) look at living and working aboard a shuttle.

Date: Wednesday, March **2nd**, 1988: **7:00 P.M.**

Place: Halifax Planetarium, Dunn Building, Dalhousie University

Topic: **BEGINNER"S GROUP MEETING**
We will be teaching beginners how to find the constellations and planets of the winter sky using the planetarium.

Note: The above list is tentative and subject to change.

About the cover: The cover this issue shows fine detail in the radio pulses of the pulsar CP 1919. Each line is a scan at 318 MHz and the tick marks on the scale at the bottom of the figure are 20 milliseconds apart. The quickly varying nature of the pulses is easily seen.

Editor's Report

Patrick Kelly

The **1988 Observer's Handbook** is now available. If you are a paid up regular or youth member and still have not received your new Handbook, please contact Paul Smith (861- 2753) as soon as possible or see him at any regular meeting of our centre. Observer's Handbook sales are essential to the financial health of our centre. If you would like to try and sell one or more just contact Paul and if you don't manage to sell the Handbook, simply return it to him at a later date. The 1988 Observer's Handbook sells for $10.00 per copy. The Halifax Centre receives a $3.50 margin per sale. If the Handbook is ordered by mail, there is a $1.00 postage charge.

The centre will be hosting the public to our Febrauray 20th observing session in Beaverbank (see centrefold for map). We would like as many members as possible to bring out their telescopes. The museum is publicizing the event and is distributing kits showing the night sky, a map to the site .

As editor, I receive copies of all of the other centre's newsletters and from time to time they contain articles which I feel would be of general interest to the membership. I ususally hang on to them for a while just in case the **National Newsletter** carries them. I thought that the article "2081..." would be of interest even though it is not strictly astronomical. I hope you find it interesting reading.

Our new "Beginner's Nights" will have started by the time you get this, with the first meeting having been held Feb 3rd. The meetings will be held on the first Wednesday of each month, either at the Museum or at the planetarium (see "Notices of Meetigs" for the March one). We hope that these meetings will not only attract new members but provide an introduction to astronomy for our newer members which is an area that we have inadvertantly neglected. These meetings are open to anyone who is interested, not just members, so bring along a friend!

Lastly, I have made up my mind to get **Nova Notes** back on a more reasonable schedule. With a little bit of luck, the March-April issue will be available for pick-up at the February meeting (which will help us to save a fair bit on posatge as well).Ω

The Burke-Gaffney Award

Halifax Centre

The Burke-Gafney Award was established by the Halifax Centre to promote the development of the writing skills of non-professional memners of the centre. The award also acknowledges the contribution of the centre's first Honorary President to the formation of the group and to his long and tireless efforts to educate the public in the mysteries of astronomy. This year's contribution for the award must reach the President or Editor by March 18th.

Rules

1. Topic: Awards will be given for articles relating to astronomy, astrophysics or space science. Topics should interest average to well-informed amateurs and may be of current or historical nature.

2. Presentation: Articles should be no longer than 2500 words, written in propoer grammatical form and presented typewritten and double spaced. Diagrams should be complete and ready for drafting and photographs should, if possible, be submitted with the original negatives.

3. Eligibility: Any member of the Halifax Centre in good standing may submit entries with the exception of those who are professional astronomers.

4. Judging: Articles will be judged on scientific accuracy, originality and with a strong emphasis on the overall literary merit. Papers must demonstrate that the author(s) has/have read widely and has/have contibuted some original thopught to the discussion. Juding will be carried out a judging committee which will consist of the President, NOVA NOTES Editor and a third person appointed by the Halifax Centre's executive

5. Prize: The award will be given once annually. The winning contribution then becomes the Halifax Centre's official entry in the Simon Newcombe Award competition which is held annually on a nation-wide basis. The winner of the Burke-Gaffney Award will have the choice of one of several prizes.

6. Submission of Entries: Entries will be received anytime until MArch 18th, 1988. You may direct inquiries concerning the rules to the President.

7. Previous Awards: The Burke-Gaffney Award has been won on five previous occassions: Bill Calnen (1979 and 1980), Dianne Brooks (1981), Michael Boschat (1982) and Jennifer Wells (1983). No awards were given in 1984, 1985, 1986 and 1987.Ω

Constitution of the Halifax Centre of the Royal Astronomical Society of Canada

amended 1984

Article I

Name:

The organization shall be known as the Royal Astronomical Society of Canada, Halifax Centre, hereinafter referred to as the 'Centre'. The parent organization, the Royal Astronomical Society of Canada / La Societé Royale d'Astronomie du Canada is hereinafter referred to as the 'Society'.

Article II

Objective:

To stimulate interest in and to promote and increase knowledge in astronomy and related fields.

Article III

Membership:

The Centre shall consist of members of the Society who are in good standing and who register with the Secretary of the Centre. The Centre shall extend Associate Membership to a family member(s) of a Regular, Youth or Life Member in good standing. The fees for an Associate Member in good standing shall be set, from time to time, by the Centre Executive.

Article IV

Organization:

1) There shall be an Executive of the the Centre consisting of:

a) President *b) Vice-President*
c) Secretary *d) Treasurer*
e) Editor *f) National Representative*
g) Librarian

and h) any other position(s) which the Executive shall from time to time recommend.

2) *Members of the Centre may be elected to hold Executive office in accordance with the restrictions specified in the By-laws of the Centre.*

3) *The Executive shall:*

a) organize the activities of the Centre in accordance with the objectives of the Centre;

b) propose By-laws respecting any aspect of Centre functions;

c) conduct the business and financial responsibilities of the Centre and shall report regularly, but not less than once annually to the membership. The Executive may do all things it deems necessary for the attainment of the objectives of the Centre but which are not specifically excluded from the powers of the Executive by this Constitution or by any By-law;

d) call an Annual Meeting between 1 October and 31 December of each year for the purpose of receiving reports of the Executive Officers and for the election of a new Executive to hold office for the following calendar year;

e) Appoint committees to carry out the duties for specific functions and these committees shall be dissolved on completion of the duties;

f) fill any Executive position which becomes vacant with a member of the remaining Executive;

g) form a quorum at an Executive Meeting if five (5) members are in attendance.

Article V

<u>Amendments:</u>

1) *To the Constitution:*

a) This Constitution may be amended at an Annual Meeting or at a Special Meeting of the Centre called for the purpose;

b) proposed amendments shall be submitted to the Secretary not less than twenty-one (21) days before the date set for the Annual Meeting or Special Meeting called for consideration of said amendments. Such amendments shall be co-signed by not less than two (2) other members of the Centre in good standing;

c) the text of the proposed amendments to the Constitution shall be appended to the Notice Of Meeting and shall be mailed or delivered to members not less than seven (7) days prior to the Annual or Special Meeting;

d) amendments to this Constitution shall have full force and effect when adopted by a two-thirds (2/3) majority of members attending the Annual or Special Meeting but such majority shall be not less than twenty (20) members. Amendments to this Constitution shall be subject to the final approval of the Society's National Council.

2) To the By-laws:

a) the By-laws of the Centre may be amended at any General Meeting of the Centre;

b) proposed amendments shall be submitted to the Secretary not less than three (3) days prior to the General Meeting at which they shall be considered;

c) amendments to the By-laws shall have full force and effect when adopted by a simple majority of members attending the General Meeting but such majority shall not be less than fifteen (15) members. Amendments to the By-laws shall be subject to the final approval of the Society's National Council.

BY-LAWS

By-Law 1: Respecting restrictions on the nominations and terms of Executive Officers

1) Restrictions on the Nominations:

a) no person may hold Executive Office unless he/she is a member of the Centre in good standing;

b) a member may be nominated for the position of President only if he/she has been a member of the Centre for one (1) year or more;

c) a member may be nominated for the position of National Representative only if he/she has reached nineteen (19) years of age as of 1 October in the year of nomination.

2) Restrictions of terms of office:

a) President - may be elected to one (1) additional consecutive term;

b) Vice-President - may be elected to one (1) additional consecutive term;

c) Secretary - may be elected to two (2) additional consecutive terms;

d) Treasurer - may be elected to two (2) additional consecutive terms;

e) National Representative - may be elected to two (2) additional consecutive terms;

f) other Executive Officers may hold office without restriction on the term of office. Ω

Proposed Constitutional Amendments

Halifax Centre

The following amendments to the Constitution and By-Laws of the Halifax Centre have been proposed by Darrin Parker and seconded by Doug Pitcairn. A vote on these amendments will be held in accordance with the Constitution at the February meeting of the Centre.

The text of the Constitution appears on the following pages for those who wish to compare the proposed amendments to the current text.

Amendment 1

Article IV - Section 1 to be amended to read:

1) There shall be an Executive of the the Centre consisting of:

a) President *b) First Vice-President*
c) Second Vice President *d) Secretary*
e) Treasurer *f) Editor*
g) National Representative *h) Librarian*
i) Observing Chairman
and j) any other position(s) which the Executive shall from time to time recommend.

Amendment 2

By-Law 1 - Section 2 to be amended to read:

2) Restrictions of terms of office:

a) President - may be elected to one (1) additional consecutive term;

b) First Vice-President - may be elected to one (1) additional consecutive term;

c) Second Vice-President - may be elected to one (1) additional consecutive term;

d) Secretary - may be elected to two (2) additional consecutive terms;

e) Treasurer - may be elected to two (2) additional consecutive terms;

f) National Representative - may be elected to two (2) additional consecutive terms;

g) other Executive Officers may hold office without restriction on the term of office. Ω

1987 Handbook Report

Darrin Parker

I am very happy to announce that our second largest source of income, sales of **Observer's Handbooks**, of course, has **increased by 17%** over 1986 for an increase of $67.50!

At this time I'd like to remind everyone that our centre is one that **does not** levy a surcharge on membership dues as many other centres do. This is due in part to the fact that the Halifax Centre is the leader in **Observer's Handbook** sales in Canada. Needless to say handbook sales are necessary to the well being of our centre (we receive $3.00 per handbook sale) and any effort to find new markets or individuals willing to purchase one of these "pocket libraries of astronomical info" is a service to your centre.

If you would like to sell one or more **Observer's Handbooks**, or know of someone or some organization who would be interested in purchasing one **please** let myself or Paul Smith, your new First Vice-President and "handbook handler" know.

186 **Observer's Handbooks** were sold this year by us (up by 38 from 148 last year). The following is a breakdown of sales of handbooks by the Halifax Centre. I apologize for any errors or omissions.

Nova Scotia Museum	52
Wilf Morley (Parkview Education Centre)	30
Mail orders	27
Nova Scotia Government Bookstore	21
John MacNeil (Cole Harbor School)	20
Saint John Astronomical Society	12
Pair of Trindles Bookstore	7
David Tindall sales	7
Pat Kelly/Doug Pitcairn sales	3
Laurie Reed sales	3
Peter Steffin sales	1
Mike Boschat sales	1
Bill Thurlow sales	1
Hugh Thompson sales	1
TOTAL	**186**

Sales Recap

	1987	1986
Gross Sales	$1,638.00*	1,332.00
Less cost of handbooks	1,116.00	888.00
Less Commission	57.75	47.25
Net Sales:	**$464.25**	**$396.75**

* 12 Handbooks were sold at cost ($6.00 each) to The Saint John Astronomical Society.

The above statement reflects the Halifax Centre's 1987 dollar sales of **The Observer's Handbook** which is different than the actual income realized by our centre. In order to get a realistic view of the ***actual*** income realized by our centre, I submit the following statement:

	1987	1986
Net Sales	$464.25	396.75
Less Net Handbook Credits*	166.25	N/A
Less Postage for Mail Orders	11.88	4.68
Less costs for notices and direct mail promotion	11.00	12.46
Net Handbook Income:	**$275.12**	**$379.61****

*This figure is the net amount of credit our retailers received in 1987 for returned Handbooks. This amount was not available for last year.

**Because the net handbook credit was not available for 1986, the '86 net handbook income was overstated, probably by about $175.00.

It is important to keep in mind that the net handbook income is only the actual amount of cash received by the Halifax Centre for handbook sales in the calendar year. The net sales figure ($464.25) is, of course, the amount of income gained by us from handbook sales although it is distributed over a number of years via the handbook credit. This is a means of accounting for cash already received by the Halifax Centre for handbooks unsold by our retailers. Ω

On the Tuscan Trail of Galileo

Dianne Brooks

On June 20 of this year, Randall and I landed at Pisa's Aeroporto Tuscano Galileo Galilei for a one-week stay in Florence. While he collected more precision screw samples in the Science Museum, I wanted to find traces and remembrances of Galileo in Florence and Pisa, especially how he is presented to tourists.

Born in Pisa February 15, 1564, Galileo received his early education at the monastery of Vallombrosa, near Florence where his family moved in 1574. He went to the University of Pisa in 1581 to study medicine, but actually studied math and physics and became a math lecturer at the university in 1589 while also lecturing at the Florentine Academy. It was in Pisa Cathedral that Galileo reputedly observed a swinging lamp (still there) and noted the utility of the motion as a pendulum. Also, in Pisa the scientist is popularly thought to have used the Leaning Tower to test if objects of different masses fell at different speeds. After conflict with the church over his public support for the truth of the Copernican system, Galileo retired to a house in Bellosguardo, near Florence, and worked on his Dialogue which was published in 1632. After formal prosecution at his refusal to recant his belief that the Ptolemaic earth-centered solar system was incorrect, Galileo was held under house arrest at Arcetri, near Florence, from 1633 until his death there on January 8, 1642.

The most obvious place to begin a search for evidence of Galileo was the Science Museum (Museo di Storia della Scienza) on the north bank of the River Arno. Here among other artifacts are housed the lens with which the four Galilean satellites of Jupiter were discovered, his two wooden telescopes, and the lodestone presented by Galileo to Ferdinand II. Just inside the entrance to the museum is a bust of the scientist, looking over to a bust of Cardinal Leopold de Medici who, with his brother, Grand Duke Ferdinand II, were students of Galileo and who

founded an Academy of Experiment in 1657, the forerunner of the present museum. During our visit, the Science Museum was closed to the public for renovations, and was scheduled to reopen July 1 with a special exhibit called "The Legacy of Galileo". Incidentally, the former name of the Instituto Salvemini di Firenze, a technical college in Florence, was the Instituto Tecnico Galilei.

If one climbs the steep narrow street known as the Costa di San Giorgio, on the south bank of the river near Fort Belvedere, the reward is the house at number 9, purchased for his son by Galileo and where he was visited by Ferdinand I. Privately owned, the house's front wall has a commemorative plaque in Italian and a painting of Galileo over the door. In Florence's Santa Maria Novella, the most important Gothic church in Tuscany, Galileo's theories were denounced by Caccini from the north aisle pulpit in 1616, beginning the conflict leading to his imprisonment seventeen years later. Also in this church are two astronomical instruments by Egnazio Danti, deposited there in 1572 but the reason is unknown. After an hour's pleasant walk south from the river, along a gentle incline leaving the city, one reaches Arcetri. At number 42 Pian dei Giullari, a quiet village street high in the centre of Tuscany, is the state-owned Villa il Gioiello where Galileo remained a virtual prisoner until his death. The front of the typically brownish yellow house, with its tower and windows only on the second floor, directly adjoins the street and another house on the right. On the left an open gate leads into the back garden and reveals an impressive view of the city. A second floor pillared porch, or loggia, could be seen from the street. A bust of Galileo was set high in a niche on the front wall above two plaques, both in Italian. Our curiosity about the interior remained unsatisfied, as there appeared to be no custodian to apply to for entrance and neither of the guide books consulted indicated that the house was accessible to the public, although in 1982 there were said to be long-term plans to open it. In this house Galileo wrote some of his most important works and was visited by Torricelli, Thomas Hobbes and, possibly, Milton.

On the same road at number 2 and around a bend is the Astrophysical Observatory, with the first solar tower built in Europe in 1872. After subjecting ourselves to a complicated manoeuvre to obtain a photo of the tower and domes behind a high stone wall topped with barbed wire, we discovered a gate, unexpectedly unlocked and with an apparent invitation in Italian to visit. Needing no further encouragement, we went in and up two enclosed flights of steps which came out onto a sloped gravel driveway leading to a parking lot and a building housing the observatory offices and topped by a large dome. From an observation platform beside a radio telescope, we could just identify the tower and back of Galileo's villa through the trees. Because our Italian is almost non-existent and since astronomers are incredibly considerate people--especially toward fellow astronomers--we didn't demand a tour of the establishment, but quietly went on our way down the hill to the next Galileo landmark.

In the Church of Santa Croce, close to the north bank of the river and a few blocks from our hotel, is Galileo's tomb, evidently unmarked, in the Novitiate Chapel which is tucked away behind several other chapels. We wondered if his tomb was not marked because he was banned. He was denied burial inside the church until 1737 when a very large monument to Galileo, designed by Giulio Foggini, was placed in the left nave close to the main entrance and facing the tomb of Michelangelo in the right nave. This church has been called a "pantheon of Italian genius" because of the prominent natives buried there--the Florentine equivalent of Westminster Abbey in London.

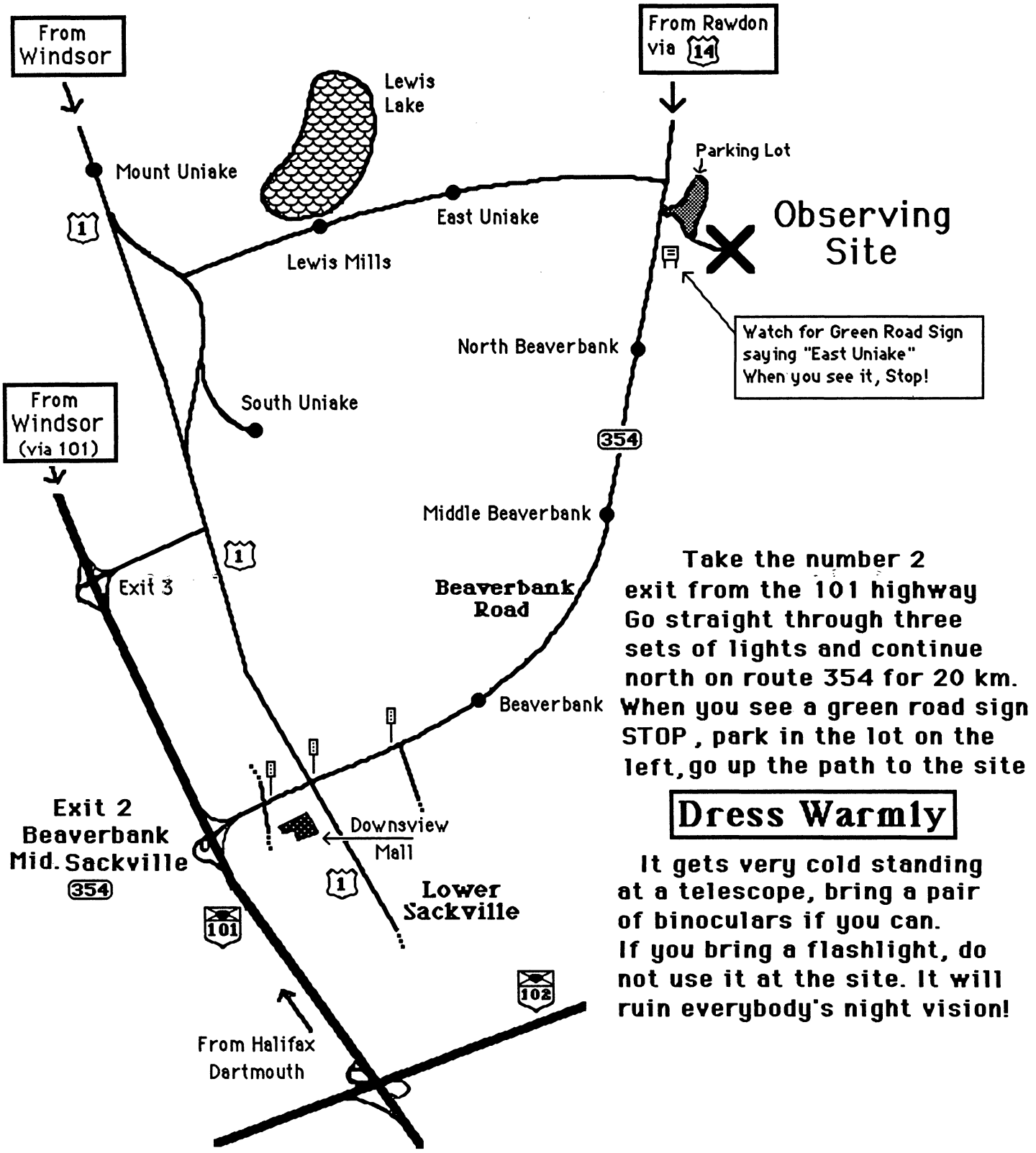
Near Santa Croce is the Biblioteca Nazionale which holds an important collection of material relating to Galileo. Down the street from the Library and in the same building as the Science Museum, the Uffizi Gallery (Galleria degli Uffizi)--said to be the most important collection of paintings in Italy--contains a portrait of Galileo by Justus Sustermans (1597-1681), which has appeared in many astronomy books. This art work is found in Room 41, somewhat overshadowed by mammoth works by Rubens. Incidentally, a small copy of this painting was encountered a week later in

the Palazzina Napoleonica dei Mulini, Napoleon's official residence while in exile on Elba. We also noticed in the Emperor's library a three-volume set of L'Astronomie Moderne and the one-volume L'Astronomie Ancienne, both by Bailley. Galileo's picture appears on the front of the Italian 2000 lira bank note with the Arcetri Astrophysical Observatory on the reverse. A wide, shady street on the south side of the river, running uphill from the Piazzale Michelangelo, which is the best vantage point for a panoramic view of Florence, has been named the Viale Galileo Galilei. His name has also been given to a nearby square (Piazzale Galileo).

Randall and I took a day tour to the religious complex of Pisa which is about 90 km from Florence. About half a kilometre northwest from the centre of Pisa are the cathedral (duomo), baptistry and bell tower (companile), all constructed of white marble and surrounded by lawns and sections of the 13th century city walls. The circular bell tower, begun in 1173 and completed in the mid-14th century, is 54.5 metres high and leans 4.5 metres from the perpendicular due to soil subsidence occurring while the third storey was being built. The lean increases by about 3.28 millimetres per year and a calculation has shown that it can lean only about another half a metre before it falls. An internal stair well containing 294 narrow steps, winds up through six pillared galleries on which it's possible to emerge and walk around the outside of the tower at various levels. The combination of lean, absence of railing and smooth marble underfoot made a few sightseers obviously nervous. The construction of the top section, containing the bells, tried to correct for the lean and it appears marginally straighter to the eye. If Galileo did, indeed, drop the three metal spheres from the top, the only significance of the location is likely that it was the tallest structure in Pisa during his time. He's considered to be Pisa's most prominent citizen and the university where he taught is one of the most respected in Italy with a strong science faculty since Galileo's time.

An all-too-brief encounter with Tuscany nevertheless showed that Galileo is well remembered in Florence and Pisa, the cities in which the most significant events of his career occurred and where he continues to be highly respected as one of their most distinguished natives. Ω

Map to Halifax R.A.S.C. Observing Site



Take the number 2 exit from the 101 highway Go straight through three sets of lights and continue north on route 354 for 20 km. When you see a green road sign STOP , park in the lot on the left, go up the path to the site

Dress Warmly

It gets very cold standing at a telescope, bring a pair of binoculars if you can. If you bring a flashlight, do not use it at the site. It will ruin everybody's night vision!

2081 The Prospects for the Next Century

Keith Sudds
reprinted from **Niagara Whirlpool**- Niagara Centre

It is unfortunate that space development should be in such a low state of preparedness at this time of crisis in industrial civilization. Space advocates have always believed that space technology will provide the means of averting the decline of the world economy. The problems of the depletion of cheap energy and raw materials are compounded by the rise of pollution and urban decay. This is accompanied by a decline in the morale of the population, particularly the young. The effects of this decline are apparent in both the western and eastern worlds. It can be seen in current fashions, nihilistic opinions, raucous pop music with vulgar lyrics and a general air of morbidity that permeates modern culture. Few economists or sociologists have any optimistic views to offer as solutions to the mounting problems. The reality of this and their causes are much discussed, not only in the media, but also in the tomes of academia. The old rallying point of the downtrodden, the political left, have also noted this decline and its proponents are alarmed to find themselves unable to offer the revolutionary solutions with which they have always been so confident about - Eastern Europe simply does not look like a socialist paradise. The old order, it is said, is crumbling, and with it our civilization.

This decline is perceived by some, perhaps quite correctly, to be as much a product of materialism - both the acquisitional and the philosophical kind - as of the decline of the world's material base. Materialism, it is increasingly argued, does not provide an adequate basis on which to build the ethics and ethos of a viable society. As a result of this, social structure begins to crumble and people find

themselves cut off from their community and thrown into destructive forms of individualism. The book **The Culture of Narcissism** by Christopher Lasch provides an absorbing examination of the phenomenon and has been well received by critics of both the political left and right.

Over the last fifteen or so years, a new political movement has been steadily moving into the gap left by the decline of the old order; it is called the environmental movement. Within the last seven years this group has appeared on the political scene in Western Europe and is called the Green Party. One of its more notable achievements has been to unite otherwise disparate groups such as land owners, conservationalists, feminists, labor groups, peace activists and an assortment of disaffected parties of the old left and center. In the short period of their existence the "Greens" have had representatives elected to the governments of many Western European nations; in particular West Germany where they have now captured over 6% of the vote. This may not seem like a lot, but many politicians in Europe find it expedient to adopt environmentalist positions so as to assuage the growing sentiments that this movement has promoted.

The underlying philosophy of this movement has grown out of the naïve radicalism of the 1960's, and it emphasizes the primacy of the natural environment in all human concerns. The thinkers who have most influenced the environmentalists have been people such as E.F. Schumocher, Buckminster Fuller, Murray Bookchin and others, usually from the non-Marxist left. It is a primary contention of this movement that our current age - from the eighteenth century on - is an anachronism: a time of gross excesses and that the civilization based on industrial-scientific progress, in either the eastern or western blocks, is certain to cause catastrophe if it is not stopped in its tracks. Perhaps the best overall picture of the environmentalist outlook can br found in two books by the

American activist Jeremy Rifkin. In his books **Entropy** and **Algeny**, he outlines a case against technological civilization that has been widely accepted by intellectuals throughout the world.

It need hardly be said that this philosophy is not in accord with the aims of the space advocacy. To send people to live in space colonies is to them compounding the problem with what they call "technological fixes". New age writer Fritjov Capra, in his popular work **The Turning Point**, wrote:

> "The ultimate manifestation of our obsession with technology is the widely entertained fantasy that our current problems can be solved by creating artificial habitats in space ... from what I have seen of the existing plans, and of the mentality underlying them, I would certainly not want to live there. However, the basic fallacy of the whole idea is not technological; it is the naïve belief that space technology can solve the social and cultural crisis on this planet."

Clearly this view is at odds with the idea of progress through science and technology.

The term "new age" is applied to much of the central philosophy of the environmentalist movement and underlying it is a profound mistrust; not only of the power that science and technology confers upon man, but also on the nature of the human mind that makes it all possible. In his book **The Re-enchantment of the Mind**, philosopher Morris Berman examines aspects of the mind of "new age man". It is proposed in this semi-academic work, that in the future "post-industrial" world, people will not experience themselves as isolated entities, separated from the world in the dualistic way described by the philosopher René Descartes; indeed, the human mind will

be a kind of boundless entity that merges into a Mass-mind which encompasses the Earth's biosphere.

Ideas such as this are extremely contentious and have more to do with speculative metaphysics than matters of empirical investigation. Berman's work draws heavily upon the cybernetics derived ideas of anthropologist Gregory Bateson as presented in his book **Mind and Nature**, and although most people in the natural sciences regard such works with suspicion, many intellectuals do not. Indeed, many of them see in these notions a way of gaining power over the human species allowing them to bypass most of the conundrums inherent in a society composed of individuals. Anyone who is familiar with political ideologies will recognize in these sentiments the perennial idea that underlies all radical politics: the idea of saving man from himself by perfecting him. It has formed much of the regrettable politics of the twentieth century and is the foundation of totalitarianism.

This author believes that these ideas are an attempt to avoid the consequences of what mankind has become by escaping into quasi-mysticism. There is no escaping what we have become just as there is no denying the perilousness of modern times. Nobody today seriously doubts the ability of mankind to destroy the life of this planet through nuclear conflict or even pollution. Our capacity for evil seems limitless. The best hope we have is to press on with our civilization, taking care that our actions are minimal in their adverse affects. We must, above all, strive to understand and accommodate ourselves to the needs of the world and of one another; it is in all our best interests. But the knowledge and capabilities bequeathed to the world by western civilization cannot now be taken from the common heritage of humanity; it's our nature to comprehend the world and adopt it for our own purposes. For every society that turns its back on science and technology a dozen will not and will pursue it vigorously.

Finally, this brings us back to Gerard K. O'Neill's

2081. As naïve as his view may appear in light of the things considered here, I believe that his and similar works are genuine visions of what can and should be. His world does not involve the physically impossible and is a world of "Doers". The environmentalist world is of the "Do-nots", fearing progress fro its alienating and destructive potential. There is a logic in O'Neill's outlook, wherein humanity, having outgrown the bounds of Earth, moves its purpose and organization to the vast untapped resources of the solar system and thence to the stars. It is perhaps speculative to suggest that there is purpose in the unfolding of human history, but technology is no more implausible than many ideas that are considered acceptable today; like all metaphysical notions it will never be provable, but it can certainly be inferred.

The problems that we face today are certainly enormous and stem from our capabilities combined with the loss of our moral roots. The eighteenth century enlightenment, mentioned at the beginning of the essay, was the starting point of the modern dilemma. The enlightenment promised liberty and peace through universal suffrage and science. The loss of mankind's religious roots was to be a stage on the road to freedom and happiness. Utilitarian ethics combined with social engineering and prosperity would abolish the fear, irrational hatreds and greed that feed human discord and the world would shortly enter a golden age where all men and women would have evolved into a better species.

This utopian condition is as far away as ever while religion has become a matter of personal, even eccentric choice. The failure of the humanist experiment is apparent everywhere, while the consequences of our burgeoning knowledge and power leave us in a position of a person of

uncertain sanity in possession of a dangerous weapon - a weapon that we cannot throw away. We cannot be certain of the outcome of our predicament so the steps our leaders take must be well considered.

The move into space, if it is allowed (it is quite possible), would make us all the more dependent on our technology, but at the same time would give us the means of surviving disaster by dispersing our biosphere and our population throughout the solar system. No one can claim that this is a solution to all of our problems, but it certainly solves the most pressing one which is the threat of extinction. The deeper spiritual problems must await further development and true enlightenment.

For all the concern, however, over the current dilemma of humanity, it cannot be denied that the conditions of the great mass of the people in the developed world are much better than they have been at any other time. As strange as it may seem in light of what has been written here, there is less crime today, better health, longer life, much shorter hours of work and indescribably better housing than has ever been known in the world before. All this is due to the rise of science and technology, and it is this success which will ultimately hold sway in peoples' minds. 2081 is an arbitrarily chosen year - it being exactly 100 years from the publication of O'Neill's book - but the decades between now and then will surely be decisive to the course of history. The sheer accumulation of possibilities inherent in our time must mean that ours is a pivotal age. It may be that thousands of years from now, beings perhaps only vaguely human in appearance, but descended from people alive today, may gaze upon the stars at the other side of the galaxy and know them and the universe as home. It is a compelling vision and those who live in 2081 should be in a position to know whether or not it will come about. Ω

Solar Observing

Michael Boschat

The first thing that the term "solar observing" brings to my mind is DANGER. However, if safety procedures are properly followed, the danger can be eliminated and some interesting observing undertaken.

To begin with, this is one case where a **small** telescope (from 60 to 80 mm aperture) is advantageous as the sun is not exactly an object that is hard to find or to see! Besides, larger telescopes gather too much light and heat unless their optical system is stopped down by blocking the objective with a hole of the dimensions given above. If you wish to use solar viewing for showing the sun to groups (i.e. during eclipses) I would recommend projecting the image onto a white screen or card as the most efficient method. During this May's eclipse, I used projection with my 80 mm refractor to point out features to a group of people which I feel is better than having long lineups at telescopes with filters where each person only gets a short glimpse.

All that aside, what is to be seen on the solar surface? Well, I am sure that most of you know, but let's have a refresher anyway. The most noticeable features are dark areas called sunspots. They consist of two parts, the umbra (the dark area) and the penumbra (which is the lighter area around the umbra). Sometimes a spot may have a very complex penumbra , a penumbra with spots in it, one that is broken into sections or even none at all. Using a medium power, say 150 times, the umbra may have a white line crossing it. This is a matter bridge. There are times, which are quite rare, when a white light flare may be seen, however, these last only a few minutes.

On the solar limb, you may see bright patches or faculae. When observing them, make sure that you check for spots. Some can be seen in faculae while

others can be seen right on the limb. The faculae themselves can be either small or large patches. In theory, they foretell of an approaching spot. The month of August proved that out! When a spot is seen near the limb, note if it is convex or concave in appearance (making the spot look like a bowl or bubble shape respectively). This is known as the Wilson effect. Also near the limb, you should be able to notice an effect of viewing the solar atmosphere at an increasingly higher angle. The effect is called limb darkening and causes the sun's surface near the limb to appear darker than in the centre.

One last feature that may be seen is the solar granulation, which is often called the "rice grain" effect. At times you may see a small black dot as part of this structure. It is called a pore spot and in calculations of the daily spot number or the Wolf number these should be included. What Wolf number? The Wolf number is one measure or the amount of solar activity. To compute it is quite simple. Count both the number of sunspots seen as well as the number of groups of sunspots seen. The formula for calculating the Wolf number (R) is: R = 10G+F where G is the number of groups and F is the number of sunspots. By the way, if the umbra is cut in half, or divided by bridges of matter, then that spot is counted as two or more spots, not simply as one. If a pore spot is seen, it is counted as both a spot AND a group. The only real problem comes when you get a really complex spot with over twenty spots and bridges all over the place. Unfortunately, it sometimes happens. Use a medium power (150x) to observe the sun at its best. A violet feature is good for seeing areas near the limb in particular. Hold the filter over your eyes and look at the projected image. Never use solar filters to look at the sun directly. One last item which can be viewed safely even in a telescope is the solar corona. Its too bad that we need a solar eclipse in order to see it! Ω

Gawker's Report

compiled by Pat Kelly

Time: Wednesday November 19th, 1987
Place: Beaverbank Observing Site
Observer(s): Paul Duval, Jim MacGuigan, Doug Pitcairn, Joe Yurchesyn & public
Equipment: 250 mm (10") Odyssey
MVM: 6
Weather conditions: 0°C and humid
Comments: Did some sketching and looked at some of the companions of M82

Objects Observed:

Galaxies: M81, M82, NGC 2976 (diffuse, about 5' across. elongated E3? faint), NGC 3077 (beside M81 and M82, nice and condensed, easy, 2' diameter)
Comets: Borrelly

◊◊

Time: Monday, December 21st, 1987
Place: Beaverbank Observing Site
Observer(s): Jason Adams, Paul Duval, Pat Kelly, Doug Pitcairn, Hugh Thompson, Mary Lou Whitehorne
Equipment: Meade 2080, B&L 4000, SPC-8, 250 mm (10") Odyssey, 150mm (6") refractor
MVM: not recorded
Weather conditions: cold and windy
Seeing: not recorded

Objects Observed:

Planets: Jupiter and its four moons
Planetary Nebulae: M76, M97
Nebulae: M42, M43, M78, Rossette Nebula

Open Clusters: M35, M45, NGC 2158
Galaxies: M77, M81, M82, NGC 891, NGC 1055, NGC 2403, NGC 2976, NGC 3077
Comets: Borrelly (it was rather easy to find once we found the "real" tail of Cetus; even the best of us sometimes go astray...)
Aurora: The evening concluded with a beautiful green aurora with both arcs and spikes. The show was highlighted by a two successive bright white meteors! - P.K.

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Time: Sunday, January 10th, 1988
Place: Beaverbank Observing Site
Observer(s): Pat Kelly, Mary Lou Whitehorne, Joe Yurchesyn
Equipment: 250 mm (10") Odyssey, 150 mm (6") refractor, 11x80 binoculars
MVM: 6
Weather conditions: #!@"* cold according to Mary Lou. Actually it was only about -10° C.
Seeing: Fair
Comments: There was much shovelling to be done but we finally got both a path and an area on the asphalt cleared out. As we were packing up Mary Lou noticed that **both** Jupiter and Sirius were casting shadows. - P.K.

Objects Observed:

Planets: Jupiter
Planetary Nebulae: NGC 2392 (Clown Face) At least there was a fuzzy star in the correct field!
Nebulae: M42, M43 (what else is new!)
Open Clusters: M35, M44 (Beehive), M67, h & χ Persei, NGC 6939 (this cluster along with the galaxy NGC 6946 can be seen in the same field as they are about a degree apart. A photo of them can be found the the "Deep Sky

Wonders" column of the December '87 **Sky & Telecope**)
Galaxies: M31, M33, NGC 6946
Comets: Borrelly, Bradfield
Asteroids: Vesta! It was a distinct pale yellow in color

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Time: Friday, January 22nd, 1988
Place: Beaverbank Observing Site
Observer(s): Nat Cohen, Martin & Darlene Harris, John Huczel, Pat Kelly, Jim MacGuigan, Doug Pitcairn, Hugh Thompson, Joe Yurchesyn
Equipment:
MVM: 6
Weather conditions: Started off clear but slowly clouded over from the west.
Seeing: Average
Comments:

Objects Observed:

Planets: Jupiter with its Red Spot
Nebulae: M42, M43, NGC 2024, Rossette Nebula, the nebulosity around Merope in the Pleiades looked like a comet's tail; Doug looked for the Cone Nebula with one of Jim's LPR filters. I could not convince myself that I could see anything although Doug and Hugh both thought that they saw something. It turned out that we were not quite looking in the right place, but part of it would have been in the field.- P.K.
Globular Clusters:
Open Clusters: M35, M36, M37, M38, M45 (Pleiades) Enterprise Cluster (NGC1647), NGC 6939
Galaxies: M33, M81, M82, NGC 2024, NGC 6946
Comets: **Bradfield** - After having determined roughly where it was in Andromeda the search began. After having no luck Doug decided to try using the binoculars - and quickly found it. "It's not where you said it was, Pat","It's

higher up, almost due left of Andromeda's waist!" Sure enough, I looked and there it was, though much brighter and rounder than I remembered it. On a hunch I sighted along the tube and sure enough, we were all enjoying a nice view of M33! Let's hope that Doug never gets elected as Observing Chairman! I found it a few minutes later by sweeping. **Borrelly** - Doug found this in the Odyssey despite Hugh's protests that it couldn't be visible as he couldn't find it in his telecope!! It was very faint compared to Bradfield, especially as Sky & Telescope had predicted similar magnitudes for both of them.- P.K.

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Members are invited to submit their observations to the Editor for inclusion in "Gawker's Report". In order to make the compiler's job easier, please list all information in a format similar to that used for the column. Thanks and clear skies. Ω

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The dates of the regularly scheduled monthly observing sessions can be obtained from the "Calendar of Events" inside the back cover. If the weather does not permit an observing session on the scheduled date, an alternate is set by the Observing Chairman based on the weather. If you wish to be informed of the time of alternate observing sessions, contact the Observing Chairman to have your name added to the list (see the inside front cover).

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NOVA NOTES INDEX

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HALIFAX CENTRE - R. A. S. C.
1988 CALENDAR OF EVENTS

February 1988

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	***13***
14	15	16	17	18	19	***20***
21	***22***	23	24	25	26	27
28	29					

March 1988

S	M	T	W	T	F	S
		1	2	***3***	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	**19**
20	21	***22***	23	24	25	26
27	28	29	30	31		

April 1988

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	**16**
17	18	19	20	21	***22***	23
24	25	26	27	28	29	30

May 1988

S	M	T	W	T	F	S
1	2	3	***4***	5	***6***	7
8	9	10	11	12	13	**14**
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

Key to calendar:

Meetings: **Shadowed and outlined**
Special days: ***bold and italicized***
Observing sessions: **bold and underlined**

Special Days:

February13 - Saturn 1.3° North of Uranus
February 22 - Mars 0.01° North of Uranus
March 3 - Lunar eclipse that we can't see
March 6 - Venus 2° North of Jupiter
March 20 - Vernal Equinox
March 22 - Mars 1.4° South of Neptune
April 22 - Lyrid Meteors
May 4 - Eta Aquarid Meteors
May 6 - Venus at maximum brightness (-4.5)

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