



# REGULUS

MARCH-APRIL 1991

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

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ASTRONOMY DAY.....	Stan Hanna	(000)	000-0000
	Peggy Torney	(000)	000-0000

## UPCOMING MEETINGS AND EVENTS

Regular Meetings of the Kingston Centre, RASC are held on the second Friday of each month at 8 p.m., in Room D-216, MacIntosh-Corry Hall, Queen's University. Non-members are welcome. Executive meetings are at 7:30 p.m.

Fri., March 8	<b>Regular Meeting</b>	<b>Peggy Torney, Review of "Voyage Through the Universe"</b> <b>Film, "To Boldly Go...", the Voyager Mission</b>
Thurs., March 28	<b>Special Meeting</b>	<b>Alister Ling, "Deep Sky Observing"</b>
Fri., April 12	<b>Regular Meeting</b>	<b>Ian Levstein, "The Surface is Fine and Powdery"</b>
Sat., April 20	<b><u>ASTRONOMY DAY</u></b>	<b>-- Mall Displays, etc.</b>
Sat., May 4	<b>NFCAAA SPRING MEETING</b>	<b>-- See information inside</b>

## IN THIS ISSUE

	<u>Page</u>
Message From The President.....	2
Holleford Meteorite Crater Tour.....	2
An Opportunity to State Our Opposition to Light Pollution.....	3
Report of the National Council Meeting of February 2, 1991.....	4
Observations of Mars During November, 1990.....	6
Astro Jumble, Honour, Etc.....	10
A Boat Ride Under The "Stars".....	11
The Celestial Observer.....	12
NFCAAA ANNUAL SPRING MEETING, REGISTRATION AND INFORMATION.....	13

## MESSAGE FROM THE PRESIDENT

Greetings from somewhere north of Kingston. Thanks for the many favourable comments received regarding my January thoughts. To keep you up-to-date, I did manage to send letters to the principals and teachers at each of the eight local high schools, offering my (our) services regarding information and observing sessions, our hopes of having their students involved in astronomy via an astronomy club, and inviting the students and staff to our meetings. But so far I've not heard of any takers.

Totally different topic: Did you know that the "Planets" by Gustav Holst (1874-1934), that everyone raves so much about, and listens to at star parties and observing nights, had nothing whatsoever to do with astronomy--other than the names of the seven movements? Holst was, however, very interested in astrology and Hindu mysticism, and felt that the planets did exert some influence over our lives. It was his intent to write music which reflected this mystic influence, and the subtitles to each of the movements (in the order in which Holst felt the music should be performed) shows his thinking on this! "Mars--the Bringer of War" (timely, eh? More about that later.); "Venus--the Bringer of Peace"; "Mercury--the Winged Messenger"; "Jupiter--the Bringer of Jollity"; "Saturn--the Bringer of Old Age"; "Uranus--the Magician"; "Neptune--the Mystic".

Regarding "Mars--the Bringer of War": if you're familiar with the music, you'll have noticed that the CBC used this theme (Tomita's synthesized version) for its news updates on the Gulf War. The music was first heard in 1914 and it was popularly believed that Holst had written the music ("Mars" especially) as a reaction to World War I. Not true. In fact, the piece was originally written for two pianos and finished in 1912. Indeed, some early sketches of "Mars" date to 1908. But Holst did not finish scoring the work for full orchestra until 1914, and did not have an open public performance before that. So now you know. Regardless, it's still nice music to observe by. One day I'll bring the video version to a meeting and we can all enjoy it. People (well, my students usually) often ask why "Pluto" was never included as part of the suite. Do you know the answer?

Well, that's all for this month. See you soon.

**IAN LEVSTEIN**

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## HOLLEFORD METEORITE CRATER TOUR

This year's **NFCAAA ANNUAL SPRING MEETING**, which is being hosted by the **Kingston Centre** on Saturday, May 4, will feature a tour of the **Holleford Meteorite Crater**,

Located 20-some kilometers north of Kingston off Highway 38. Discovered during an examination of some 200,000 aerial photographs, the crater was important in the development of the impact theory of crater formation. Formed in **precambrian rock**, which today is overlaid with rocks of sedimentary origin, the crater is about two kilometers wide and 60 meters deep. It is believed to be over half-a-billion years old.

## AN OPPORTUNITY TO STATE OUR OPPOSITION TO LIGHT POLLUTION

Adapted from presentation made by our  
National Council Representative Leo Enright to  
the Executive Meeting held February 8, 1991

If there is any topic of concern to modern professional and amateur astronomers, it is the growing spectre of **light pollution**. Many national and regional astronomical organizations have active and, to varying degrees, effective committees designed to inform and teach the public regarding this problem and to lobby politicians and legislators.

Following "Motion 87422" of the **National Council Meeting** of September 27, 1987 (Item 14, Page 10 of the minutes of that meeting) our Society is committed to taking a firm stand against proliferating light pollution of the night sky.

# Environmental Bill of Rights

## *Invitation to Comment*

The Ontario Government is committed to introducing an Environmental Bill of Rights.

The following principles will form the framework of the bill.

- *the public's right to a healthy environment;*
- *the enforcement of this right through improved access to the courts and/or tribunals including the right to sue polluters;*
- *increased public participation in environmental decision-making;*
- *increased government responsibility and accountability for the environment;*
- *greater protection for employees who "blow the whistle" on polluting employers.*

An Advisory Committee composed of individuals representing a broad range of interests has been established to give advice on the principles and the ways in which they can be turned into law.

In addition, any concerned individual, group or organization is invited to present their views in writing by March 1, 1991 to:

The Honourable Ruth Grier  
Minister of the Environment  
135 St. Clair Avenue West  
Toronto, Ontario  
M4V 1P5

For further information, call (416) 323-4321. Collect calls are accepted.



Environment  
Environnement

Ontario

Right now is a particularly **opportune moment** in Ontario to make our views known to the **Ministry of the Environment**, which is in the process of preparing an **Environmental Bill of Rights**, a document that will set a precedent for the other provinces. "Groups, organizations, and individuals representing a broad range of interests" have been specifically invited (in Ontario-wide newspaper advertisements, December, 1990 [copy reproduced here]) to submit to the Minister of the Environment their concerns and views, so that these may be included in the forthcoming **Bill of Rights**. National Council approved a motion (made by Leo Enright) on February 2nd for the National President and Vice-Presidents to submit a letter on behalf of the Society. At the General Meeting of the Kingston Centre on February 8th, a motion was approved to send a similar letter, which was signed by the President of the Centre and many of the members present.

In addition to the above, members are urged to write individual letters to the **Minister of the Environment**, in accordance with her "**invitation to comment**", expressing your concerns and desires with respect to light pollution. Although the March 1st due date may be passed by the time you read this, please--don't let the opportunity pass by. Send your letters anyway.

Thank you!

REPORT OF THE NATIONAL COUNCIL MEETING OF FEBRUARY 2, 1991

The National Council of our Society held its annual winter meeting in Toronto on Saturday, February 2, 1991, with the national president, M. Damien Lemay, presiding and ten of the twenty-two Centres represented. The agenda included reports from the officers and the standing and special committees of the Society, and several important announcements were made and significant decisions were adopted.

The Treasurer presented a financial statement for the year that had just ended and a proposed budget for 1992, which again projects a small operating deficit.

Mr. Patrick Kelly, the incoming editor of the **National Newsletter - Bulletin**, announced that the changeover in editorship had taken place, and that a number of changes here contemplated in the format of the publication, which will be renamed simply the "**Bulletin**". These changes will include a new larger-page format.

There were important announcements from several of the committees of the Society. Council approved the motion of the Awards Committee to confer the Service Award on two long-serving members of the Society, one of the Toronto Centre and one of the Calgary Centre. There was an announcement from the Constitution Committee that the new Model Centre Bylaws should be ready for the General Assembly, at which time they would be presented for approval by Council and tabled for comments and input from the Centres of the Society. A report from the chairman of the Historical Committee stated that at the time of the General Assembly there would be a presentation of a number of recommendations for improved archival practices of the Society.

The Nominating Committee chairmen put forward a recommendation from the committee, approved by Council, that, beginning with their next terms of office starting at the time of the 1991 General Assembly, the new National Recorder be Mary Ann Herrington of the Toronto Centre and the new National Librarian be Cathy Cresswell of the Hamilton Centre. The current vacancy on the list of Honorary Members of the Society has not yet been filled, and nominations are still in order to fill the position; an announcement regarding the new Honorary Member will be made at the time of the General Assembly. The Society's Messier Certificate was also awarded to two members - Andrew Westland and Alan DesRosiers.

The chairman of the Property Committee reported that things were going well with the property owned by the Society. Council also approved a motion to make the National Office and the National Library smoke-free areas.

The Centennial Committee presented recommendations and guidelines for the future use of the Endowment and Centennial Funds. The recommendations were tabled for further study and for approval at the next meeting.

The materials included in the Comet Halley Time Capsule were displayed and the capsule is to be sealed shortly and to remain at the National office to be opened at the General Assembly at the time of the next perihelion of Comet Halley.

The chairman of the Computer Use Committee suggested that consideration is being given to purchasing another computer for the National Office.

The Long-Range Planning Committee presented its first report and established a mandate that it should consider many different ventures of the Society, but not duplicate the work being done by any other committees of the Society.

The chairman of the Society-sponsored 1991 Solar Eclipse Expedition reported that the planning for the trip to Baja California Sur were proceeding apace. An airline, Nation Air, had been commissioned by the travel agent and the chairman would be making another trip to Mexico in June to finalize plans.

The report from the Seal Committee contained proposed guidelines for the sale within the Society of products with crests embodying the Seal of the Society; the report and the guidelines are to be studied further, and presented again at the time of the next Council meeting.

Council endorsed a report from the chairman of the "Mini-Handbook" Committee, giving approval to Leo Enright to continue working with the editorship and production of a beginner's observing guide.

The Astronomy Day Committee chairman, Steve Dodson, announced that the theme of next Astronomy Day, which would be Saturday, April 20, 1991, would be The Stars Belong To Everyone, meaning that the pursuit of astronomy should be open to all, particularly to persons with physical and other handicaps.

Council also approved a motion to state our concerns about light pollution through a letter to the Ontario Ministry of the Environment which is currently inviting submissions from interested groups and individuals prior to its preparation of an Environmental Bill of Rights.

A request from the Centre Francais de Montreal for an annual grant of \$2300 to support its publication of the *Annuaire Astronomique* was set aside for further study.

A proposal from the second Vice-President that the Society establish a new memorial

award in memory of the Dr. Peter Millman, to be called the Millman Medal and to be awarded to a Canadian astronomer for a contribution to our understanding of the Solar System, was referred to the Awards Committee for further study and recommendations.

The upcoming General Assembly, scheduled for the weekend of May 17 to 20 in Vancouver, was also discussed. A report from the Organizing Committee of the 1990 General Assembly contained the good news that a healthy profit had been realized from that undertaking, thanks partly to a grant from the provincial government.

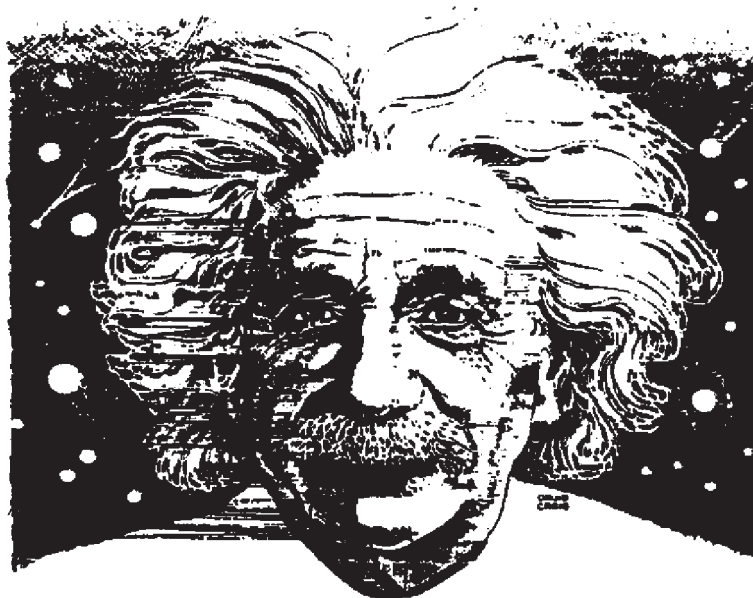
Our National Council, on behalf of all the members of the Society, was clearly able to accomplish a great deal over the first few months, thanks to the hard work done by its officers and committees, as described in the many reports received at this meeting.

Complete details regarding all the items discussed at this meeting may be found in the minutes of the meeting which will be distributed later to our Centre President and National Council Representative.

Leo Enright  
(National Council Representative)

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# IT'S THOUGHT THAT COUNTS



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# MARS

DURING NOVEMBER, 1990

By Leo Enright

During November 1990, observers in the Northern Hemisphere enjoyed one of the finest Mars oppositions of recent times and the best one until August 2003. Night after night the planet rose, orange-red and brilliant, just as the sun was setting, and in the telescope it was a rare delight, because, as those experienced in observing the fourth planet in our solar system well know, it can be a disappointing object for months on end, that is, until we approach the time when it is near opposition. As most of us found out from the abundant observing information in the Observer's Handbook 1990, Mars was at a closest approach to Earth on November 20th and at opposition on November 27th. For those who observed it less than they might have wanted to during late 1990, the red planet is still prominent in the evening sky after the end of twilight, though it has, by now, lost fully a magnitude in brightness and is somewhat smaller in size from the 18 arc seconds in diameter it displayed in November.

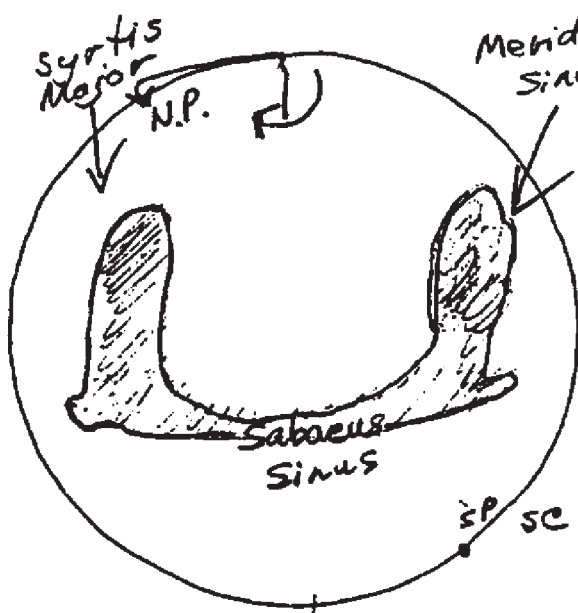
In five of my November observing sessions I made rough pencil drawings of the red planet on the left-hand page of my observing log. (I always reserve that side of my notebook for drawings of planets, sunspots, and other celestial objects to accompany the documentation on the right-hand side.) Beside each drawing, I have added in my log the computer printout for the appropriate time of observation from the Mars Ephemeris Program that appeared in the September 1990 issue of Sky and Telescope magazine.

My procedure is as follows. First, I make the drawing from observations using the 350mm Schmidt-Cassegrain telescope. (I like to use a 19mm Wide Field eyepiece giving 206X, or a 12mm Konig giving 326X; occasionally I am able to use a 9mm Nagler giving 434X.) I draw a circle in the observing log 7cm in diameter, the same size I use for the solar disk when I draw sunspots. I always write the letter "SC" beside the drawing to indicate to myself that what I have drawn is not the "true view" of the planet, as you would see it in binoculars, but the view as seen in a Schmidt-Cassegrain telescope using a diagonal--in other words, a mirror image or a "reversed-left-to-right" view. My drawings are in pencil so that I can easily correct myself as I make them. The second step is to check with the Mars Ephemeris Program to determine the Central Meridian and the position angle of the axis for the moment when the drawing was made. The Central Meridian, in practical terms, tells me which "Martian Longitude" was facing toward the Earth and what "Martian geographical features" I was able to see. I use the map of Martian features shown on page 133 of the Observer's Handbook 1990 or on page 135 of the Observer's Handbook 1991. I then mark in pen on the diagram the name of the feature that I have drawn or make a note of a certain feature that I have not drawn but think that I should have been able to see at that time. The Position Angle of the axis tells me the direction that the North Pole-South Pole line runs with respect to the North-South sky direction in my eyepiece. I then mark on the drawing the approximate positions of the North Pole and South Pole. The number given after the words "Declination of the Earth" effectively tells me which one of the poles is slightly tilted toward the Earth and which one is hidden from view. The negative number on this quantity

in recent months indicates that the Martian South Pole is tilted several degrees toward the Earth. Keeping in mind that I have been observing a "mirror image" with the left and right sides reversed, I indicate, with a curved arrow at the top of the drawing, the direction of the planet's rotation. From our point of view, the real rotation is from left to right, but in my telescope, it is from right to left. The third part of the procedure is to write up a brief description of the observation in my observing log.

The computer printout also gives the angular diameter of Mars in arc-seconds, which at this opposition reached 18.0 arc-seconds, much larger than the planet is on average. It gives the phase angle in the form of a decimal, with 1.000 the greatest possible, meaning that at opposition, the hemisphere lighted by the sun is exactly the same as the hemisphere that we see. At other times the decimal represents the **lighted** hemisphere as a fraction of the hemisphere that we see. Finally, the magnitude is given. Rarely is it above -1.0 for Mars. At the November opposition, it reached -2.0.

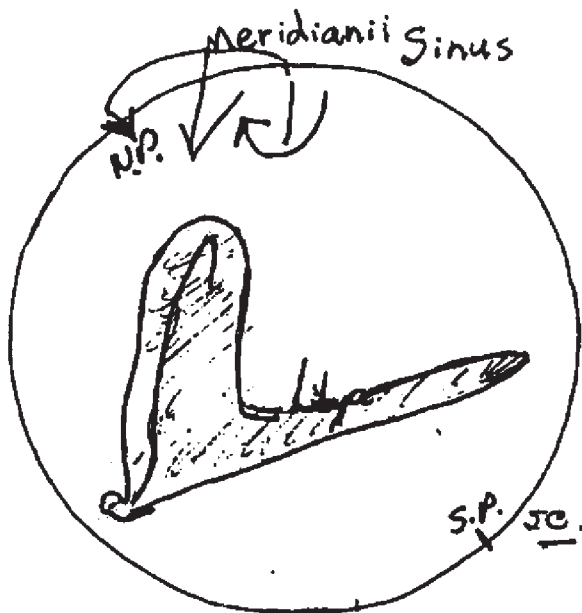
1990 Nov. 13-14, 00:30 UT: The seeing and transparency were quite good. I was able to distinguish three features: the wide and fairly dark Meridianii Sinus, the wide Syrtis Major and the slender Sabaeus Sinus connecting the other two features. (Drawing and printout from Mars Ephemeris Program below.)



YR,MO,DAY : 1990, 11, 14  
 UT (H,M,S) : 0, 30, 0

Central meridian: 292.85  
 P.A of axis: 325.46  
 Decl. of Earth: -6.25  
 Angular diameter: 18.0  
 Phase: 0.988  
 Magnitude: -1.9

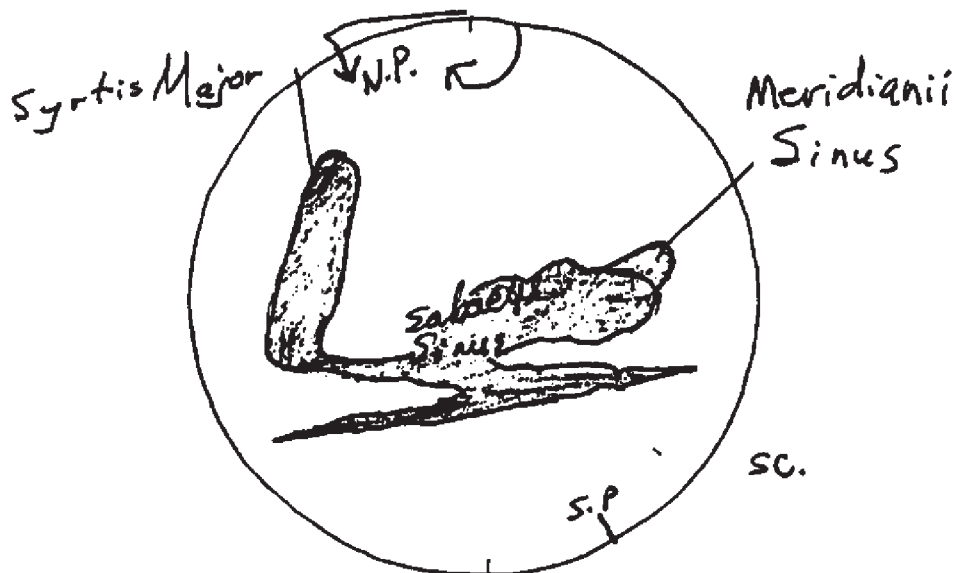
1990, Nov. 13-14, 04:00 UT: Three-and-a-half hours later, the central meridian line had increased by over 50 degrees. Mars does rotate fast! The Meridianii Sinus appears completely over on the other side of the disk. The area known as Libya can be clearly seen stretching in almost an east-west line below the equator. (Drawing on next page.)



YR,MO,DAY : 1990, 11, 14  
 UT (H,M,S) : 4, 0, 0

Central meridian: 344.06  
 P.A of axis: 325.44  
 Decl. of Earth: -6.27  
 Angular diameter: 18.0  
 Phase: 0.988  
 Magnitude: -1.9

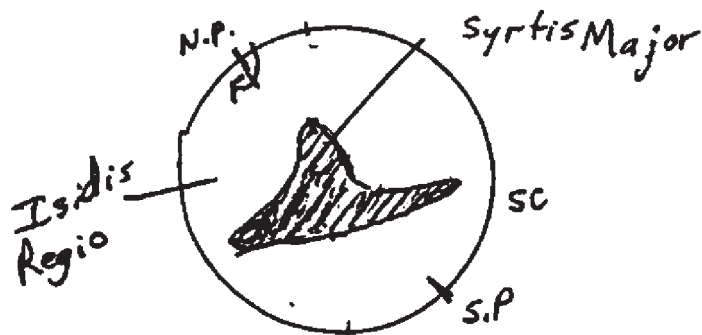
1990, Nov. 15-16, 03:35 UT: Seeing conditions are above average. Syrtis Major looks much like it did two nights ago, but the Meridianii Sinus looks much different. It looks darker and smaller and does not seem to extend as far north. To what can I attribute this change? Mars seems to have many surprises. The Sabaeus Sinus seems to be connecting these two features but it appears to be considerably darker than it was two nights ago, and also below it there is what seems to be a long thin east-west feature, almost as if the Sabaeus Sinus has split in two parts. (Drawing below.)



YR,MO,DAY : 1990, 11, 16  
 UT (H,M,S) : 3, 35, 0

Central meridian: 320.31  
 P.A of axis: 325.22  
 Decl. of Earth: -6.66  
 Angular diameter: 18.1  
 Phase: 0.991  
 Magnitude: -1.9

1990, Nov. 17-18, 03:00 UT: Seeing conditions are good and transparency is exceptionally good. Syrtis Major is prominent near the centre of the disk. The Isidis Regio is the area within the curve to the upper left from Syrtis Major. The conditions were good enough to try to photograph Mars using eyepiece projection. (See below.)

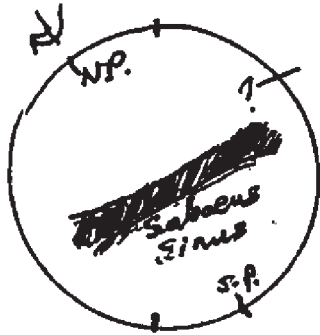


YR,MO,DAY : 1990, 11, 18  
 UT (H,M,S) : 3, 0, 0

Central meridian: 294.15  
 P.A of axis: 325.00  
 Decl. of Earth: -7.06  
 Angular diameter: 18.1  
 Phase: 0.994  
 Magnitude: -1.9



1990, Nov. 18-19, 06:40 UT: It is less than 22 hours from the moment of Mars' closest approach to the Earth. Transparency is again excellent and seeing is good. Features are very easily seen, but strangely do not seem to be as distinct as previously. I suspect that the Sinus Meridianii may be less distinct than previously because of reported dust storms. The Sabaeus Sinus makes a wide equatorial band and is the easiest feature to see--at almost any power. (Drawing below.)

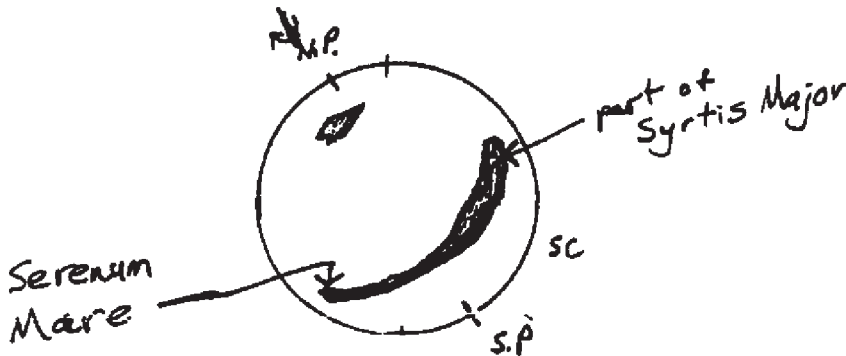


Sinus Meridianii may have been indistinct because of dust storms.  
SC

YR,MO,DAY : 1990, 11, 19  
UT (H,M,S) : 6, 40, 0

Central meridian: 339.00  
R.A of axis: 324.86  
Decl. of Earth: -7.29  
Angular diameter: 18.1  
Phase: 0.995  
Magnitude: -1.9

1990, Nov. 26-27, 00:45 UT: We are within hours of the listed moment of opposition. Not even the best telescope on Earth could detect a phase angle of Mars today. A very definite streak can be seen curving from the "7 o'clock position" on my drawing to the "3 o'clock position". Strangely, there is a more "whitish colouring" on the surface south of the curving band, and a more "reddish colouring" on the north side of the band. The band seems to be made up of the Sereuum Mare, the Cimmerium Mare and Tyrrenum Mare, with part of the Syrtis Major shown at the extreme right of the band. In the far northern region, there is a slight darkening in the Diacria region. Observing Mars is always full of surprises. (Rough drawing below.)



YR,MO,DAY : 1990, 11, 27  
UT (H,M,S) : 0, 45, 0

Central meridian: 182.10  
R.A of axis: 323.99  
Decl. of Earth: -8.90  
Angular diameter: 18.0  
Phase: 1.000  
Magnitude: -2.0

I hope that this report encourages others to submit their drawings or reports of "Martian explorations" during the time of the recent opposition. Let's compare notes.

--LEO ENRIGHT

**SPECIAL MEETING THURSDAY MARCH 28, 8 P.M.**

Hear ALISTER LING, meteorologist, amateur astronomer  
and noted deep sky observer, speak on --

**"DEEP SKY OBSERVING"**

LIMERICKS etc.

By Walter MacDonald

There was an observer from Kent  
Who on comet seeking was bent.  
He'd look and he'd look  
Until he'd one hooked  
And then word of discovery'd be sent.

There once was a man from Kars  
Who liked to observe from afars,  
And he said with a grin  
As he put an eyepiece in,  
"If I could, I'd observe from Mars!"

HUMOUR

**Answer:** Hubble Telescope Opticians  
and the planet Mars.

**Question:** Name some things that  
are extremely red right  
now.

NEW NAGLER FROM HELLOFAVIEW

HelloFAView Optical Corporation in the U.S. has started shipping a new type IIIId Nagler eyepiece. This latest in oculars represents a tremendous breakthrough in optical design--it sports a wrap-around field of view! All of the observers who have used the type IIIId so far claim that they feel like they've actually stepped out into the field of view! This supports HelloFAView's claim that anyone using the new type IIIId eyepiece will be outstanding in their field.

WHEN I HEARD THE LEARN'D ASTRONOMER

When I heard the learn'd astronomer,  
When the proofs, the figures, were ranged in columns  
before me,  
When I was shown the charts and diagrams, to add,  
divide, and measure them,  
When I sitting heard the astronomer where he lectured  
with much applause in the lecture-room,  
How soon unaccountable I became tired and sick,  
Till rising and gliding out I wander'd off by myself,  
In the mystical moist night-air, and from time to time,  
Look'd up in perfect silence at the stars.

-- WALT WHITMAN (1819-1892)

ASTRO JUMBLE

Unscramble the letters (see clue),  
then use the circled letters to solve  
the puzzle. Answer in next issue.  
Good luck!

**CLUE: SOLAR SYSTEM MOONS**

B	O	N	O	P	S		
					○		
N	E	G	E	D	A	M	Y
	○				○	○	
N	I	T	T	A			
		○					
I	N	I	T	A	T	A	
					○		
R	O	N	T	I	T		
	○						
N	A	R	C	O	H		
				○			

**IN SOME CASES, A MOON COULD BE A  
CAPTURED**

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## A BOAT RIDE UNDER THE "STARS"

By Bill Broderick

The flat-bottom boats glide silently over the dark water, the dozen or so passengers in each craning their necks "skyward". The darkness overhead is punctuated by thousands of tiny pin-points of bluish light. From horizon to dark horizon stretches a river of light, reflected in the waters beneath.

This is not a midnight boat ride under the stars, but part of a tour of the Glow Worm Caves near Waitomo, New Zealand, which we visited when in that country last October.

The glow worms are not really worms at all, per se, but rather a kind of caterpillar; actually the larval stage of a variety of two-winged insect or fly called Arachnocampa Luminosa, native to New Zealand. (Related species are found in Australia and Tasmania, which also have glow worm caves.) In this part of their life-cycle, they attach themselves to the walls and ceilings of certain caves and attract other insect prey--and each other--with their bioluminescence.

When the electric lights in the caves are turned off, and eyes become adjusted to the dark, the glowworms present an appearance remarkably like a sky full of stars and even to portions of the Milky Way. One can almost imagine oneself transported to a world in another part of the universe with a new and unfamiliar sky overhead.

A most delightful experience.

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### NEW MEMBERS WELCOME

A word of welcome to the many new members who have joined the Kingston Centre in the last little while: **JOANNE BURNS, STEVEN FRITZ, LAURIE GRAHAM, BYRON JACKSON, STEVEN MANDERS, ERIC REID, DAN ROMBOUGH, JACK STOCKDALE, JOHN TUTTLE.** E. H. THRING, It's great to have you all with us! May your association with the Centre and our Society be long and pleasant.

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### COMMUNICATING WITH THE NEWSLETTER

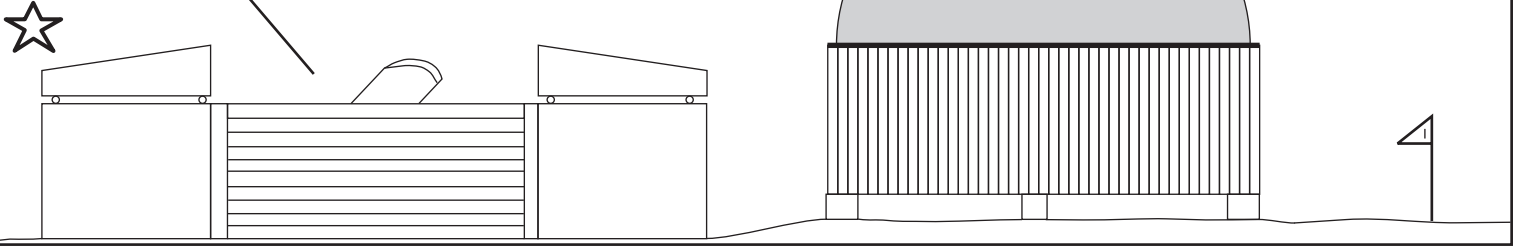
As always, we invite your comments, observations, submissions. Also notifications re changes of address, etc. Please send any communication intended for the editor or the newsletter direct to: **Bill Broderick, XXXXXX, XXXXXXXXXXXXX, Ontario XXX XXX, or phone: (613) 000-0000.** All other communications should be sent to: **RASC KINGSTON CENTRE, P.O. Box 1793, Kingston, Ontario K7L 5J6.**

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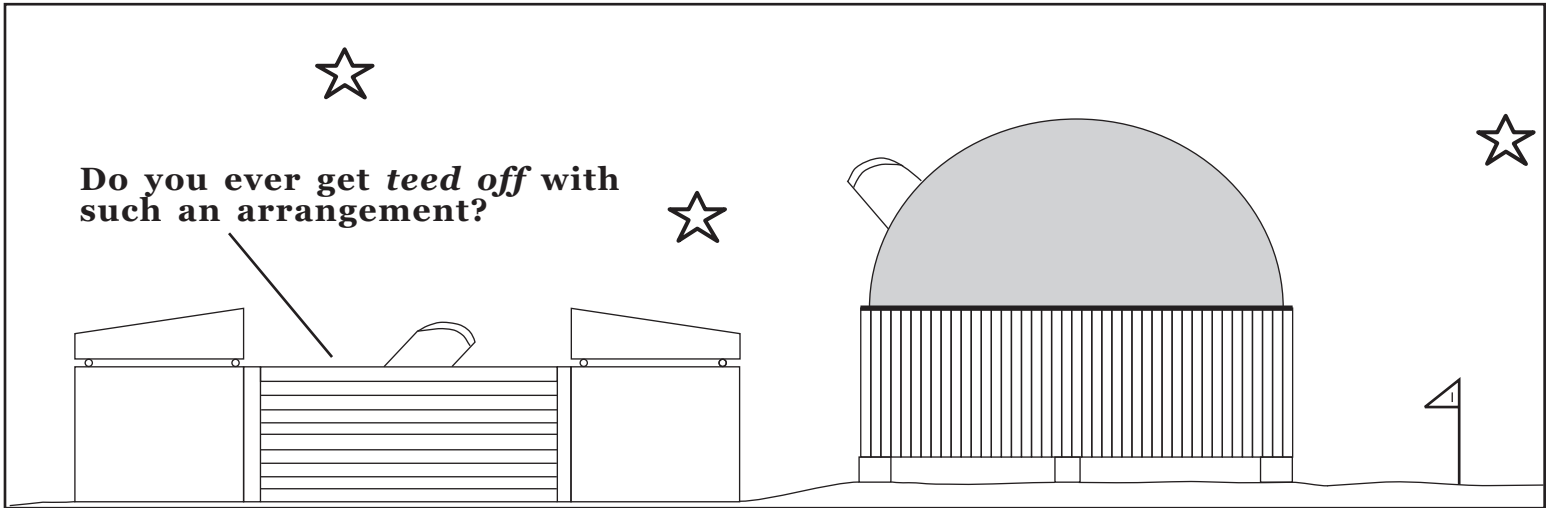
# The Celestial Observer

Continuing on from last time, our two observing heroes continue their discussion of *golf-ball* observatories...

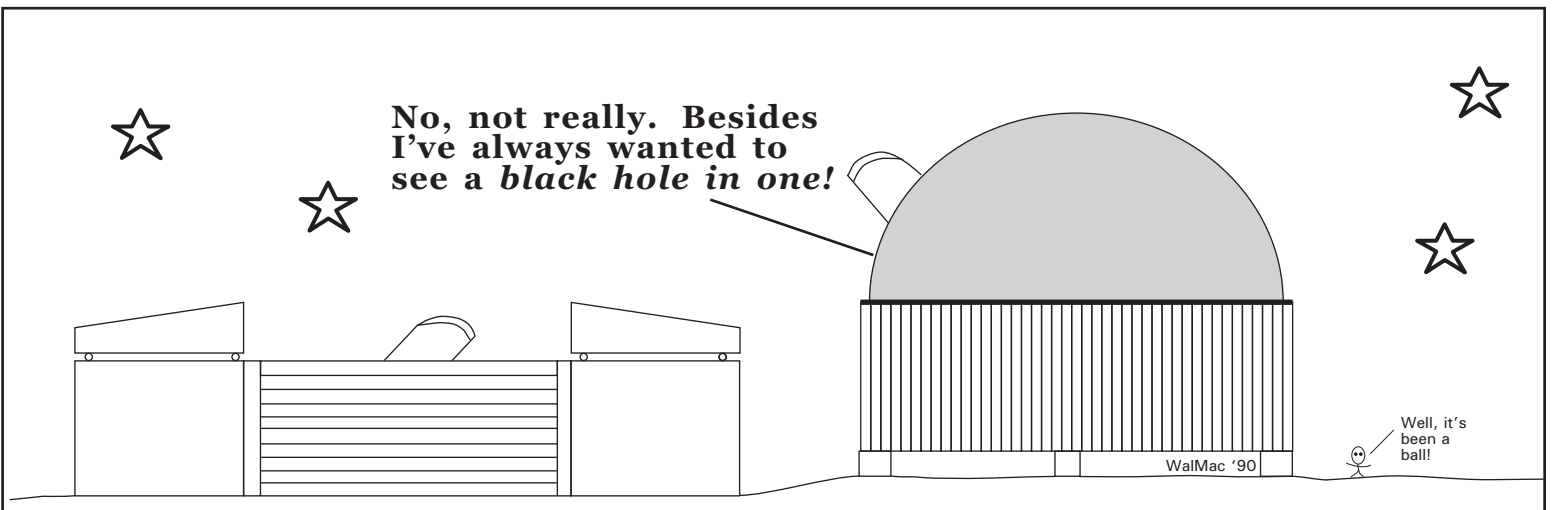
Using golf balls to rotate the dome is interesting, but I have to know...



Do you ever get *teed off* with such an arrangement?



No, not really. Besides I've always wanted to see a *black hole* in one!



Well, it's been a ball!

WalMac '90

N.F.C.A.A.A. ANNUAL SPRING MEETING

KINGSTON, ONTARIO

SATURDAY, MAY 4, 1991

\*\*\* TOUR OF THE HOLLEFORD METEORITE CRATER

\*\*\* BANQUET at HOLIDAY INN, DOWNTOWN KINGSTON

\*\*\* GUEST SPEAKER: Dr. MARTIN DUNCAN  
TOPIC: CHAOS IN THE SOLAR SYSTEM

COST: \$25.00

\* \* \* \* \*

DETACH AND MAKE DINNER SELECTION

N.F.C.A.A.A. BANQUET CHOICES

SELECTION	NUMBER REQUESTED
1. Roast Turkey with Chestnut Dressing	_____
2. Filet of Sole Almondine	_____
3. Roast Pork Loin stuffed with Apples and Raisins	_____

ADVANCE PAYMENT IS REQUIRED TO RESERVE DINNER. LIMITED NUMBER OF DINNERS AVAILABLE.

MAIL, ALONG WITH PAYMENT OF \$25.00 PER DINNER, TO:

MS. DENISE SABATINI  
XXXXXXX,  
XXXXXXXXXXXXX, ON.  
XXX XXX

For further information about accommodations and things to do in Kingston,  
please check here----->

NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

NFCAAA ANNUAL SPRING MEETING SCHEDULE

Holleford Meteorite Crater Tour

Leaves parking lot a junction of Hwys 38 and 401

12:30 pm

Banquet at Holiday Inn-Downtown Kingston

Cash Bar

6:30 pm

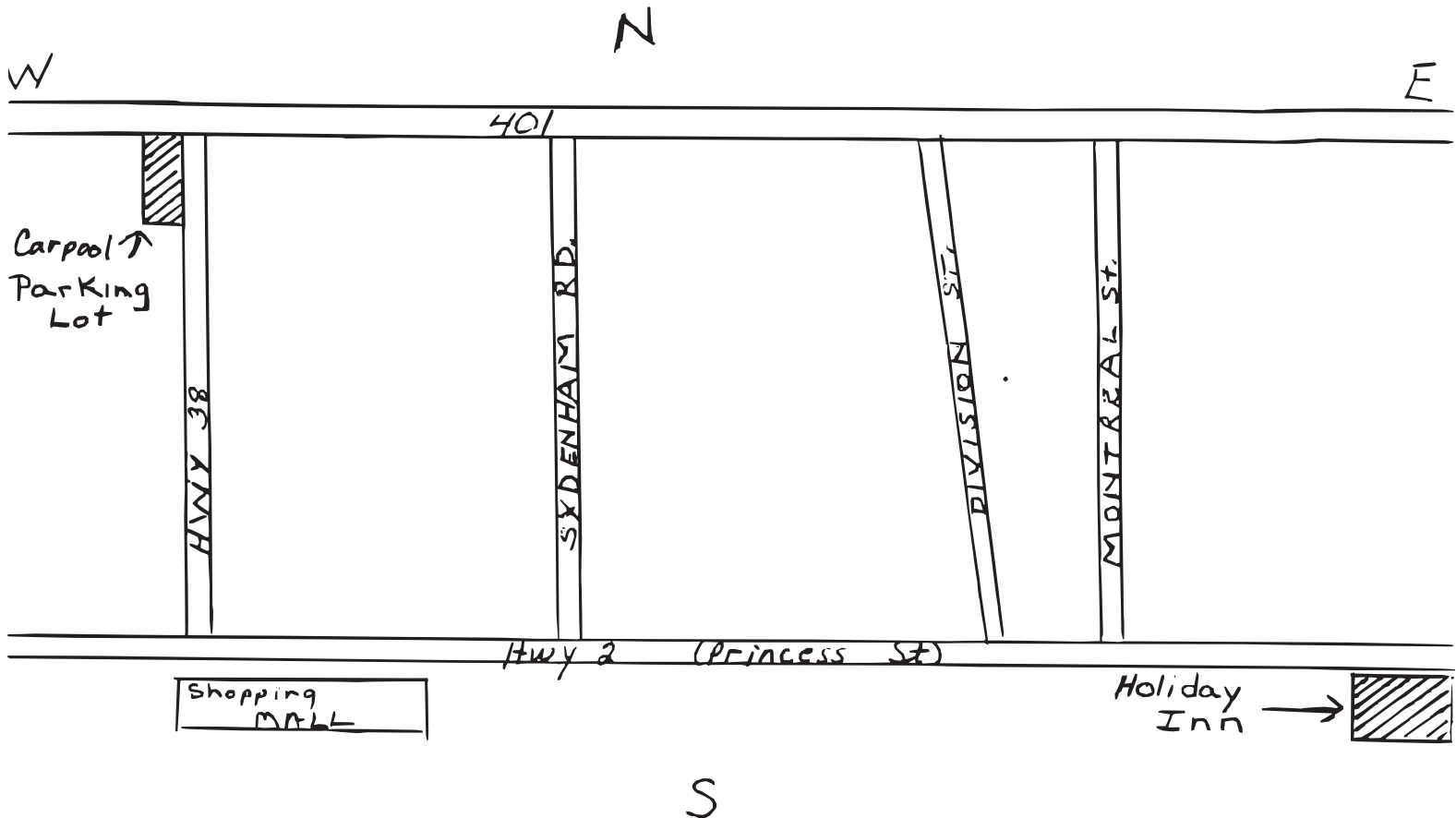
Dinner

7:00 pm

Guest Speaker--Dr. Martin Duncan

"Choas in the Solar System"

Immediately  
after dinner



THIS MAP IS BY NO MEANS TO SCALE!!!



## INTERNATIONAL DARK-SKY ASSOCIATION

The International Dark-Sky Association was incorporated early in 1988 as a tax-exempt non-profit organization, exclusively for educational and scientific purposes within the meaning of Section 501(c)3 of the United States Internal Revenue Code of 1987 (Identification Number 74-2493011). IDA operates under formal Bylaws, established at the time of incorporation and revised at the first annual meeting, 4 February 1989.

IDA's goal is to be effective in stopping the adverse environmental impact on dark skies by building awareness of the issue of light pollution and of the solutions. A united approach should be very supportive of the many local and individual efforts. Much has been accomplished in some locations, but much more needs to be done everywhere. We believe that we can succeed in preserving dark skies and in improving the nighttime environment for everyone. Quality outdoor nighttime lighting is the key. IDA can and will be supportive of members' problems concerning these issues, by sharing common knowledge on a local, national, and international basis.

Specific areas where IDA will be active include: education on all phases of the issues; a Quarterly Newsletter; brochures, leaflets, economic information, lighting design examples, and other such resources and references; Speaker's Bureaus; documentation of good and bad lighting via photos and video; Good Lighting Awards; media contacts; press releases; marketing the issues; developing viable and effective Sections as local resources in many communities and areas.

IDA is growing and now has over 700 members from 46 states and 25 other countries. Of these, 72 are organizational members, including several astronomy departments or observatories, amateur astronomy clubs, and a number of lighting companies. It is encouraging that 28 percent of those who have joined IDA have done so at more than the \$20 standard membership level.

IDA has produced 9 Quarterly Newsletters as of this date. There have been 34 Information Sheets produced, as well as other useful handouts. We have copies of many of the outdoor lighting control ordinances enacted, now numbering over 60 that we know of. A slide set, illustrating the issues, is now finished, and the Astronomical Society of the Pacific has included 20 of these slides in their new catalog.

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### Annual Membership:

	Member	Sponsor	Supporter	Sustainer	Patron	Angel	Benefactor
Individual:	\$20 *	\$50	\$100	\$200	\$500	\$1000	\$2000
Organization:	\$100 *	\$200	\$500	\$1000	\$2000	\$5000	\$10000

\* Student or Limited Income Individual Membership at \$10

\* Small (less than 100 members) Astronomy Club Membership at \$50

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For more information, or to join and help, send your name, address, phone number, comments, and check (in U.S.A. dollars) to:

International Dark-Sky Association, 3545 N. Stewart, Tucson, AZ 85716 U.S.A.

We can accept Master Charge or Visa. Include the above information, your card number, type card, expiration date, and your signature, which authorizes us to charge your account.

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## List of Information Sheets as of the Date of This Edition

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No.	Date	Title
1	Dec 88	Astronomy's Problem with Light Pollution
2	Dec 88	Light Pollution - A Problem for All of Us
3	Dec 88	Why We Don't Like the 175 Watt Mercury Fixture
4	Dec 89	Operating Data And the Economics of Different Lamps
5	Jan 89	Cities and Counties in Arizona with Outdoor Lighting Codes
6	Jan 89	Advice on Working with Community Leaders, Officials, and Others to Educate Them about the Issues and to Solicit Their Help
7	Dec 89	As a Non-Profit Organization, IDA Needs Help
8	Jul 90	Local Sections for IDA: Why? How?
9	Jan 90	Glossary of Basic Terms and Definitions
10	Feb 89	Summary of the IAU Colloquium No. 112
11	Nov 89	Estimating the Level of Sky Glow Due to Cities
12	Dec 89	Recommendations about Effective Outdoor Lighting
13	Dec 89	Summary of the City of San Diego Street Lighting Conversion
14	Jul 90	Fact Sheet on the International Dark-Sky Association
15	Jul 90	List of Information Sheets Available as of This Date
16	Dec 89	Items Currently (or Soon) Available from IDA
17	Dec 89	Vast Orbiting Displays .. A Letter by Robert Dixon
18	Jan 90	Theft of the Night .. Text of a Dec 1989 NAS Op-ED Press Release
19	Jan 90	The American Astronomical Society's Position on Light Pollution
20	Jan 90	Sky Glow Effects on Existing Large Telescopes
21	Jan 90	Poster Paper: Light Pollution, Mother Threat to the Environment
22	Jan 90	Sample Letter to Help Build Awareness and Ask for Help
23	Mar 90	Campus Lighting, and Other Such Applications (Libraries, etc.)
24	Mar 90	Security Lighting. Let's Have Real Security, Not Bad Lighting
25	Feb 90	How To Talk To Your Neighbor Who Has a Bad Light
26	Feb 90	Economic Issues in Wasted and Inefficient Outdoor Lighting
27	Feb 90	Control of Outdoor Lighting at Wesleyan University, by A. Uppgren
28	Mar 90	An Introduction to Light Pollution
29	Mar 90	Turtles and Outdoor Lighting in florida
30	Jul 90	Partial List of Good Lighting Fixtures
31	Mar 90	'Does Stanford Need More Outdoor Lighting?' Letter by Dan Schroeder
32	May 90	Telling the Differences Between Different Lighting Sources
33	Jul 90	Talking Hasn't Worked. Shall I Sue Them?
A	Mar 90	We All Need Good Outdoor Nighttime Lighting

For copies, please send a donation of \$1.00 for one to four, \$2.00 for five to nine, \$3.00 for ten to 14, \$4.00 for 15 to 19, \$5.00 for 20 to 25, or \$6.00 for 26 or more (extra donations most welcome!) to help cover costs of reproduction and mailing. There have also been 9 Newsletters produced so far; copies of these are available for \$1.00 apiece. To order, write to IDA, Inc., 3545 N. Stewart, Tucson AZ 85716 U.S.A.