

Royal Astronomical Society of Canada

BULLETIN

La Société Royale d'Astronomie du Canada

Supplement to the Journal / Supplément au Journal

August
août
1991

Volume 1
Number 4

Reflections

What is Heaven?

A Personal Perspective

Louie Bernstein

Montreal Centre

In western culture we traditionally imagine heaven as a peaceful place in the clouds; God's luminous domain where angels play and good souls come to rest. Alas, this wonderfully naïve concept does not stand up to scrutiny. We have transcended the clouds and have landed on the Moon. We have spanned the reaches of the solar system using robot explorers. We have peered over a billion light-years into space-time and have probed the nuclear heart of matter down to quarks. We have discovered that there are billions of galaxies like ours, each containing

billions of stars like our Sun. Today we know that the universe is expanding and that it probably rose spontaneously, like universes do, some 15 billion years ago, from a shimmering "singularity" of unimaginable density and energy.

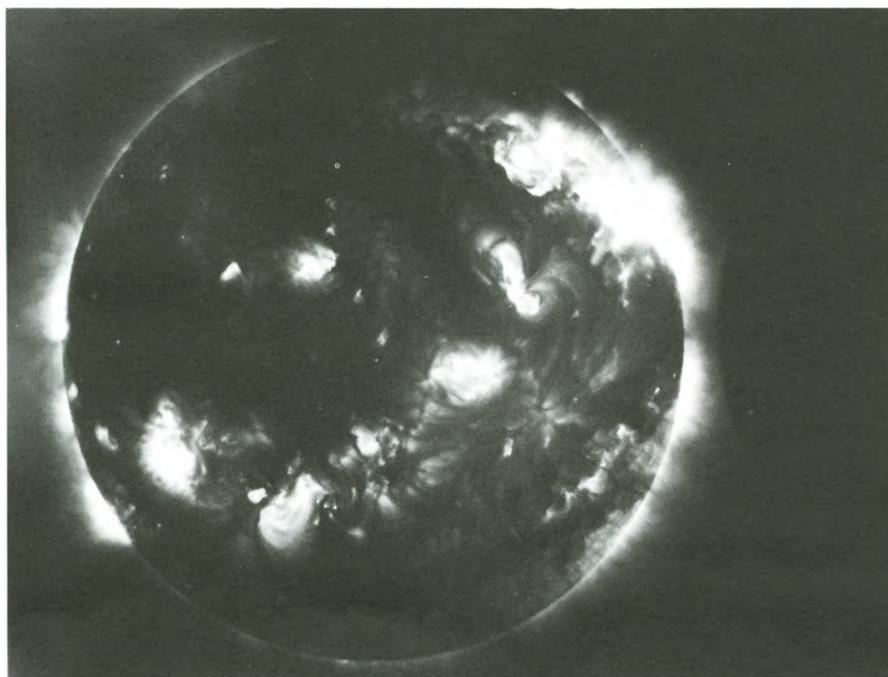
Though the universe itself is evidence of a creative force, it is unreasonable to attribute to this force the characteristics which traditionally personify God. The concepts of heaven and God must be redefined, using knowledge and reason, if they are to make any sense and be of benefit to mankind.

Personally, I experience heaven when I look up at the sky and see thousands of stars glittering in the cosmic depths. For me, heaven is existence. It is being alive and knowing the variety and beauty of the universe. Heaven is basking in the warm glow of the Sun or feeling the sting of a winter's night. Heaven is everywhere, right now. It is all around us; we are a part

of it. Heaven is not our reward in death, it is our reward in life. All we need do is learn to feel it.

And what about God? It is said that God created man in his own image, but it appears to me that it is we who have created God in our image. The vision of a wise, old man who answers our prayers and sometimes vents his wrath, is an artifact from the early development of the human psyche. I firmly believe that God exists, but as a force. This force flows through each of us as the potential for understanding, compassion and love.

It is knowing the difference between right and wrong, good and bad, and having the vision to act on that knowledge. It is learning to live in peace and harmony with nature. I believe that as we continue to evolve, this force will express itself increasingly within each of us, putting an end to our meaningless differences. For without it, humanity has no future. ✪



This high-resolution X-ray image of the Sun was obtained from an X-ray telescope flown on a NASA sounding rocket above New Mexico. It was taken on July 11th during totality in Hawaii to complement other solar experiments undertaken during the eclipse. The dark silhouette of the approaching Moon can be seen to the right of the Sun. Photo courtesy of IBM's Research Division.



BULLETIN

is a publication of the Royal Astronomical Society of Canada and is distributed together with the Society's Journal. It contains articles on current activities of the Royal Astronomical Society of Canada and its Centres across Canada, as well as articles from members and non-members which are of general interest to members of the Society. Manuscripts (in English or French) should be submitted to the Editor at the address below. Inquiries about the Society should be directed to its National Office at 136 Dupont Street, Toronto, Ontario, Canada M5R 1V2.

Editor: Patrick M. Kelly
Mailing Address: 2 Arvida Avenue, Halifax, Nova Scotia, Canada B3R 1K6
E-mail Address: PKELLY@watt.ccs.tuns.ca
FAX: (902) 423-6672

Editorial Staff: Diane Brooks, Harlan Creighton

Rédacteur pour les Centres français: Marc Gélinas, 11 Pierre-Ricard, N-D-Ile-Perrot, Québec, Canada J7V 8M6

Printing: University of Toronto Press

This publication is printed on recycled paper containing 50% pre-consumer recycled paper and at least 5% post-consumer de-inked fibre.

Deadline for the December issue is Nov. 1st.

Event Horizon

October 4 - 6
 Third Annual Astronomy Workshop
 Camp Maskapatoon, Alberta
 Registration fee of \$75 covers accommodations (bunk beds), meals and ten presentations on amateur astronomy. This year's special guest speaker is Stephen J. O'Meara of *Sky & Telescope*. For registration or information, write to: Astronomy Workshop, c/o 8950 Windsor Road, Edmonton, Alberta, Canada T6G 2A2 or phone Russ Sampson at (403) 439-3474. Registration deadline is September 30th.

Commencement avec l'année 1992, tous les membres du Centre de Québec et du Centre Français de Montréal, et les membres français non attachés à un centre, qui désirent recevoir le Annuaire Astronomique à la place du Observer's Handbook pourront expédier leur Observer's Handbook et une requête au Office National. Les membres non attachés à un centre pourront indiquer leurs préférences sur leurs forms du renouvellement.

Letters to the Editor

New Format Liked

What a surprise it was to see the new format **BULLETIN!** Wow! It looks great. It was nice to see a change to a more friendly and attractive format after all these years.

The first two issues were also first rate in content. As a former Centre newsletter editor myself, I'm familiar with the publications put out by each R.A.S.C. Centre. The one thing I've always been impressed with in all the Centre newsletters and in the previous *National Newsletter* is the high quality of writing. It looks like the new **BULLETIN** is off to a good start at maintaining the tradition of quality amid the new, more energetic look.

My compliments to you and to everyone involved with the **BULLETIN** for a job well done. Keep up the good work!

Alan Dyer

Associate Editor, *ASTRONOMY* magazine

[Editor's Note: I would like to thank all of you who wrote, phoned, E-mailed or spoke to me at meetings and the G.A., etc. for your kind support. I appreciate it greatly and hope that I can continue to live up to your expectations.]

The "Old" Name's History

Congratulations on becoming the editor of the revised R.A.S.C. **BULLETIN** and I wish you the best of luck in maintaining the high standards and interesting readability. I recall attending a meeting at the General Assembly in the 1960's that approved the founding of the *National Newsletter*. We couldn't agree on a name, so that's how it ended up with the not-so-original name of *National Newsletter*! I had suggested *Urania*, but that has now been taken over by a Centre newsletter.

Jim Low

111 Rainsford Road, Toronto, Ontario M4L 3N8

[Editor's Note: We obviously think alike! I had also thought of "Urania" as a new name to go with the new format but, alas, Samia had already beaten me to it!]

A Mystery of Procyon

In the Arabic names of the stars, Sirius is called "al-Shiira" and sometimes "al-Yamaniya" is added meaning "the southern al-Shiira". Procyon is named "al-Shiira al-Shamiya" or "the northern al-Shiira" and is also called "al-Shiira al-ghomayssa" meaning "the blinded al-Shiira".

Ancient Arabic mythology claimed that Sirius and Canopus were once in the northern part of the sky and that Sirius and Procyon were sisters

of Canopus. Canopus married al-Jauza (in Orion) and broke her back, so he fled south of the Milky Way and his sister Sirius followed him. The other sister, Procyon, remained alone in the north and cried so hard that she became blinded, hence the reason for the alternate name given to this star.

That Procyon is called "the blinded" may give insight that the ancient Arabs, or the people from whom they inherited their myths, may have observed some change in brightness of Procyon, possibly due to the evolution of Procyon B. Whilst the mystery of a change in the colour of Sirius from ancient times is still unresolved, we may now encounter a similar one concerning its sister, Procyon!

Bassel A. Reyahi

P.O. Box 86, Tulkarm, West Bank, Israel

Across the R.A.S.C.

Halifax

Several active members of the Halifax Centre moved on to greener pastures over the last couple of months. Long time member Randall Brooks moved to Ottawa in April to take up his new post as Curator of Physical Sciences at the National Museum of Science and Technology. Jim MacGuigan, who had been the owner of the Maritime's only telescope store moved back to Vancouver to operate a Vancouver telescope shop. Greg Roberts, who gained national fame for publishing electronic images from N.A.S.A. is off to California to start working at J.P.L.

The recession has had an effect on local astronomy journalism as both *The Daily News* and *The Mail-Star* dropped their astronomy columns. Terry Dickinson's monthly column, however, will still be published in *The Mail-Star*, so we won't be going completely without an astronomy forum.

The centre recently purchased a 1000 Oaks solar filter (off-axis type II) for the centre's C8 so that borrowers will be able to use in the day as well as at night.

This year's Perseid party was a huge change from the two previous ones. Large numbers of people showed up as before, but this year it was actually clear! We had about 150 members of the public scattered over a large field. Those who were not taking in the meteors were able to view other objects as there were about a half dozen telescopes set up as well.

Starting in the fall, the Nova Scotia Museum will be charging the centre for the printing of NOVA NOTES. At this time, it looks as if a surcharge will have to be adopted to cover this extra cost. ☺

Astronomy Day in Six Cities

Steve Dodson
National Astronomy Day Chairman

Special congratulations are due to the Calgary Centre for reporting on their Astronomy Day events only a few days later for at least the last three years.

It snowed on last year's events in Calgary, so Centre volunteers were thankful they only had to dodge clouds this time to show 1700 visitors the Sun, the Moon and Venus by day and numerous night-time objects at Fish Creek Provincial Park. The twenty-nine members' telescopes present ranged from 4 inchers to a 20-inch trailer mounted Cassegrain. The observing was supplemented by indoor displays at the Alberta Science Centre and sky programs in the Centennial Planetarium.

The Vancouver Centre had some success fulfilling the theme of involving the disabled in astronomy, since the telescope at the Gordon Southam Observatory is wheelchair accessible and was used by star gazers in wheelchairs. Outdoors at the observatory site, as secretary Sally Baker relates "We had a 'very large array' of all shapes and sizes of telescopes and many volunteers helping to demonstrate". One crowd-pleasing eye-catcher was the big blue 25-inch Dobsonian built by two members. The big scopes were taken at night to Campbell Valley Park for public observing.

An innovation by the Vancouver Centre this year was the awarding of "Certificates of Mirror Grinding Proficiency" to people of all ages attracted by the noise of coarse grit in action, who then stayed to "help" hands-on.



Part of the Kingston Centre's display at the Kingston Mall. Photo by Leo Enright.

Always ambitious, John Ginder and his host of prize-winning Astronomy Week enthusiasts exceeded even last year's amazing schedule, providing a dozen days of public astronomy at parks, malls, and the local astronomical institutions. Unfortunately cloud and rain ruled the skies, and only two observing events were favoured with partly-clear skies. An observing

highlight was a transit of Io shared with many visitors on Thursday April 18th.

Indoor "observing" was much more reliable and good crowds enjoyed two innovative programs at McLaughlin Planetarium: a "Family Stargazing Workshop" and "Meet the Planetarium Astronomer".

The Halifax Centre provided an observatory tour complete with solar observing and a variety



Members of the public lining up to look through the 25-inch scope in Vancouver.

of indoor displays and talks. A highlight was a great variety of unusual telescopes, instruments, and devices. For example there was the Centre's mirror grinding machine, made by crossing a bicycle and a washing machine!

Other unusual features at Halifax included a display on the history of celestial navigation and a powerful computer allowing interactive "zoom-in" displays of Landsat images.



This Toronto lad has seen the light!

Montreal Centre members successfully predicted cloudy weather and concentrated on a large variety of indoor exhibits. The lecture hall at the Dow Planetarium overflowed with exhibits

by members, local astronomical stores, and the large French organization L'Association de Groupes Amateur Astronomes du Québec.

Many visitors toured the Montreal Centre Observatory in spite of rain. In connection with this year's theme Centre President Mario Caluori notes that the observatory driveway and entrance were designed with people experiencing limited mobility in mind.

Weather did not permit supplementing the Kingston Centre's mall exhibits with planned observing at a public park.

More than at any other reporting centre, Kingston members devoted much effort and research to developing astronomical experiences for potential participants with sensory disabilities. They involved the Canadian National Institute for the Blind, the local Handicapped Centre, and various schools.

Much creative energy went towards allowing the seeing impaired to visualize astronomical instruments and objects. Some telescopes were set up in low positions for wheel-chair-confined visitors to inspect and for those with visual impairment to feel. Cotton batten "tactile galaxies" were on display in face-on and edge-on orientations. A roughly proportioned tactile solar system model was made with different-sized balls appropriately spaced on strings.

Last year my paper on Centennial Astronomy Week at the Ottawa General Assembly was illustrated by a Canada-Wide Observing Weather Map based entirely on the dozen Astronomy Week reports received. The picture, based only on the above, is obviously much less certain, however it is tempting to suggest that (except for solar observing in Halifax) stargazing was just possible for Toronto and increased as one went westwards.



Toronto Centre's Scott Lough demonstrating his recipe for comets while an attentive audience looks on.

Next May's first quarter Moon does not occur on the Victoria Day weekend and at the coincident time of the General Assembly as it did this year. Therefore, Astronomy Day 1992 occurs on May 9th. Hopefully this later date will attract more widespread good weather! ☺

How Astronomers Captured an Asteroid

John Howell
Victoria Centre

A stargazer will be entranced with his first views of Saturn, but as nights pass he will soon lose interest in viewing the Moon and planets that form the solar system. Deep sky objects are more challenging, but most serious observers will eventually want to find a project that is scientifically rewarding. In the early 1960's my eyes were focused (no pun intended) on occultations when President Kennedy announced that the U.S. should land a man on the Moon and return him safely by the end of the decade.

The Ranger missions to our neighbouring world gave us close-up views of the lunar surface, but also revealed that we did not know the Moon's position in space accurately enough for the complete safety of a manned landing. To improve our knowledge of the Moon's orbital

ally given as a "corridor" across the Earth indicating the path of the shadow of the asteroid or planet. This corridor is similar to the path of totality of a solar eclipse. Accurate photographs of the asteroid and star are usually taken over several days immediately before the event to finalize the shadow path. This information is made available to amateurs, usually in the form of a recorded telephone message.

In the 1970's, reports were made of star occultations by possible companions of asteroids. As a result of these observations, it is speculated that some asteroids may be gravitationally bound together as binary objects. Recent radar images of several asteroids have shown that this is indeed the case.

About eight years ago, on May 29th, 1983, the spectroscopic binary star 1 Vulpeculæ (SAO 87010) of magnitude 4.8 was predicted to be occulted by the asteroid 2 Pallas. The path was projected to cross the southern United States and northern Mexico. Observers at 130 locations timed the event and a further 110 observers also provided observations of the area around

true shape of the asteroid could be determined for more than 65% of its circumference. (See Figure 2) The southern part of the track was clouded out for many other observers.

The 110 observers that did not see an occultation also contributed to our knowledge. They showed that a large area of space around Pallas does not contain a satellite. (See Figure 3) Also, the best photometric results rule out a large cloud of dust surrounding Pallas. This had been postulated by Soviet astronomers after an earlier occultation by the asteroid.

It was a wonderful effort spearheaded by dedicated astronomers, mainly amateurs, with whole-hearted assistance from their professional peers. The R.A.S.C., as a Canada wide society, should be ready to organize a similar effort when an appropriate occasion occurs in the future. On December 12th of this year, 22 Kalliope (magnitude 10.4) will occult the 9.5 magnitude star +25°733. This event will be observable in a path running from Florida to British Columbia. I am sure that a major effort will be made to observe this event. All Victoria and Vancouver Centre

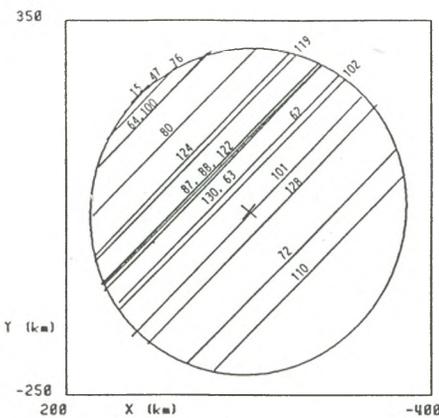


Figure 1. Solution using photoelectric and video timings.

parameters, observations of many more occultations of stars by the Moon would be needed. Amateur astronomers were requested to help and I started observing them in 1963. I next progressed to observing grazing occultations and still find this type of event to be very fascinating. The formation of the International Occultation Timing Association (I.O.T.A.) in the late sixties increased the scope of these kinds of observations. The occultation of stars by asteroids and planets were predicted and the timing of these occultations is now the best way of measuring the sizes of these bodies.

The position of an asteroid is not known to sufficient accuracy to allow occultation predictions to be made for a specific observer with any great certainty. The path of the event is gener-

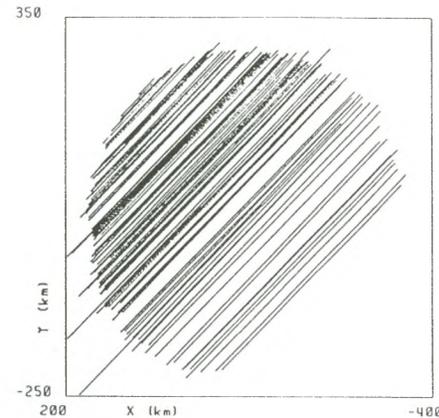


Figure 2. Raw occultation observations.

the asteroid. Fourteen of the observations used photometry which gave very accurate timings. (See Figure 1) These could be used to compare the accuracy of the visual recordings. Most of the photoelectric stations and a few visual observers recorded the secondary star event of the binary pair. This provided data that determined the angular separation of the pair to be 0.0028 arc-seconds with an error of ± 0.0004 , and the position angle to be 305° with an error of $\pm 10^\circ$. It was also determined that the actual parallax of the star is probably near 0.008 arc-seconds which is half of the published value. These are wonderfully accurate and fulfilling results and are worthwhile science.

With the large number of observers, many chords of Pallas were obtained. As a result, the

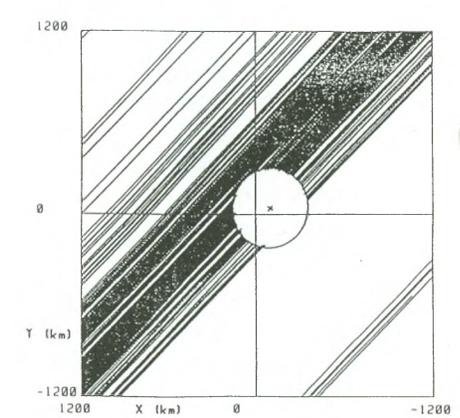


Figure 3. The sky plane observed around Pallas.

observers should try to time this event. As the predicted path will probably be shifted just before the actual event, members in other Centres may also want to get involved. See pages 72-75 of the January 1991 issue of *Sky & Telescope* for more details. I will be pleased to help anyone interested. The Pallas data that I have outlined, showed a distinct increase in accuracy for observers who were classified as "experienced" so try and get some experience before December. The *Observer's Handbook* lists occultations of stars by the Moon, which will help you get practice. Be sure to pick a Moon that is less than 50% illuminated as a brighter Moon makes it more difficult. It will help, I know!

[Figures are from Dunham et al: *Size and Shape of Pallas*] ✪

Meteors: Why Not?

Peter Brown
Fort McMurray Astronomical Society

The different areas amateur astronomers can contribute to in a scientifically meaningful way through simple observing are many. The question as to which discipline in astronomy amateurs are most likely to devote such serious observations to is usually answered by words like "variable stars" or "occultations". True, both of these avenues provide rich rewards in terms of scientific payback, but both also require somewhat expensive equipment to get going. Equally valuable observations can be made through meteor observing without any extravagant equipment by anyone with some knowledge of the constellations and a notepad.

Why then have many amateurs turned to variable stars and occultation work to attempt to make serious scientific observations when meteor observing can be done so much easier? The answer in large part rests with the fact that both variable star and occultation observations are coordinated through large internationally-based organizations, namely the A.A.V.S.O. and I.O.T.A. These are able to provide guidance to beginning observers and have the resources to meet the needs of more advanced observers. The centralization of the observations also enables researchers to readily access the observations in a standard format for easy intercomparisons, hence the data gets used extensively by professional astronomers and in this way proves very attractive for the would-be amateur contributor.

Such has not been the case, until recently, in the area of meteor astronomy. While several attempts have been made to set up an international meteor group by ambitious national meteor organizations, all failed within a couple years of their founding. Right up until the late 1980's amateur meteor observations were made in varying formats by dozens of small national groups around the world at all different levels of sophistication. For this reason many professional meteor astronomers have been reluctant to use amateur meteor observations.

As a result of intensive correspondence between some active meteor amateurs world-wide in the mid-1980's a consensus emerged as to the grave importance of the establishment of an international body for the further development of amateur meteor astronomy. As a result, in 1988 the International Meteor Organization (I.M.O.) was founded as a non-profit scientific body modelled in large part after the I.A.U. and has

since grown to incorporate the work of over 500 observers in forty countries. The I.M.O. has no affiliations with any national, or regional organizations and hence is truly international in spirit.

The I.M.O. has adopted standard observing techniques similar to that used by many of the national meteor groups around the world and has set up computerized databases for all forms of amateur meteor observations collected using these internationally agreed methods. The I.M.O. maintains commissions devoted to visual, radio, telescopic, fireball and photographic meteor observations and each section has its own coordinator and database from which researchers extract information for the study of meteor streams. Since its founding, the I.M.O. has logged close to 300 000 visual meteor observations alone, with more information contained in radio, telescopic and photographic records. The result of such a homogenous global approach to meteor observations has resulted in many new findings, including an apparent double peak in the well-known Perseid meteor stream!

The techniques for observing are outlined in detail in several handbooks which also contain a wealth of information on all aspects of meteor phenomena.

In addition, the I.M.O. publishes a bi-monthly journal called *WGN* containing some 200 pages each year of observing results and projects by groups from all over the world, as well as papers covering a broad spectrum of interests within the meteor astronomy community by both amateur and professional astronomers. To insure that the observations submitted to the I.M.O. are made as widely available as possible all observations are published in a report series consisting of several hundred pages of structured presentation of all the data collected in a given year.

For those interested in meteor literature the I.M.O. has an 8 000 paper library, completely documented on a bibliographic database for researchers.

Each year during the International Meteor Conference the annual assembly of the I.M.O. is held. Papers and results from the previous year are presented and discussed. This is a chance for observers in this specialized area to meet one another in person and exchange ideas and observing methods. For the past decade such weekends have been held in Europe, but plans are under way to host such an event in North America by the end of the present decade.

Members of the R.A.S.C. who are interested in joining the I.M.O. can obtain a yearly membership for \$12 U.S. (\$14 Can.) which includes the

(continued on page 8)

Major U.S. Research University Discovers New Element!!

Reprinted from *Appology*

The heaviest element known to science was recently discovered by investigators at a major U.S. research university. The element, tentatively named administratium, has no protons or electrons and thus has an atomic number of 0. However, it does have 1 neutron, 125 assistant neutrons, 75 vice-neutrons, and 111 assistant vice-neutrons. This gives it an atomic mass of 312. These 312 particles are held together by a force that involves the continuous exchange of meson-like particles called morons.

Since it has no electrons, administratium is inert. However, it can be detected chemically as it impedes every reaction it comes in contact with. According to the discoverers, a minute amount of administratium causes one reaction to take over four days to complete when it would have normally occurred in less than one second. Administratium has a normal half-life of approximately three years, at which time it does not decay, but instead undergoes a reorganization in which assistant neutrons, vice-neutrons, and assistant vice-neutrons exchange places. Some studies have shown that the atomic mass actually increases after each reorganization.

Research at other laboratories indicates that administratium occurs naturally in the atmosphere. It tends to concentrate at certain points such as government agencies, large corporations and universities. It can usually be found in the newest, best appointed, and best maintained buildings.

Scientists point out that administratium is known to be toxic at any level of concentration and can easily destroy any productive reaction where it is allowed to accumulate. Attempts are being made to determine how administratium can be controlled to prevent irreversible damage, but results to date are not promising. ☛

This is the excellent foppery of the world, that when we are sick in fortune — often the surfeit of our own behavior — we make guilty of our disasters the sun, the moons and the stars; as if we were villains by necessity; fools by heavenly compulsion; knaves, thieves and treachers by spherical predominance; drunkards, liars and adulterers by an enforced obedience of planetary influence.

William Shakespeare
English Dramatist/Poet (1564-1616)

Halley's Comet Time Capsule Sealed

Patrick Kelly
Halifax Centre

At long last, the society's Comet Halley time capsule is sealed shut and begins its long wait until 2061 when it will be reopened. The final preparations were carried out at the National Council meeting which was held in Toronto on February 2nd. Michael Watson, who is the chairman of the Comet Halley Time Capsule Committee, had arranged to have the time capsule, as well as a representative sample of the contents, on display for those present at the meeting.

The collection of material was extremely interesting. As expected, there were many publications relating to Halley's Comet's latest visit, including special issues of *Astronomy*, *Sky & Telescope* and other magazines, centres' newsletters and publicity posters for public observing sessions. Also included were photographs of the comet taken by many society members. On the more unusual side, there was a spherical pillow representing the night sky with the path of Halley's Comet marked on it; a commemorative Wedgewood plate (donated by Michael's wife) and a jigsaw puzzle of memorabilia from the 1910 visit. The puzzle was donated by Peter Broughton, and has the distinction of being the last item submitted.

The capsule was not actually sealed at the meeting. This was because the material still had to be carefully packed, in case, as Michael noted, it had to be hauled a long distance because the 2061 G.A. was being hosted by the Tuktoyaktuk Centre.

Also to be included is the following letter (which was signed after the meeting) that eloquently sums up the purpose for having the time capsule in the first place.

February 1991

Dear Members of the Society & Comet Watchers:

We, your fellow astronomers and predecessors in the Society, have assembled for your enjoyment a small collection of mementos from the 1986 visit of Halley's Comet. We hope that this Time Capsule and its contents have survived intact throughout the 70 years since the sealing of the Capsule in 1991. We intend this collection to provide a tangible link between our future and your past, and recognition of the long and distinguished history of the Society, which we fervently hope will continue to benefit future beholders of the most famous of all comets.

We forgive you the wry humour that you must feel in knowing that the 1986 apparition of Comet Halley was possibly the worst in recorded history! As you probably are aware, the Comet never approached very close to Earth, and at its most favourable period of observation, in March and April 1986, was so far south in declination as to be virtually invisible from Canada. These conditions prompted many Society members to travel to the Caribbean or Australia to get a better view, resulting in many travel-damaged telescopes and overdrawn bank accounts.

Today, one can only guess at what the future holds for celestial imaging systems. In 1986, charge-coupled devices (CCDs) were just starting to be available to amateur astronomers, and virtually all images of the Comet were made with standard silver-based photographic film using camera lenses or amateur-sized (10-25 cm aperture) telescopes or Schmidt Cameras. The crudeness of our technology will probably astonish you as much as the simplicity of the 1910 technology (available at the last appearance of the Comet) amazes us.

We envy what we know will be the spectacular evening views that you will have of Comet Halley in the summer of 2061. Enjoy the Comet, and think of us as you do. We salute you and wish you good fortune and clear skies, Quo Ducit Urania.

Michael S.F. Watson
Chairperson
Comet Halley Time Capsule Committee

Damien Lemay
President

The Royal Astronomical Society of Canada
La Société Royale d'Astronomie du Canada ☼

L'Astronomie en couleur

Marc A. Gélinas

L'astronomie a aujourd'hui un nouveau défenseur dans les mass médias : la revue "Astronomie-Québec". La revue officielle de l'Association des Groupes d'Astronome Amateur (AGAA) possède quelque quarante pages entourées d'une couverture couleur, elle est distribuée aux membres des clubs de l'AGAA. Elle est aussi disponible par abonnement individuel, et est vendue en kiosque. Le directeur en est Jean-Pierre Urbain. Il y a un employé permanent en Jacques-Serge Neveu, le rédacteur en chef. Une équipe de rédaction comprenant: Mlle Corinne Roy, pour les nouvelles des clubs, M. Patrice Gélin-Roze pour les chroniques et M. Marc A. Gélinas pour

les dossiers, complète le personnel. A part le rédacteur en chef, qui est un journaliste professionnel à contrat, tout les autres sont des bénévoles. Le grand cousin américain, la revue "Astronomy", a fait récemment parvenir une lettre de félicitation à la rédaction où elle vantait la qualité de notre revue.

Historique : En 1972 la Société d'Astronomie de Montréal transforme son bulletin mensuel en une publication plus volumineuse qui est baptisée "Québec-Astronomie". En 1980, suite à la fondation de l'Association des Groupes d'Astronome Amateur (AGAA), regroupant les clubs d'astronomie du Québec, le Québec-Astronomie devient la revue officielle de l'AGAA. En février 1991 la revue prit un envol nouveau lors d'une assemblée générale des collaborateurs. Peu après, le conseil d'administration de l'AGAA votait en faveur du changement de nom; depuis le numéro de mai-juin 91 la revue s'appelle "Astronomie-Québec".

Objectifs: Le changement de nom reflète un changement dans les objectifs de la revue. Elle se préoccupera maintenant d'astronomie avant tout, elle est abonnée à l'Agence France Presse Scientifique. D'autre part, elle sera se préoccupera toujours de présenter l'activité des clubs québécois, mais ses efforts de présentation s'axeront vers le grand public. En bout de ligne la médiatisation de l'astronomie ne pourra qu'être bénéfique pour le recrutement de nouveaux astronomes amateurs. Le changement de nom est aussi une tactique pour prendre place dans un nouvel environnement, celui des kiosques à journaux. Tout comme *Sky & Telescope* a changé sa présentation pour être plus visible parmi les multiples revues en kiosque, *Astronomie-Québec* sera plus facilement identifiable, les premières lettres du mot *Astronomie* (souvent les seules visibles) seront facile à reconnaître. Encore faut-il être présent en kiosque, et c'est là un objectif fixé par Jean-Pierre Urbain, le directeur. Des expériences effectuées en quelque points de vente ont été encourageantes, la revue se vendant mieux que la moyenne. Afin d'augmenter son attrait, une page couverture couleur est maintenant produite. Ce rêve caressé pendant vingt ans par tous les éditeurs du Québec-Astronomie est devenu réalité grâce à la réduction d'autres coûts.

Distribution: Tout les clubs de la S.R.A.C. à travers le Canada reçoivent une copie de la revue (voyez votre bibliothécaire ou votre secrétaire), et si votre club ne la reçoit pas, vous pouvez contacter le secrétariat pour faire rectifier la situation. Un abonnement individuel, (voir page 8)

Kingston Centre Hosts a Real Blast!

Bill Broderick
Kingston Centre

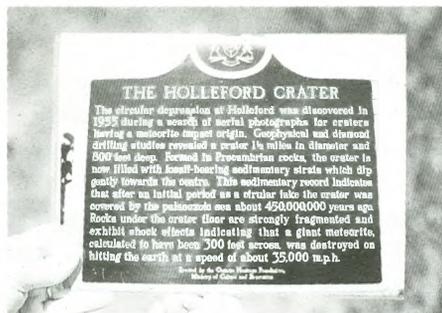
On Saturday, May 4th, 1991, the Kingston Centre played host to the spring meeting of the Niagara Frontier Council of Amateur Astronomical Associations (N.F.C.A.A.A.). The afternoon was devoted to a tour of the Holleford Meteor Crater, located some twenty kilometres north of Kingston off Highway 38. Kingston Centre member Leo Enright led the approximately thirty attendees over the crater which is situated on an area of farmland about five kilometres E.N.E. of the village of Hartington. He explained the history of the crater's discovery in 1955 from an aerial photographic survey and its subsequent confirmation as a meteorite impact site by diamond drilling in the same year.



Three holes were drilled in a south-east direction from the center of the crater in order to establish its profile. The group is shown here at Drillhole Number One on the "floor" of the crater. The other drillholes are just below the rim and on the rim itself. Leo Enright (with back to camera) is explaining the history of the crater. Photo by Bill Broderick.

The visitors learned that the crater was formed in the Precambrian bedrock over half a billion years ago and that it is somewhat larger than the Barringer Crater in Arizona. The impacting body is believed to have been about 100 metres in diameter and to have struck the Earth at about 20 km/s. The energy of the impact is believed to have been about six times that of the Barringer Crater impact.

The crater tour was followed by dinner at the Holiday Inn in Kingston. Susan Rugelis of Syracuse and co-chairperson of the N.F.C.A.A.A. welcomed everyone attending. The Niagara and Hamilton Centres were represented as well as groups from Rochester, Syracuse and, of course, Kingston. The evening's address was given by Dr. Martin Duncan of the Astronomy Group at



One of two roadside plaques originally erected by the Ontario Heritage Foundation and Ministry of Culture and Recreation to commemorate the discovery of the Holleford Crater in 1955. The plaques are no longer present, having been removed by vandals. Photo by Bill Broderick. Photo of original plaque by Leo Enright.

Queen's University, who spoke on chaos in the solar system. Dr. Duncan explained that while conventional physics can predict planetary motions and positions for a few million years, there are too many variables to make accurate predictions possible over longer terms. Changes in the orbits of asteroids, comets, and even planets, can take place in ways that appear today to be completely unpredictable. Dr. Duncan's work on chaos was featured in an article on the subject in the May 1990 issue of *Astronomy*.

All in all, this turned out to be a fine day and a great time was enjoyed by everyone. Many thanks to Denise Sabitini for organizing a terrific N.F.C.A.A.A. spring meeting. ☼

Astronomy Day in Montreal

Mario Caluori
Montreal Centre

They say "Don't put all your eggs in one basket". In the three previous years that we have held Astronomy Day events the weather has never been perfectly clear. In fact, it has poured! As a result, this year we decided to concentrate on an indoor display at the planetarium, so that if it rained, we still could benefit from the excellent publicity that the planetarium site would afford.

Many Canadians may not be aware that astronomy in Québec is alive and well, as evidenced by the excellent displays from many clubs. Although the Montreal Centre is the oldest and most established centre of astronomy in Québec, we have long known that "We are not alone!". Present were L'Association de Groupes Amateur Astronomes du Québec (a.k.a. A.G.A.A., a type of mini-R.A.S.C.), Société

d'Astronomie de Montréal (a.k.a. S.A.M.), Club Laval, Club Mirabel, Le Club de Dorval, Club Jeunesse and Club Espace. All in all the displays filled the lecture hall to the point that the A.G.A.A. had to be put outside in the lobby. Two local astronomy stores were invited. Bill Strople of Harrison brought just about the whole store. They were interviewed by the French media. La Maison d'Astronomie was also present.

Despite the rain, the event attracted 1200 people. Our theme this year was "Light Pollution and its Affect on Observing". Louie Bernstein and helpers created three excellent poster boards. Our two tables were filled with hand-outs, publications and unique measuring equipment that are seldom seen. These included a Zeiss spectroscope, a filar micrometer, a Zeiss Herschel wedge, solar filters, telescope remote controls and a specially programmed pocket calculator. A battery operated orrery generated much enthusiasm as it showed the Earth's place in the solar system. Our table was always crowded with people wanting to know the answers to what seemed like a million questions.

We also circulated two petitions, one against light pollution and another favouring the Gemini Project for Canadian involvement in two eight metre telescopes. Our secretary, Carole Talbot, was interviewed on television concerning the petitions, as was I about the event as a whole. We made the 10:00 P.M. C.B.C. newscast (just before the hockey game!). Simultaneously, at our second location, the observatory, we showed films, had computer demonstrations, explained the workings of our antique telescope collection and demonstrated our dome-mounted Celestron 14. A lot of children visited the observatory (to the apparent dismay of some parents who had been made to brave the rain!).

Later that evening, our Honorary Vice-President, Dr. Tony Moffat, gave an interesting talk entitled "Where Astronomers Observe". He detailed his professional travels to Cerro Tololo, Russia, Hawaii, Mount Megantic and Europe with a slide presentation.

Our organizers, Louie Bernstein and Suzanne Moreau were pleased that over twenty-five members helped out, showing that our members feel that it is an important and worthwhile activity bringing many rewards to the centre.

The purpose of Astronomy Day is to popularize amateur astronomy, and publicize our centre. I am surprised at how many people share an interest in the sky. Some members of the public have been observing for years or have bought their own telescope before ever joining any club. It is when I see the exuberant smiles of satisfaction at having found us and our facilities that I know we have done our job properly. ☼

L' Astronomie en couleur

(continuer à page 7)

comprenant 6 numéros, coûte (17.50 \$ + 1.23 \$ TPS = 18.73\$, les résidents du Québec doivent ajouter 1.50 \$ pour la TVP). Hors du Canada le coût est de 25.00 \$. Pour plus de renseignement contactez : Astronomie-Québec (abonnement) 4545, Pierre-de-Coubertin C.P. 1000, succ. M Montréal, (Québec) Canada H1V 3R2 ☼

Meteors: Why Not?

(continued from page 5)

journal *WGN* and several information circulars on specific topics each year. In North America membership is handled through the North American section of the I.M.O. and can be obtained through:

Peter Brown
181 Sifton Ave.
Fort McMurray, Alberta
Canada
T9H 4V7

Please make checks and money orders payable to Peter Brown. Outside North America membership can be obtained through:

Paul Roggemans
Pijnboomstraat 25
B-2800 Mechelen
Belgium

The I.M.O. invites all meteor observers to submit their observations for inclusion in the ongoing global analysis of meteor streams. In addition the I.M.O. would be pleased to try and answer any questions you might have about meteor observing or meteors in general. Please address such correspondence to the above addresses. ☼

Some Observations of the Zodiacal Light

Alister Ling

In a one sentence explanation, the zodiacal light is a faint, milky band of light stretching across the sky through the constellations of the zodiac, shining feebly by scattered sunlight from dust particles orbiting in the ecliptic plane. For more information, consult the *Observer's Handbook*. One of the most interesting facets of the zodiacal band is that it typically goes un-noticed until it is so obvious that you wonder why you've never seen it before! In fact, once you know what to look for, the zodiacal band becomes a rela-

tively easy target from rural skies at the right time of year.

Its visibility depends crucially upon sky conditions. Generally, I can only see the parts of it that are not battling brighter city glows; I have never had the pleasure of seeing the entire band. The zodiacal band is about the same brightness as the Milky Way through Monoceros, similar to the Cygnus Milky Way as seen from the city, but only half as wide.

In late October 1990, Jerry Spevak and I were out observing at Oak Heights, a two hour drive east of Toronto. The skies there were quite dark. As always, I took a short break from the telescope near midnight and simply looked up, absorbing the magnificence. It's not often I get under a sky that's so dark that the moment I turn off the car headlights I can see a magnitude fainter than at my typical observing sites.

I was scanning along the line of attractive sights from Gemini through the Hyades and Pleiades when I realised that my eyes had latched onto a glow in Pisces. I swept back and forth, up and down several times to reassure myself that this patch had to be the gegenschein. This somewhat oval glow is about 8° across and lies exactly opposite the sun, where the dust particles back-scatter light most efficiently.

I got out my trusty *Observer's Handbook* to check the sun's position, added 12 hours of right ascension, and arrived right at the spot in question on my Norton's Star Atlas. Almost. With a puzzled look I stared back up at the sky only to find that the large oval was exactly where it was supposed to be, not the 2 degrees away where I first saw it! Try as I might, I could not get it to return to the first place.

This observation brings up an interesting point to ponder. How much does the brain influence what the eyes detect? In other words, if your brain knows for sure what it should see, then will it manufacture the feature? It would be nice to read about your experiences or thoughts on this matter.

There are also a couple of dark adaptation effects I've noticed. The first is mentioned above. Once you've seen some subtle detail, it almost becomes obvious. The second deals with the limits of averted vision. For an object that occupies a large field of view, some of its light will fall onto less sensitive areas of the retina. Moving one's eye around, the various features should appear to vary in brightness.

The zodiacal band is best seen near the western horizon on March evenings (a nice prelude to a Messier marathon) and near the eastern horizon in October. Near the horizon it widens out into an elongated pyramidal glow. As

I noted above, it is a lot easier to detect than one at first might think.

The gegenschein, it turns out, is best visible in October when it is high in the sky and away from bright stars, i.e. in Pisces. Even the Pleiades in November don't wash it out. From mid-January to mid-February it lies high in the dark sky in Cancer. Another good spot might be half way between Regulus and Spica in mid-March. The typical strong rain systems in March clear out the dust particles and haze very effectively, leaving those awesome deep blue skies, the promise of a dark night. ☼

A Saskatchewan Name in the Skies

Richard D. Vanderberg
Reprinted from *Saskatoon Skies*

Most of us would like to see our names go down in history. As amateur astronomers, we perhaps look with envy at David Levy who now has seven comets named after him. One amateur astronomer in Saskatchewan who has achieved that goal is Father Lucien Kemble of Lumsden. Father Lucien, known as "Luc" to his friends, is a truly amazing and dedicated amateur astronomer and teacher. It was my good fortune to spend many nights observing with him when he lived in Cochrane, Alberta. His major interest is observing and drawing galaxies. He has drawn more than 1300 of them.

Luc's claim to fame, however, is not a galaxy, but a chain of stars. It is known as Kemble's Cascade. Because Kemble's Cascade is in the constellation of Camelopardalis it is well placed for observing during the fall and winter months. Finding Kemble's Cascade is not too difficult. Begin by locating NGC 1502, an open star cluster of magnitude 5.7. It is located at R.A. 4 hours, 7.7 minutes, Dec. +62.2° with a diameter of 8". At that magnitude and size, it should be visible in most finder scopes or with a pair of binoculars. A drawing of NGC 1502 can be found on page 61 of *The Webb Society Deep-Sky Observer's Handbook, Volume 3*.

From NGC 1502 look just to the west and then northwards. You will see a string of stars going from south-east to north-west. The northwestern tip of Kemble's Cascade is at approximately R.A. 3 hours, 52 minutes and Dec. +64°. Most of the stars in the cascade range from magnitude five to eight and so are easily seen with any type of optical aid. There are few stars in that area of the sky so the stars in the cascade appear quite prominent. As you look at Kemble's Cascade and enjoy their beauty, remember that they are named after a fellow amateur astronomer. ☼