

NATIONAL NEWSLETTER

February, 1982

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OF CANADA

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Plan now to attend the General Assembly at Saskatoon, Saskatchewan, 20–23 May 1982. Details inside this issue.

NATIONAL NEWSLETTER

February, 1982

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Deadline is six weeks prior to month of issue.

Editorial

Readers will note that with this issue there is a new masthead for the *National Newsletter*. It is inevitable that when a new editor comes into office there will be some changes. Then too, there is an evolution of the nature and style of the publication. We at the NNL like to think that our little bimonthly is improving and becoming more informative and entertaining. Arrangements made in the past to smooth the process of assembling the NNL six times a year no longer seemed to be in step with our present production methods. Although these responsibilities are now ended, the contributions made over the years by Bill Ireland (Staff Artist), Richard McDonald (Photographic Editor) and Dr. Lloyd Higgs (Assistant Editor and Referee) have been cornerstones of the NNL's development, and I sincerely thank them for their services to my predecessors and the Society.

For the past several years, we have had Regional Editors who had the job of digging out news from the Centre newsletters for wider dissemination in these pages. For a variety of reasons the system has not been as successful as was hoped, although much material for the 1981 volume was selected by Frank Shinn in his capacity as Western Regional Editor. Effective immediately Centres should send copies of their newsletters to the NNL at the address in the Masthead above. To Frank, and to Barry Matthews of Ottawa Centre, who for a time served as Frank's opposite number for Eastern Centres, many thanks for your efforts.

Corrigenda: Observer's Handbook 1982

by Roy L. Bishop

Among the editorial comments in the 1982 *Observer's Handbook* is the prophetic line: "the inevitable flaws and errors are solely the responsibility of the new editor." Listed below are four errors that have come to my attention. The first three are minor, but the fourth is more serious and is the reason for this note.

1. Page 9, Satellites of Jupiter “XI Sinope” should read “IX Sinope”. (Courtesy of P. M. Millman)
2. Page 92, caption to lower figure, last sentence: “latitutes” should be “latitudes”.
3. Page 118: Margin symbol has been omitted. It should be the same as on page 120.
4. Pages 96 and 98, the Uranus and Neptune charts: Precession between 1950 and 1982 was not taken into account (This was the editor’s oversight, not that of the author of this section). Fortunately the shift required in both instances is nearly parallel to the indicated paths. The Uranus chart may be corrected simply by shifting the indicated monthly positions *4 mm to the right along the path*. For the Neptune chart the required correction is *7 mm to the right along the path*.

A Brief History of L’Association des Groupes d’Astronomes amateurs (AGAA)

by Damien Lemay
Quebec Centre

The idea for a province-wide association of clubs devoted to amateur astronomy was born at an informal meeting of Quebec amateur astronomers held at Nicolet in the summer of 1973. The purpose of the proposed organization would be to promote communications among Quebec amateur astronomers by means of a common publication and a yearly meeting, as well as offering assistance to individual clubs needing help to get started or encountering difficulties in maintaining their existence.

Participants at the 1973 meeting were concerned that many of the amateur groups that existed in small Quebec towns at this time revolved around two or three young, active members. When these members moved away, the remaining members often were not prepared to take over the operation of the club, which gradually died away. Over the years, astronomy clubs might come and go several times in a given location.

On November 8, 1975, the first true meeting devoted to the formation of a province-wide association took place at L’Université de Québec à Trois Rivières. Under the leadership of Interim President Felix de Forest, the basic rules of the association were written and a course of action for the future agreed to. Events moved quickly from then on. In 1976, L’Association des Groupes d’Astronomes amateurs (AGAA) was formally incorporated as a non-profit organization, and the first annual meeting and election of officers was held at Drmmmondville. Coincident with this latter meeting, Réal Manseau’s L’Observatoire du Sagittaire was officially opened.

The beginning of 1977 saw the inauguration of AGAA’s publication *Magnitude Zero* on a quarterly basis. It contained material contributed by members dealing with news of the various clubs, reports of observations, articles on basic astronomy, as well as other material of interest. *Magnitude Zero* was of great benefit to clubs without a publication of their own, but it also was in competition with two other established publications: *Le Québec Astronomique* of the Societe d’Astronomie de Montreal and *Le Bulletin du Centre de Québec*. Three publications proved to be too many, and when *Magnitude Zero* began publishing ten times yearly in 1978, *Le Bulletin* was reduced to a skeleton containing material pertaining solely to the Quebec Centre. Finally, in 1980, *Magnitude Zero* and *Le Québec Astronomique* merged after a long period of negotiations. The merger agreement provided that *Le Québec Astronomique* would become the official newsletter of AGAA and *Magnitude Zero* would be discontinued. The September, 1980, issue of *Le Québec Astronomique* was reset to Volume 1, Number 1, to mark the first issue of the merged publication.

AGAA started with less than ten clubs, but during the first half of 1981 the number grew to eighteen. Although the existence of some of these clubs is still sporadic (dependent upon the presence of leaders), the overall situation is substantially more stable than it was in 1977. Many of AGAA’s clubs are enjoying continuous good health and are very active. The clubs range in size from the giant Societé de Montreal with over 800 members, through Le Centre de Québec with more than 100 members, to the others which range from between ten and twenty-five members.

The rules for participation in AGAA are simple. A club needs only to send a list of its members (minimum – ten) along with a fee per member. This money serves mainly to finance *Le Québec Astronomique*. The membership fee is fixed each year at the annual meeting, where each club has one or more voting delegates depending on the size of the club. Other business conducted at the annual

meeting includes election of officers and other matters of interest. There is no equivalent to the RASC's unattached membership: a person can become a member of AGAA only by joining a club affiliated with AGAA. However, it is possible for an individual to contribute articles to *Le Québec Astronomique*, and an individual may subscribe to this publication for \$10 per year.

Many people have been involved in establishing AGAA. At the risk of forgetting important contributors, I feel special mention should be made of Jean Vallière, AGAA's first president, and Michel Rebetez, the first editor of *Magnitude Zero*. As well, the efforts of Felix de Forest, interim president, should be mentioned; regrettably, he is no longer active in amateur astronomy due to his commitments at the Physics Department of l'Université du Québec a Trois Rivières.

AGAA has now achieved its two main objectives: the consolidation of all small French publications relating to amateur astronomy into a single, large one, circulated to all members; and the organization of an annual meeting with talks, exhibits, prizes, a banquet, etc., much like the RASC's General Assembly. The AGAA annual meeting brings together about 75 persons. In addition, AGAA maintains contact with other astronomical organizations, encourages any astronomy-related activity, organizes trips to places like L'Observatoire du Mt. Mégantic, etc.

All RASC centres are entitled to receive *Le Québec Astronomique* which is sent to the secretary of each Centre at the address appearing in the annual *Supplement to the Journal*. Any inquiry concerning AGAA or *Le Québec Astronomique* should be addressed to:

AGAA
1415 est rue Jarry
Montreal, Quebec
H2E 2Z7
Tel.: (514)-374-3541

News Briefs

The report on solar terrestrial conditions broadcast over WWV at 18 minutes past the hour is also available in written form. Interested solar and aurora observers should write for the "Preliminary Report and Forecast of Solar Geophysical Data." The address is:

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
Environmental Research Laboratories
Space Environment Services Center
Boulder, Colorado 80303.

Our thanks to member A. J. Boyko of Detroit, Michigan for this information.

The Astronomical Society of the Pacific has published an index listing all of the astronomy books published by NASA. These books include non-technical descriptions of planetary missions, and summaries of conferences on the search for extraterrestrial life and the building of space habitats. Restrictions on government publishing have resulted in these publications being given little publicity. The free index, which gives addresses for ordering the books, is available from the ASP. Two international airmail postage payment coupons should be sent with your name and full address to:

NASA Index
Astronomical Society of the Pacific
1290 24th Avenue
San Francisco, California 94122.

Hamilton Centre is looking for donation or exchange copies of the *Journal* to round out its collection. The Hamilton duplicate *Journals* include at least one full set from 1932 to 1972 inclusive, with a gap for 1957. Extra *Handbooks* are also available. All are in very good to excellent condition, some in the

original mailers. If you can help out, please contact the Hamilton Centre, P.O. Box 1223, Waterdown, Ontario L0R 2H0.

On 19 March 1982 London Centre will celebrate its Diamond Jubilee with a banquet and a special lecture. The speaker will be Dr. Bart Bok, who will discuss "The History of Milky Way Research, 1920-1982." For further information, contact the London Centre at P.O. Box 842, Station B, London, Ontario N6A 4Z3, or phone (519) 433-2992.

Victoria Centre member Dr. J. B. Tatum has found that northern hemisphere observers will be able to observe Comet Halley after all. In an article in *The Observatory*, Vol. 101, p. 84ff, Dr. Tatum notes that the comet should be at magnitude 8 in Taurus in late November 1985. It will be at its brightest in the southern sky, where it is inaccessible to northern observers. By May 1986 it will again be visible from the northern hemisphere, but it will be at magnitude 7 and fading fast: by late June it is at magnitude 12 and will be observed in twilight. Dr. Tatum also predicts that in the two weeks prior to perihelion on 9 February, Comet Halley should be visible to observers at midnorthern latitudes for an hour or so after sunset at magnitude 3. Its next apparition in 2062 should be more favourable.

The International Society for Photogrammetry and Remote Sensing will hold a symposium on Data Interpretation in Toulouse, France from 13 to 17 September 1982. For further information write the Groupement pour le Developpement de la Teledetection Aerospatiale at 18, avenue Edouard-Belin, 31055 Toulouse Cedex, France.

National Office Changes Number

Effective March 15, 1982 the National Office of the Royal Astronomical Society of Canada, 124 Merton Street, Toronto, Ontario will have a new telephone number. The new telephone number will be

(416)-484-6383

Inquiries after March 15 to the old number (416)-484-4960 will only be transferred by Bell Canada to the new number for a short time.

International Workshop for Amateur Astronomers

Due to the success of previous camps (for example in Havelte, The Netherlands, in 1978 and 1979) the International Workshop for Amateur Astronomers (IWAA) will hold a camp in co-operation with the Volkshogeschool Overcinge from July 18 to August 8, 1982. Belgian, English, Dutch and Italian leaders will offer the following working groups: general astronomy, meteors, cosmology, history and astronomical techniques. In addition, a spare-time programme of excursions, films, sports events, games, etc. is being planned. The Volkshogeschool offers very good accommodations, as well as a dark room, video equipment, several telescopes, microcomputers, etc. The camp site is situated in the northern Netherlands where the night sky is quite dark. The official camp language will be English.

Amateur astronomers between ages 16 and 22 are eligible to enroll. The fee of f 425,- (Dutch currency) includes accommodation, meals, excursions, and use of facilities. A free information booklet and application forms can be obtained by writing to:

Niels van Weeren
Sand-Ambachstraat 17
2691 BL's Gravenzande
The Netherlands

International Astronomy Youth Camp

The International Astronomy Youth Camps organization is also planning a workshop/camp at Schauinsland, a 1280 metres-high mountain in the Black Forest near Freiburg, West Germany. The twenty-day programme based out of the Jugendhaus Schauinsland and the Kiepenhauer Institute of Solar Physics will include working groups on solar astronomy, planetary astronomy, satellites,

technological advances in astronomy, psychology of astronomy, the earth-moon system, basic astronomy, and cosmic dimensions. As with the IWAA programme, there will also be a recreational programme. Registration is limited to seventy persons, age 16 to 22 years. English is the official camp language. The fee is DM 420. Information and application forms are available by writing to IAYC, c/o Christoph Muenkel, Richard-Koehn-Strasse 24, 2080 Pinneberg, West Germany.

Texas Star Party

The Southwest Region of the Astronomical League is organising its first major amateur telescope maker's conference in the American southwest at Fort Davis, Texas, May 26–30, 1982. The programme includes a tour of the nearby McDonald Observatory and Bart Bok and Clyde Tombaugh as guest speakers. Information and registration materials can be obtained by writing to: David Clark, 2709 Colonial Drive, Carrollton, Texas, USA 75007.

(Ed. Thanks to Howard Simkover of Ottawa for this information)

Amateur Astronomy Survey A Bulletin from The Astronomical League

Active American and Canadian amateur astronomers own \$58 million worth of telescopes packing the light-gathering power of 68 Mt. Palomars. Last year they added more equipment and accessories to this arsenal than could be bought by triple the budget of Kitt Peak National Observatory.

Fantastic? This is the conclusion reached in a summary survey of North American amateur astronomy compiled by the Astronomical League Light Pollution Committee at the request of a group of the Lighting Engineers Society studying harmful impact of light waste.

The League queried some major United States telescope manufacturers; Canadian amateur astronomers; government agencies such as the United States Department of Commerce and the National Science Foundation; major astronomy magazines; speciality societies such as the American Association of Variable Star Observers, and others.

Total interest in astronomy as a serious hobby is widespread. An estimated 185,000 "active" non-professionals are among at least 400,000 who, the survey estimated, have "some interest" in the hobby. A recent university estimate, for example, put the number who have "recently" taken voluntary astronomy courses at about 200,000 people.

In the two countries there are 20,000 active amateurs organized in more than 400 local astronomy societies and clubs. About 60 percent of these are affiliated with national or regional groups such as the League or the Royal Astronomical Society of Canada.

The League concluded, projecting a recent reader study published in *Astronomy* magazine, that there are as many as 112,000 "active" telescope owners. They muster 56,000 instruments in the 4 to 8-inch class and 3,700 telescopes of 10-inch size or larger. The total U.S. annual market for imported and domestic instruments may be more than 40,000 units, including at least 15,000 produced in the U.S. Several telescope industry executives have stated that these figures may be low.

The scientific contributions of amateur astronomers are significant. Probably 500 observers, the study concluded, provide scientific data to six speciality societies which make the data available to professional researchers. As a comparison, there are 3300 active members of the American Astronomical Society.

The study also mentioned cultural benefits of this unique popular science and the costs of continued degrading of the quality of the dark sky. "Tens of millions," it said, "look at the sky and tens of millions, in addition, would be interested but have probably never seen a dark sky ...". The report cited a United States Environmental Protection Agency study of the daytime sky which stated, "Decreasing visibility of the sky creates aesthetic and psychological costs, loss of property values, loss of tourist revenues in scenic areas and general citizen dissatisfaction." The League report concluded that, "Rural

and suburban communities should realize that a key but often overlooked ingredient in their rural setting is the fact that one can see the stars at night.”

For a copy of the summary report send a stamped self-addressed envelope to: Astronomical League Survey of Amateur Astronomy, 329 South Front Street, Harrisburg, PA 17104.

My Observatory: All Good Things Take Time

**by Roberto Abraham
Vancouver Centre**

Good news, fellow observers, my observatory is finished. No longer will I be frustrated by clear nights when I am without my telescope during the week; no longer will I suffer from endless polar alignment; for I now have my own little Palomar in my back yard.

The concept for the observatory is a few years old, but its construction was only made possible about a year ago. The idea was simple: tear down an old garage in our back yard and build a new one with an observatory on top. Sparing you the gory details of our initial reservations, my Dad had an architect draw the plans, and the whole thing was put up last summer by my father, some professional carpenters, and me.

The garage is big enough for two cars, and its rear wall left open so that two more cars can be driven in onto a concrete patio that extends about twenty feet to the rear of the house. The observatory is a sliding-roof type, with the roof divided into two independent halves, each sliding off on rollers and strips of teflon-like nylon. The observatory is 8 by 16 feet, with the long axis oriented east-west. A ten-inch concrete reinforced pier rises some 8 feet from the floor of the garage through a hole in the floor of the observatory, where a welded pier for my 12-inch Meade Newtonian is held on by four anchor bolts. This pier has four short pieces of angle iron, at the bottom of which is welded a baseplate. The baseplate is welded onto a short length of 6-inch diameter pipe, into which the flange at the bottom of the telescope mount fits.

The roof slopes from the south to allow water to run off, and is waterproofed by a layer of fibreglass. While most of the observatory sticks out of the garage, there is still about two feet of the observatory within the roof of the garage, so plywood sheets have been laid out on the supporting structure just outside the bottom of the observatory's frame, providing a triangular space running the length of either wall, which I can use for storage, or with a mattress there, as a bed. In the future I will furnish the observatory with a TV, phone, carpet, desk, and bookshelves.

The two major problems I envisioned at the start of the project were (1) hot air rising from the cars below into the observatory to play games with seeing, and (2) supporting a rather heavy telescope about eleven feet in the air. I believe the problem of rising hot air is solved by a layer of insulation below the observatory floor. The height problem was somewhat more difficult to correct, but the 10-inch column seems to be adequate support for the telescope. I have found that I must sweep quite gently, because at 350× a sudden stop starts the image vibrating for over 11 seconds, while at the same magnification a slightly slower stop sets the image vibrating for maybe five seconds. By contrast, the normally mounted telescope vibrates six or seven seconds after a sudden stop, and about three or four seconds after a gradual stop. In any case, this rather small loss of stability (by my standards) is more than compensated for by the convenience of the present setup.

More critical to my enjoyment of the telescope is the question, on what type of sky objects will I concentrate my observing. My favourite type of observing is deep sky, but my light-polluted environment is certainly a hinderance. I enjoy planetary and variable star observing, but neither seems to give me as much of a kick as finding a difficult galaxy or beautiful star cluster. These were my thoughts as I sat in the observatory the other night, when I suddenly realized M42 was on the meridian. I gazed long and deeply at the feeble glow that is my favourite object under dark skies, and I contemplated its distance and size, and strained my eyes searching for details I once thought easy. And you know what? I had the time of my life!

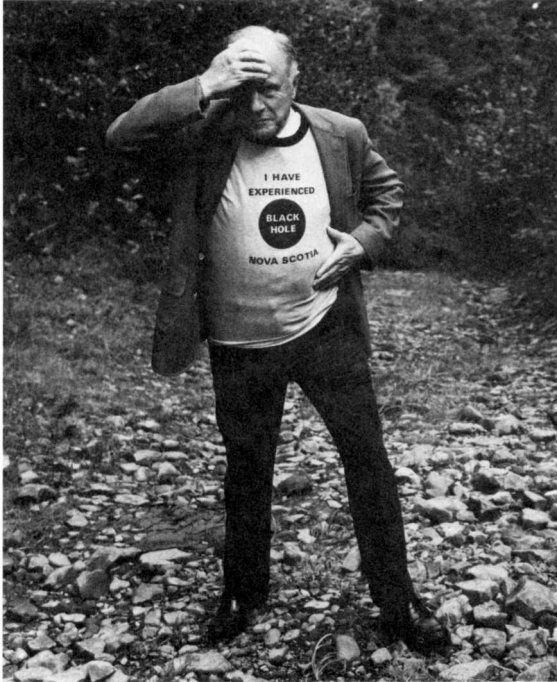
I have come to the conclusion that neither light pollution nor clouds will keep me from observing what I love best. The most spectacular thing about deep sky observing is the realization of the true nature of the object, and I can do that from the bottom of some sewer just as well as on a remote

mountaintop. Sure, dark skies are something worth striving for, and when I get my driver's licence you can bet I'll be heading out to the country every clear night I can, but I'll be using my little observatory far more often. After all, it's only a minute away from my bedroom!

Reprinted from *Nova*

A Special Visitor to Black Hole, N.S.

by Roy L. Bishop



At the 1980 General Assembly in Halifax (the first joint meeting of the Royal Astronomical Society of Canada and the Canadian Astronomical Society) a bus-load of delegates visited the only confirmed black hole in the Universe.* A recent visitor to this unique site is shown in the photograph as he was recovering from the experience. The gentleman is Mr. Black Hole himself, John Archibald Wheeler.

One of the leading theoretical physicists of our time, Dr. Wheeler has made profound contributions across the spectrum of physics. Among his early activities was a collaboration in 1939 with Niels Bohr to develop the theory of nuclear fission. More recently his work in the general theory of relativity has been instrumental in the revival of interest in that theory and its cosmological implications. It was he who coined the term "black hole", a concept that, in the popular sense, has come to symbolize the general theory of relativity in much the same way that $E = mc^2$ symbolizes the special theory of relativity.

For many years Dr. Wheeler was associated with Princeton University. Currently he is Director of the Center for Theoretical Physics at the University of Texas at Austin.

*Editor's Note: The discovery of this black hole was reported in the *National Newsletter*, December 1977, L68.

Astronomy in New Zealand

by Don Hladiuk
Calgary Centre

I finally found the time to write a brief account of my trip to New Zealand and Fiji in late January and early February of 1981.

First of all, New Zealand is one of the most beautiful countries I have yet visited. On first impression, one would think it is only inhabited by sheep, but when you finally come across some people (hopefully they are not tourists like yourself) the warm hospitality and friendly conversation will make you feel at home.

For such a small country, the changes in topography and vegetation are incredible. There are the Southern Alps, glaciers, subtropical forests, rugged coastlines, deserts, volcanoes, geothermal (steaming) valleys, fords, sandy beaches, glow-worm caves, and much more. I would strongly recommend stopping at Kaikoura on the east coast of the South Island for fresh crayfish (like our lobsters), or having a fresh rack of lamb, or even fish and chips served in newspaper.

Getting back to astronomy, during my short stay in New Zealand, I visited with a few amateur and professional astronomers. At the very bottom of the South Island, in a small city called Invercargill, I met the Director of the Southland Museum, Mr. Michael Beck, who is also an avid amateur astronomer. He gave me a tour of the observatory which is attached to the museum. The instrument is a 12-inch $f/24$ Cassegrain-Newtonian. The observatory has an interesting observing aperture in that one third of the dome slides away to expose the sky.

In the central part of the South Island, near Tepako, I drove to the top of Mt. John, where a Baker-Nunn satellite tracking station and several observatories are situated. The Americans at the Baker-Nunn site would not allow me to see the installation because I was twenty minutes late for their public tour hours. Even though I explained I was from Canada and would not be passing this way again, they would not budge. That was my astronomical beef for the trip! However, Dr. Michael Clarke of the Mt. John Observatory (a New Zealander) was more than happy to give me the grand tour of the instrumentation located on the mountain. The installation is a joint University of Canterbury, University of Pennsylvania, and University of Florida project. There were numerous sky cameras under roll-off roof structures to monitor sky conditions and to record meteors. There are three large domes on the mountain. The original dome housed a 16-inch reflector, but had its shutter blown off (sounds like Plateau Mountain!) and is currently being dismantled. Just in passing, they have Ash domes and have had very little trouble with them, considering the high winds and almost comparable temperature fluctuations. The other two domes each house a 24-inch reflector ($f/13$ and $f/16$). The newest is a 24-inch Boller and Chivens with all the options. Most of the current research is on spectroscopic binary stars.

After several hours of conversation, I had to press on to Christchurch. While on the ferry from the South Island to the North Island, on 1981 February 5 (February 4 in Calgary), I observed the partial phases of an annular solar eclipse. The moon was easily noticeable, silhouetted against the sun, by 8:30 am. local (New Zealand) time. I used a 35mm lens with a 2x teleconverter (about $f/12$) and Ektachrome 400 film at 1/500 sec. Eclipse maximum occurred about 10:00 am. and the event was over by 11:20 a.m. At mid-eclipse, one could project the apparent diameter of the moon over the sun and see that it would not cover the sun completely. Centre line for this eclipse went through Stewart Island, which is just south of the South Island.

I saw one other observatory in Nelson, South Island, but could not locate the owner. There are many other observatories and even a planetarium which I did not get to see. My last four days were spent on a tiny island resort called Treasure Island, Fiji, which I also strongly recommend for people who like to rest in the sun.

Reprinted from *The Starseeker*

Impressions of a Planetarium Intern

by Ron Waldron
Manitoba Planetarium

The planetarium profession is small in terms of the number of people it employs, unusual because it is a medium that is not well understood, and glamorous because of the exciting nature of astronomy and the space age. Training in the form of internships for working in a planetarium is limited. Only a handful of training programs are offered on a yearly basis in the United States and beginning this year one program exists in Canada.

When the Manitoba Planetarium in Winnipeg, with the financial assistance of the National Museums of Canada, announced their one year internship program, I could not help but apply. Work in a planetarium – it was a childhood dream come true. Now, I am not an inexperienced student fresh out of school. I am almost a staid member of the establishment: seven years teaching elementary school students, husband, father of three. It is not easy to explain why I suddenly wanted to leave a successful and rewarding occupation for a new career. To me it signified the first step in the achievement of a goal I had set for myself a decade ago. That goal is to work in a planetarium and to actively promote a planetarium for my home province of Saskatchewan.

The planetarium is located near the heart of downtown Winnipeg about one mile north of the famous corner of Portage Avenue and Main Street. It is a part of a much larger complex which besides the planetarium, includes the Museum of Man and Nature and the Centennial Concert Hall. The planetarium employs a full-time staff of ten consisting of the Director, two Producers, an Artist/Photographer, a production supervisor, three design engineers, Communications/Events Officer, and Secretary. With its sixty foot dome and Zeiss model 5S planetarium star projector, the Manitoba Planetarium is one of the five major planetaria in Canada. The others are located in Vancouver, Calgary, Toronto and Montreal. The facility has been in operation since May of 1968.

The internship program is set up to provide training in all aspects of planetarium production. This includes audiovisual scripting, planetarium oriented research, technical, artistic and photographic skills. In addition, it includes a study trip to one or more major planetaria in Canada and the United States spending enough time at each to learn their individual approach to planetarium operation and show production. The internship culminates with the opportunity to prepare a planetarium show for public presentation at the Manitoba Planetarium.

After three months of the internship program, I feel very fortunate to be learning the creative and demanding skills of planetarium show production. Creative in the sense that shows are locally inspired and produced, and demanding because the shows are aimed at the entertainment and education of public audiences. Within the confines of the 287 seat theatre, audiences are presented with a type of experimental theatre which can be found in few other places. Through a magical combination of starlight, slides, sound and special effects, the public is entertained and informed about all aspects of science, past, present, and future. The magic of the show is more than the 8,000 stars realistically projected onto the planetarium dome. It is more than the myriad of special effects of a black hole. The real magic lies in the fact that every planetarium show is a unique entity – a special creation with a lifetime of approximately three months. After this very short lifetime, the show is destroyed and the materials saved or recycled for use in the next or a future planetarium show.

I began the internship on July 7, 1981 with an introduction to the Zeiss star projector, a dumb-bell shaped collection of lenses, motors and gears – a marvel of human engineering conceived in Germany in 1929. To operate the machine, known as Marvin to the thousands of school children who have visited the planetarium, I was confronted with the large control console. The console contains a battery of knobs, switches, levers, and buttons to push. These together control the star projector and the many other special effects projectors hidden in a dark shelf around the bottom edge of the dome. After a full month of training and practice. I emerged well enough equipped to deliver my first planetarium lecture known as the *Sky Show*, a monthly program which explores the wonders of the current night sky over Winnipeg.

Since then, I have learned to operate the console for the current public show entitled *Cosmic Catastrophes* with Isaac Asimov, a show that deals with cosmic disasters and how they might affect planet earth. Major public shows are recorded on audio tape and the operator skillfully orchestrates the

star projector and various special effects in co-ordination with the audio. The operator works from a script similar to that of a play but with practice the show is memorized so that it becomes a flowing performance with the maze of controls operated in total darkness.

The planetarium gives a variety of special shows to schools on a regular basis throughout the school year. The shows are live productions and the responsibility for preparing and delivering them is shared among the Director, Producers and myself. The planetarium maintains a good liaison with teachers, offering assistance and in-services in astronomy education.

I have been fortunate to be able to work with the Department of Education in planning and presenting several astronomy workshops in Winnipeg and other smaller centres across the province. These are one day workshops designed to familiarize and prepare teachers for the teaching of astronomy as outlined in the new science curriculum. I have also become involved in two committees, one working on the refurbishment of displays in the planetarium science gallery, the other working on a proposal for a science centre for the province of Manitoba. The latter, if successful, will result in the creation of a large facility containing numerous participatory displays and demonstrations, a pattern successfully established by the Ontario Science Centre.

I find myself thinking about other ways to make use of the unique circular environment of the planetarium theatre. I am encouraged by a plan to mount the planetarium star projector on an elevator platform allowing it to be removed for maintenance and to free the theatre for other uses.

It is intensely caught up in the atmosphere of the planetarium profession and worry that the year may be going by too quickly. I wonder if there will be enough time to learn all that is required. Everything I am doing is either a new experience or an old experience in a new and exciting context. The skills I have acquired through teaching are valuable but are not enough in themselves. The process of planetarium production demands many other skills including script writing, imagining effects, technical know-how, and artistic photographic technique. Amid all this, one must remain abreast of all current topics in science so that subject material can be presented to the public in an interesting but factual way.

Where this internship will lead is at this time uncertain. The intent of course is to provide training for future employment in the planetarium field. Canadian planetaria offer infrequent employment opportunities. This planetarium intern is content in the knowledge that the skills gained here will be valuable assets to whatever position he accepts following the internship program.

Phoenix II in Lions Head

**by Clifford Cunningham
Kitchener-Waterloo Centre**

and

**Douglas Cunningham
Toronto Centre**

What weighs 1,600 pounds, is 14 feet long and has the power to draw 55 people from all over Ontario to Lions Head on a clear night?

The answer is the largest portable telescope in Canada, a 22-inch f/7.4 behemoth owned by Steve Dodson of North Bay. Dodson, a high school physics teacher, finished building the telescope in July, and won a prize for best mechanical design at the Stellafane conference in August.

The Bruce Peninsula has the darkest skies in southern Ontario and on the night of October 3 the weatherman co-operated by providing an exceptionally transparent sky. The telescope, called Phoenix II, was set up in the backyard of Doug Cunningham. Present were five members of the Kitchener-Waterloo Centre, and others from Toronto, Windsor, Tobermory and Guelph. There were long lines to the ladder reaching up to the eyepiece of the giant reflector, which afforded spectacular views of some well-known celestial objects.

Among the Messier objects seen was M13, the globular cluster in Hercules. It was splendid, with resolution to the core. Radiating streams of stars separated by dark lanes were readily visible. The Andromeda Galaxy, M31, was simply grand, with the dark dust lanes cutting a swath through the spiral

arms. Two regions were detected in the Crab Nebula – a bright central bar and an irregular slightly fainter outlying nebulosity.

Everyone agreed that the view of the Orion Nebula really made the trip worthwhile. The swirls, knots and globules gave it a “dynamic” quality. Even the faint F and E stars associated with the Trapezium were easily observed.

There were several other telescopes in use as well, including John Hlynialuk’s 12-inch reflector and some smaller scopes from Doug’s local astronomy group, which has about 25 members. When not observing the group was well provided for with victuals by Doug’s wife.

But the star of the show was Phoenix II. Phoenix I was destroyed when it was hit by a vehicle while in tow. Fortunately the mirror, from the San Francisco Sidewalk Astronomers, was not in the tube. Dodson, who built his first telescope at age 12, said he wanted to build a large mobile telescope that could be set up without lifting it off a trailer, and still be manoeuvrable enough to track the stars.

“I was puzzled that nobody had actually built a telescope with those attributes,” he said. “I got an extra thrill out of doing something no one had ever done.”

Dodson is not the only one who was thrilled, and as Doug said, “It’s a wonder we didn’t wake up all the neighbours with the excitement.”

MASCON 1981

MASCON 1981, the first Manitoba Astronomical Convention, was held at the Riding Mountain National Park on August 1 to 3. The event was organized by the Winnipeg Centre with the aid of the National Parks Service.

About fifty enthusiastic participants began the programme with a humorous take-off on a popular science show – Cosmoose, featuring Dr. Snarl Kagan. Other representations included Chris Rutkowski’s talk “The Astronomer and the UFO”, and demonstration of James Gould’s mobile planetarium.

Sunday’s lecture programme included David Levy, speaking on teaching astronomy to young children, Damien Lemay’s talk on methods of solar observation, and Dr. Martin Clutton-Brock, who discussed evolution of galaxies and the birth and death of the universe. The evening programme included discussions of gas hypersensitising of film, and new films for astrophotography. The clear sky that evening provided an opportunity to observe with a wide variety of telescopes. Throughout the evening participants observed several bright meteors, followed by a spectacular auroral display.

On Monday, Dr. Ian Halliday presented a lecture on meteorites and their relation to the history of the solar system. Samples of various types of meteorite were passed around for inspection.

MASCON 1981 concluded with a banquet and presentation of awards and door prizes. All concerned agreed that the meeting was a success despite the poor turnout due to the loss of information bulletins and correspondence caught in the postal strike. It is hoped that next year’s event will be better attended.

(This report was based on reports published in *Winnicentric*s and *Saskatoon Skies*. – The Editor)

A Meeting with Dr. Bart Bok

by Alister Ling
Montreal Centre

On a recent return trip from Utah, Colorado, where he was attending a conference, my father had to change planes at Chicago. The plane he boarded was somewhat crowded in his section and an elderly gentleman seated beside him decided to move to the back of the plane, where there were some empty seats. Luckily for me, he and my father had already started to talk. I gather the conversation went something like this:

MY FATHER: “Where are you from?”

THE REPLY: “Tucson.”

MY FATHER: "The skies out there must be clear for all those big telescopes Arizona has."

THE REPLY: "As a matter of fact, I am an astronomer myself."

MY FATHER: "No kidding ... my son is an avid amateur."

THE REPLY: "I will be staying in Montreal for two days, and I would be delighted to meet him. I am going to be at the Sheraton on Peel Street, and my name is Dr. Bart Bok."

Although I had my father versed in basic astronomy, the name did not ring a bell with him. However, the two-hour conversation taught him many things, and one was that Dr. Bok is one of the top astronomers in Milky Way astronomy.

When my father got home I was out, and when I came in I had no idea that I was in for a treat. My father asked if I knew of a Dr. Bok. I said, "Of course," and told him that Dr. Bok was well known. I then asked why he was enquiring, and he told me they had been sitting next to each other on the plane to Montreal. I almost fell off my chair in disbelief. The chances of such a happening must be very small! Not only did they have adjacent seats, but they also were on the same interconnecting flights! My father told me that Dr. Bok would like to speak to me the next day, and I don't think I have ever smiled for such a long time continuously.

I telephoned Dr. Bok the next morning and asked what time would be convenient for him to see me. He said, "In a couple of hours." He had heard from my father that I knew David Levy, and he said, "Ah, David is a good friend of mine." Therefore when I went to see him I took with me David's telephone number since he was in Montreal for the summer.

I met Dr. Bok in his hotel room. He is 76 years of age, but has a bubbling overflowing spirit of many years younger. He was wearing what we Canucks would call a "Texan" outfit (but he did not have a cowboy hat!). After some small talk he gave me an autographed reprint of his April 1981 article in *Sky & Telescope*. We then talked - about some of his students (he has supervised over 40 Ph.D.s). I informed him that Dr. Racine is no longer at Mégantic, but at Hawaii, and that Dr. Demers is now the director at Mont Mégantic. I asked him a few questions about globules, and then asked him whether he had seen the recent lunar eclipse. He replied that he had, and as a matter of fact, was on his way to Siberia to the total solar eclipse at the end of July. He was going to see some friends in Moscow and other places while he was in the neighbourhood. As we were winding up the conversation I asked him if he would mind signing my observing log book. As it turns out he is versed in French, and he signed it in Quebec's official language. The hour went by quickly, but I had enjoyed it immensely, and I am now looking forward to his coming to London and Montreal to give a talk some time in the Spring.

Reprinted from *Skyward*

Neutron Star

by Peter Jedicke
London Centre

This was the winning song in the Song Contest at last year's General Assembly at Victoria, B.C. It was performed by Peter Jedicke and David Levy. Peter notes that the tune is a country and western song, "Jealous Heart." He wishes to thank the many people who have written to him, saying how much they liked the song. So, by popular demand, here are the lyrics.

The Editor

Neutron star, O, neutron star you're massive,
And your tidal forces are immense
You have crushed your atom shells to pieces,
Neutron star, your gravity's immense.

You were once a star like all the others,
Shining brightly in the evening sky.
But your thermonuclear reactions
Consumed all your hydrogen supply.

Neutron star, O, neutron star you're spinning
'Round and 'round at such a fever pitch.
You conserve your angular momentum
And speed up with every little glitch.

You were once a star like all the others,
Somewhere on the Hertzsprung-Russell graph.
Now you're in the lower left hand corner,
Stellar mass reduced by more than half.

Neutron star, O, neutron star you're pulsing,
Twisting your magnetic lines of force,
And electrons spewing from your axis
Form a synchrotron emission source.

You were once a star like all the others,
'Til your hydrostatic balance failed
And you lost your radiation pressure
And your outer chromosphere exhaled.

52 Years of Service Recognized

by Ian G. McGregor

In a Society with as long and distinguished a record as our Society we often forget that its success has been due to the work of many individuals who have volunteered their time and effort. At present there are only two ways of officially recognizing these members – the Service Award for 10 or more years of distinguished service and the Membership Certificate for 5 or more years of service. But there is a special group of members whose energy and enthusiasm directed to the Society's interests goes far beyond these awards.

On January 15, 1982 the Toronto Centre at one of its meetings supported action by its council to appoint Frederic Laurence Troyer an Honorary Councillor of the Toronto Centre in recognition of his distinguished service. Following the regular business of the meeting the Centre's President Ian McGregor made the following announcement:



Fig. 1. Dr. Helen Hogg presents Frederic Troyer with a special certificate on behalf of the council and members of the Toronto Centre. *Photo by Randy Attwood.*

This evening I have the very special pleasure to announce to the members of the Toronto Centre a decision by the Centre's Council. By a unanimous vote the Council of the Toronto Centre has voted to appoint Mr. Frederic Laurence Troyer, a member of the Toronto Centre since 1929, to be an Honorary Councillor of the Toronto Centre. This is in recognition of his long and distinguished service to the Centre and Society.

Frederic Troyer was elected to membership in the Toronto Centre on December 22, 1929. Prior to this date he had already been assisting at Centre meetings by operating the lantern projector. At that time our Society across Canada totalled about 800 members and for comparison purposes, annual fees were \$2.00 and a Life Membership was \$25.00!

He was first elected Assistant Curator for the Toronto Centre in December 1930 and has served terms as Secretary, Recorder, Librarian, Chairman of the Adult Education Committee, and Councillor. For many of the past 52 years he has been a member of the Centre's Council and in 1951-52 was President of the Toronto Centre.

On the National Council of the Society Fred Troyer has served for many years in various terms as Recorder, Librarian, and Toronto Centre representative. Currently he is the Society's National Librarian.

Since the 1930's Fred Troyer has actively encouraged at Centre meetings astronomical observation and for many years his review of current astronomical phenomena was a regular feature of meetings.

In 1960 Fred Troyer received the Service Award of the Society and he was one of the first members of the Society to receive this highly regarded recognition for active support of the Royal Astronomical Society of Canada. In 1968 he was recipient of the Membership Certificate.

Fifty-two years of service to an organization, any organization is a feat to be recognized. Fred Troyer's length of membership has only been exceeded to date by one other person, the late J. R. Collins, who was a member for 64 years. Tonight on the occasion of the completion of Fred Troyer's term as an elected Councillor the Chairman requests the membership present to support the decision of your Council to appoint Fred Troyer as an Honorary Councillor of the Toronto Centre.

In Recognition Of
52
Years of Dedicated Service
The Royal Astronomical Society of Canada
Toronto Centre
hereby appoints
Frederic Laurence Troyer
as
Honorary Councillor
Toronto, Ontario, 15 January 1982

By and For
The Members Of
Toronto Centre



_____ President
_____ Secretary

The chairman's request was supported unanimously by the 170 members present and accompanied by a standing ovation. Dr. Helen Hogg was called upon to make the presentation and in her remarks Dr. Hogg reviewed Fred Troyer's contribution to the Toronto Centre. Following the presentation Fred Troyer thanked the membership for this honour for "it would mean he could continue to help the Centre for many more years."

We are sure all members wish Frederic Troyer many more years of support of the activities of our Society.

General Assembly 1982

The 1982 General Assembly of the RASC will be hosted by the Saskatoon Centre on the campus of the University of Saskatchewan from May 21 to 23, 1982.

There will be several classes of exhibits, some having both a visual and photographic category. Both novice and advanced amateur astronomers are urged to enter the display competition.

Short papers dealing with various astronomical subjects, scientific or historical, are invited from both amateur and professional astronomers. A time limit of ten minutes will be imposed on the presentations. There will be two papers sessions this year, the second being the responsibility of the IAPPP (International Amateur-Professional Photoelectric Photometrists) organization. Abstracts of about 150 words in length should be sent to the Papers Chairman, Dr. Ray Skinner, at the address below.

Information on the displays competition and programme, as well as registration and entry forms, can be obtained by writing to:

Saskatoon Centre, RASC
P.O. Box 317
Sub P.O. 6
Saskatoon, Saskatchewan
S7N 0W0

L'Assemblée Générale 1982

L'Assemblée Générale de la SRAC se tiendra à l'Université de Saskatchewan du 21 au 23 mai 1982. Le Centre de Saskatoon invite les membres de la Société à y participer.

En 1982, à Saskatoon, la diversité des travaux qui y sera présentée devrait permettre aux astronomes juniors de se mesurer avec les compétiteurs chevronnés, étant donné que les juges seront tenu de prendre en consideration l'expérience des participants.

Plusieurs conférences de courte durée traitent de sujets astronomiques divers, sont une des attractions majeures de toute assemblée générale de la SRAC. Il est préférable que la durée de chaque conférence soit restreinte à dix minutes. Il y aura deux consacrées aux conférences; la deuxième sera de la responsabilité de IAPPP (International Amateur-Professional Photoelectric Photometrists). Un résumé de chaque conférence d'environ 150 mots devrait être envoyé à Dr. Ray Skinner, Papers Chairman, à l'adresse suivante.

On peut obtenir l'ordre du jour, et les formules d'inscription, etc. si on écrit à:

Saskatoon Centre, RASC
P.O. Box 317
Sub P.O. 6
Saskatoon, Saskatchewan
S7N 0W0