

Saskatoon **SKIES**

**Newsletter of the Saskatoon Centre of the
Royal Astronomical Society of Canada**
January 1997. Vol. 28, No. 1



Ariel Solose Keser and Matthew and Stacey Cornish had a GREAT time at the 1996 Saskatchewan Summer Star Party (photo Rick Huziak)

The July 5th-7th, 1997 Saskatchewan Star Party at Cypress Hills Park will be an event your whole family can enjoy! Plan it into your summer now!

*****President's Message*****

Will wonders never cease! I celebrated the new year by going out observing at the (greatly under-utilized!) Rystrom Observatory on January 1, 1997; but guess what? When I set up Eetook, the 12.5" Newtonian, in spite of being in the "cold" storage, the scope was TOO cold! As a result the main mirror and secondary fogged up immediately. The problem was one of the cold storage thermally lagging behind the quick warming trend that was happening outside. The telescope was at -27 degrees, but the outside as at -17 degrees. This episode marks the first time that I had to disassemble Eetook and haul it inside the warm-up shelter to warm the scope up! A half hour in front of the electric heater warmed the mirrors up and defogged the scope. Generally, the problem is that the scope is too warm, and has to be cooled down!!

I'd like to thank everyone for the flurry of renewals just after Christmas. The Centre relies on your quick yearly renewals to fund whatever projects and expenses we have. Late renewals often tend to keep us "broke" for a longer time. We are on a shoestring budget, and we do spend every cent that comes in, mostly just trying to keep afloat with mailing, printing, and insurance costs.

Late renewals also will affect the receipt of your **1997 RASC Handbook**, which will now be mailed to you directly from the University of Toronto Press, as far as I can determine. They will do a monthly mailing , so your Handbook should arrive 4 to 6 weeks after you renew. Mike Williams is working on the problem of why no one in Saskatoon has received their Handbooks yet. I hope this issue will be resolved very quickly. There apparently is a great photo of Comet Hyakutake on the front.

Richard Huziak President

Dues are Overdue:

Those who have not yet renewed their membership will shortly have to be removed from the membership and newsletter mailing list. Please rejoin as soon as possible to avoid long delays in receiving your **Observer's Handbook**, new **Journal** and **SkyNews**. If you have decided NOT to rejoin the Centre, please contact me, or membership coordinator, Kim Mysyk to discuss why you have left us. We do our best and really like to know.

| | DUES | DUE | DUES | DUE | DUES |
|----------|----------|-----|----------------------|----------|------|
| Regular | \$ 40.00 | | Youth (21 and under) | \$ 22.50 | |
| Lifetime | \$900.00 | | Newsletter only | \$ 12.50 | |

Make cheques payable to RASC Saskatoon and send to RASC Saskatoon Centre, PO Box 317, RPO University, Saskatoon, SK, S7N 4J8, or pay at the December general meeting. The membership year runs from October 1st. through September 30th.

Saskatoon Centre

Royal Astronomical Society of Canada
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*****Please NOTE: *****

Monday January 20th General Meeting:

Will be held at 8 P.M., at our regular location, Room B-111 Health Sciences Bldng,
U of S Campus (see **Highlights on P. 14**) Executive meeting 7 P.M. Room B11.

Rants from the editors:

Plan NOW for the July 5th -7th, 1996 Saskatchewan Summer Star Party in Cypress Hills Interprovincial Park

What...talk about a July Star party in early January, when the temperatures are threatening to go as far into the minus as they will then be going into the plus?? Yes! Events like this are far more easy to organize six months or a year in advance than they are a month or two before. Also, it is my observation, as a recent immigrant to Flatland that nowhere else in Canada (well, except perhaps in Tuktoyaktuk) do the Summers seem shorter and more tightly organized than here in Saskatchewan. For some -like Brian- every single weekend between the end of May and early September seems to be booked solid with about a week's worth of activities .

So please put the Cypress Hills Star Party on your calendar, tell friends about it, and make it part of your vacation plans now. This is necessary if you plan to make use of some this Park's unique conveniences, such as cabins, condos and hotel rooms, which are as Paul Ferguson and his family can confirm, very reasonably priced.

Things are really moving with this one.. There have already been inquiries from the Edmonton and Calgary Centres and Regina will be co-organizing the event. Father Lucien Kemble has agreed to also give hands-on instruction on how to find celestial objects by dusk to help us make the most of our observing time (if you are concerned about this, then please do bear in mind that we'll be 3 degrees further south). Three further astronomical presentations and activities are already planned, and a coordinator has even been found for the pancake breakfast. In fact, we've already had one top speaker offer his services for '98! Over the next month, we'll be putting together an audio-visual presentation on the SSSP which Rick plans to take as far as Victoria !

Charging for Centre Presentations:

Vol 17-No. 9 of the RASC's *Niagara Whirlpool* contains the following "Editor's Note" "the Niagara Centre now charges a minimum \$25.00 fee for public talks" (page 10) . This clarifies an issue which has been the subject of considerable debate within our Executive. It was proposed that we raise money for Centre projects by asking for Honoraria for the public presentations we give at places like the Brightwater Centre. This was vehemently opposed by one of two members on the grounds that any request for funds could endanger our non-profit status. Surely our Centre's request for small Honoraria, especially in situations in which we supply programming which would otherwise be paid for can in no way be seen as "profit" (which is generally defined as *individual benefit*). My stint on a Home and School Executive last year showed me that virtually all presenters and resource people who come into schools to conduct activities charge an Honorarium of *at least* \$25 an hour. Our executive should discuss this matter again and set some guidelines for fundraising in this area. School presentations can sometimes be stressful, but not nearly as much as regular Bingos would be!

Carl Sagan - Scientist and Educator

(AP -Seattle 20 Dec 1996) Astronomer Carl Sagan, a gifted storyteller who extolled and explored the grandeur and mystery of the universe in lectures, books and an acclaimed TV series, died today of pneumonia after a two-year battle with bone marrow disease. He was 62. Sagan was surrounded by his family when he died at the Fred Hutchinson Cancer Research Center in Seattle, where he had a bone-marrow transplant in April 1995 and occasionally returned for treatment, said center spokeswoman Susan Edmonds. The center had identified his disease as myelodysplasia, a form of anemia also known as preleukemia syndrome.

Sagan, who lived in Ithaca, N.Y., helped transport an ivory tower realm into the living rooms of ordinary people, entralling millions with his vivid writing and flamboyant television soliloquies. He won the Pulitzer Prize for Literature in 1978 for "The Dragons of Eden: Speculations on the Evolution of Human Intelligence."

In 1980, his 13-part Public Broadcasting Service series "Cosmos" became the most-watched limited series in the history of American public television, a record since surpassed by "The Civil War." The series turned him into a national celebrity. Comics parodied his references to "billions and billions" of stars. While purists complained that he sometimes oversimplified and made significant interpretive errors, Sagan never shied away from the label of science popularizer. "I wear the badge proudly," he told The Associated Press in 1994.

Aside from his flair for making scientific ideas comprehensible and exciting, Sagan built up an impressive research record and always insisted that scientific investigation was his top priority. "From when I was a little kid, the only thing I really wanted to be was a scientist, to actually do the science, to interrogate nature, to find out how things work," he said. "That's where the fun is. If you're in love, you want to tell the world!"

In his early 20s, Sagan deduced from experimental models that Venus, long considered a habitable planet, was actually a foreboding place with a surface heat of about 900 degrees. While teaching astronomy at Harvard in the 1960s, he established that fierce winds that sculpted the landscape, not seasonal changes in vegetation, explained the bright and dark patterns detected on Mars. Harvard never offered him tenure, so when Cornell University in Ithica, N.Y., asked in 1968 if he would set up a laboratory for planetary studies, Sagan promptly accepted. Having helped design robotic missions for NASA since the late 1950s, Sagan made use of space-mission data in lab simulations to draw lessons about dust storms on Mars or the greenhouse effect of Venus.

He was always performing on the high wire, racing from the lecture circuit to spacecraft observations of planets to his writing desk in Ithaca. When he got stuck on one project, he moved on to the next, letting his subconscious go to work.

continued next page

Sagan began publishing at the age of 22, his early work mostly academic papers and books. His 30th book, titled *Demon Haunted World*, was published in the fall of 1995. An earlier novel *Contact* (1985) became a best seller. He began experimenting with the popular market in 1973, publishing *Cosmic Connection: An Extraterrestrial Perspective*. The same year, he was off exploring the Hollywood star cluster, making the first of 25 appearances on NBC's "Tonight Show with Johnny Carson."

Cosmos winner of three Emmys, retraced the 15 billion years of cosmic evolution that have transformed matter into life and consciousness. Among its topics: the origin of life, the evolution of galaxies and matter, and the human brain. Co-written by his wife, Ann Druyan, it first aired in 1980 and was seen by more than 500 million people in 60 countries. The companion "Cosmos" book spent 70 weeks on The New York Times best-seller list, 15 weeks at No. 1. In his 1994 "Cosmos" sequel, "Pale Blue Dot: A Vision of the Human Future in Space," Sagan visualized mankind several centuries from now, concluding that humans need to settle other worlds in order to survive.

Once asked to explain the public's insatiable interest in his rather esoteric essays, Sagan said: "They're not numskulls. Thinking scientifically is as natural as breathing."

Born in New York City on Nov. 9, 1934, Sagan said he had fully expected to follow his Russian-born father into the garment industry but began to chart a career in astronomy while at high school in Rahway, N.J. While his parents knew little about science, they nurtured his sense of wonder and instilled a healthy skepticism.

He earned a physics degree from the University of Chicago in 1954 and a doctorate in astronomy and astrophysics in 1960. He was appointed lecturer and assistant professor of astronomy at Harvard in 1962. In 1971, he became a full professor at Cornell, where his campus lecture series drew standing-room-only crowds. Sagan occasionally journeyed into the political arena, pushing for more government funding of space missions and stricter measures to counter the environmental threats of ozone depletion and global warming.

As for UFOs, lost continents and the like, Sagan said the world could ill afford such pseudoscientific twaddle. "We sometimes pretend something is true not because there's evidence for it but because we want it to be true," he said. "We confuse reality with our hopes and fears."

Sagan was a firm believer in the existence of extraterrestrial intelligence, noting that organic molecules, the kind that life on Earth is dependent on, appear to be almost everywhere in the solar system. Finding out whether mankind is alone, or not alone, he believed, is one of the world's most important puzzles.

Sagan is survived by his wife; his sister, Cari Sagan Greene; five children; and a grandson.

Stretching the Limit of Observing

Rick Huziak

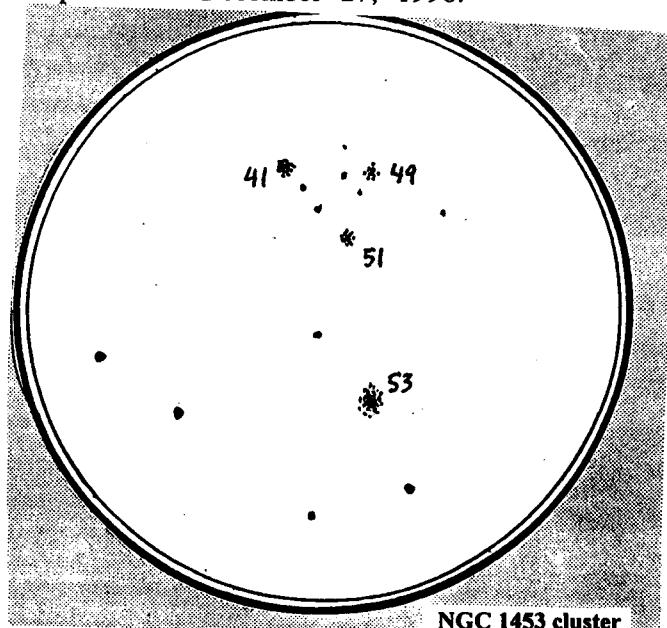
I enjoy pushing the observable limit of the telescope, and seeing the faintest objects possible. An ongoing project I'm working on is to see all 7840 plus objects in the *New General Catalog*. If I am going to accomplish this with the 12.5-inch telescope, I will have to see galaxies of magnitude 15 and 16!

I've now found almost 1000 of these objects, but each night the challenge gets tougher, because these faint objects are usually very difficult! Techniques for seeing such faint objects are a dark sky (no moon and limited light pollution), deep dark adaptation, use of a light hood, averted vision and sheer perseverance. The reward is to see really interesting objects appear one by one in the field.

In the accompanying drawing of the cluster around NGC 1453 in Eridanus, three other faint galaxies are visible, but the faintest, NGC 1451 could not be seen until 16 minutes of continuous observing of the field had elapsed! NGC 1453 is 13th magnitude, and pretty easy in the 12.5. NGC 1441 is fainter at 13.5 magnitude. Both NGC 1449 and NGC 1451 are fainter than 14th magnitude, and are very elusive.

The problem is simply one of economics. There just aren't enough photons coming into the telescope to form an image right away and it takes time, often several minutes, to gather enough of these photons to see the object! Your brain is a wonderful tool that can remember and integrate that image over that long of a period! Lack of use of this technique often is the reason why beginning observers are not impressed with what they see. You have to spend a lot of time on each object you view, even if they are relatively bright, because the more time you spend, the more you see!

In the drawing, south is up, west to the right. The brightest star is 10th and the dimmest 15th magnitude. The drawing was done over a 16-minute period on December 27, 1996.



NGC 1453 cluster

Have You Seen the Rosette Nebula?

Often, famous and large nebulae are just as famously difficult to observe visually! This applies to the Helix, Horsehead, North America, Rosette, Veil and other nebulosities scattered all over the sky. Surprisingly, most of these are not difficult objects in binoculars, since binoculars have a large field of view which can provide enough contrast to see the object.

The sky must also be clear and very dark, and YOU must be dark-adapted as well. Intuition suggests that observing such objects with larger telescopes should be easier, but usually it isn't. Although big scopes gather more light, their field of view is smaller, thus it is often difficult to get enough dark sky around the object to provide the needed contrast. Even a single bright 8th magnitude star in the field can provide enough glare to obscure the nebula. However, by using the very lowest power (30x to 50x, typically), an observing hood to eliminate stray light, and sweeping techniques, it's possible to pick these objects out of the background sky and to discern more detail than binocs will show.

On March 14, 1996, I used our 12.5" Centre reflector to map the Rosette Nebula in Monoceros -now visible in the winter sky. The nebula is one degree across, which is twice the size of the moon, but very tenuous and difficult visually. Since the field of view in the telescope is one degree at low power, no dark sky is visible around, thus picking the faint object out of the background if difficult.



Rosette on March 14, 1996.

The technique that I used is to sweep the telescope slowly across the field for several degrees in the vicinity of the nebula, and watch for the contrast in the field to change. Oh, the sky just got milky here. By sweeping the region over and over, it is possible to define the edges of the nebula and map them fairly accurately. Using a higher power, I was also able to map the inner hole of the nebula using contrast as my tool, since the inner void is dark. I have applied this technique successfully to all the above nebulae and often use the technique to find other diffuse nebulae, faint galaxies and to map the faint tails of comets.

Rick Huziak

Eclipsing Binary

For those of you who like to catch ALL the rare events, VV Cephei, a giant eclipsing star is about to begin it's next eclipse, according to my calculations from an ephemeris in *Burnham's Celestial Handbook*. The eclipses occur only every 20.34 YEARS (7430 days). In systems like this, the eclipsing body may be an accretion disk (not a super-supergiant as was previously believed), thus the total phase in this case will last 15 months due to sheer size of the occulting body! Because the eclipse is total, the bottom of the light curve is relatively flat, but this star shows many 'hills and valleys' there, possibly due to brighter and dimmer dust clouds floating past the star.

Photographic magnitude is 6.8 to 7.4: visually it is about one mag. brighter.. An estimate I made on January 4th showed it to be currently at 5.3 visual, with the star not yet having begun the eclipse. It should fall to near mag. 5.9 at minimum. Although the dimming is visually difficult to follow due to the
(continued on P. 10)

VV CEPHEI

Finder Chart & Ephemeris

Since I cannot find an appropriate comparison chart for it, I created one using the AAVSO Variable Star Atlas as the basis. It is shown opposite.

Here is the ephemeris for the next eclipse I have derived from Burnham's:

| | |
|------------------------|--------------|
| Partial Eclipse begins | 1997, Jan 17 |
| Total eclipse begins | 1997, Apr 3 |
| Total eclipse ends | 1998, Aug 24 |
| Partial Eclipse ends | 1998, Nov 4 |

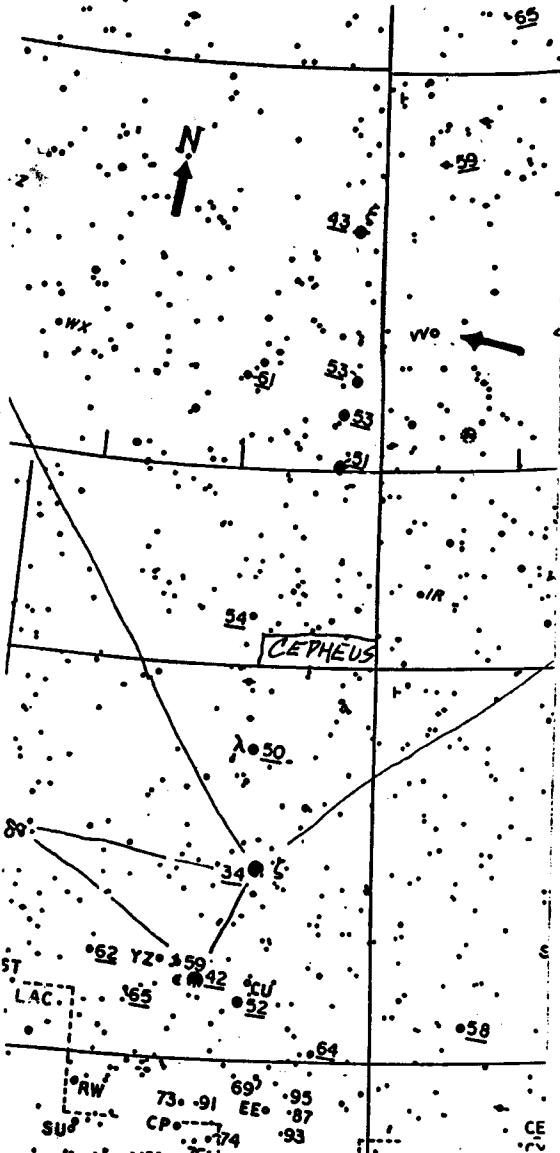
VV Cephei

per. 20.34 years

range 5.3 - 5.9 v (approx)

range 6.8 - 7.4 p

map copyright AAVSO



Eclipsing Binary...(continued from P. 9)
dimming is visually difficult to follow due to the small range, it is not impossible to view. It will be interesting to determine if the eclipse can really be distinguished visually. You can help by making a visual

using binoculars, every 2 weeks or so, I will compile these and send them to AAVSO's Eclipsing Binary Committee. This is also an excellent project for those with photometers or proper CCD's.

Rick Huziak

Tuktoyaktuk '96 Star Party T-shirts Available

A few months ago, someone complained that the Florida Winter Star Party could not really be a true winter star party, as they have NO idea of what winter really is, let alone the trials and tribulations that us true winter (i.e. Canadian) astronomers go through in search of those ever fainter fuzzy things.

In response, Joseph O'Neil of the Windsor Centre has created a wonder parody T-shirt of a fictitious event now known as the Tuktoyaktuk "96 Star Party. An example of this T-shirt will be available for viewing and purchase at the next two general meetings. Anyone who cannot attend ,

meetings and who might be interested in this shirt can either call me for a private viewing (..of JUST the shirt, eh!?) or can see the logo design on the Internet at: <http://www.multiboard.com/~joneil> The shirts are of high quality cotton/polyester and are available in a variety of styles and colors. I can save on shipping costs (add \$1.00 per order) if all orders are placed through me. Sizes affect the price as shown. Sizes S, M, L, XL, XXL are available for most types. Orders must be placed by February 28, 1997.

| | |
|------------------------|-------------------|
| T-shirt - ordinary | \$10.50 - \$12.00 |
| same -double trimmed | \$14.50 - \$16.75 |
| Sweatshirt - weathered | \$32.00 |
| Sweatshirt midweight | \$21.50 - \$24.50 |
| Sweatshirt - hooded | \$27.00 - \$30.00 |

Rick Huziak

The Royal Astronomical Society of Canada
 Saskatoon Centre Incorporated
 Balance Sheets
September 30, 1996 and 1995

| | <u>1996</u> | <u>1995</u> |
|---|------------------|---------------|
| Assets : | | |
| Current Assets; | | |
| Cash | \$ 294 | 482 |
| Savings (Telescope Fund)(note 1) | 2,746 | 4,017 |
| Accounts Receivable | - | 35 |
| Deposit (Cypress Hills) | 60 | - |
| Prepaid Expenses (BOG) | - | 34 |
| Total Current Assets | <u>3,100</u> | <u>4,568</u> |
| Fixed Assets @ cost; | | |
| Rystrom Observatory | 5,859 | 5,859 |
| Warmup Shelter | 4,773 | 4,773 |
| Underground Wiring | 3,015 | 3,015 |
| Storage Shed | 653 | 653 |
| | <u>14,300</u> | <u>14,300</u> |
| less accumulated amortization | <u>10,285</u> | <u>9,652</u> |
| | <u>4,015</u> | <u>4,648</u> |
| Library | 1 | 1 |
| Equipment | 6,861 | 5,351 |
| Total Fixed Assets & Equipment | <u>10,877</u> | <u>10,000</u> |
| | <u>\$ 13,977</u> | <u>14,568</u> |
| | <u>=====</u> | <u>=====</u> |
| Liabilities and Equity : | | |
| Current Liabilities; | | |
| Prepaid Membership | \$ 95 | 230 |
| Member Calendar Deposits | 55 | - |
| Total Current Liabilities | <u>150</u> | <u>230</u> |
| Equity; | | |
| (per accompanying statement) | \$ 13,827 | 14,338 |
| | <u>\$ 13,977</u> | <u>14,568</u> |
| | <u>=====</u> | <u>=====</u> |

On behalf of the Executive :

Howard M. Jones ----- President
John McLean ----- Treasurer
Gerry Williams Auditor

See accompanying notes to financial statements.

The Royal Astronomical Society of Canada
 Saskatoon Centre Incorporated
 Income Statement
Years Ended, September 30, 1996 and 1995

| | | <u>1996</u> | <u>1995</u> |
|-----------------------------------|----|---------------|---------------|
| Income : | | | |
| Membership Fees | \$ | 1,737 | 1,854 |
| Life Member Grants | | 58 | 72 |
| Donations | | 285 | 279 |
| Member Surcharge (newsletter sub) | | 231 | 251 |
| Member Special Surcharge (Key) | | 30 | 30 |
| Observers Handbook | | - | - |
| Observing Guide (net) | | (07) | 22 |
| National Calendars (net) | | 50 | 31 |
| Advertising | | - | 35 |
| Interest | | 9 | 13 |
| Miscellaneous - | | <u>3</u> | <u>79</u> |
| | \$ | <u>2,396</u> | <u>2,666</u> |
| Expenses : | | | |
| Educational Activities | \$ | 42 | 269 |
| Fees to National Office | | 1,064 | 1,134 |
| Library | | - | - |
| Office Administration | | 120 | 123 |
| Newsletter & Postage | | 749 | 933 |
| Donation (Belfour Memorial) | | 25 | 125 |
| Insurance | | 274 | 274 |
| Miscellaneous | | - | 75 |
| | | <u>2,274</u> | <u>2,933</u> |
| Surplus before amortization | | 122 | (267) |
| Amortization - Buildings 20 years | | (633) | (633) |
| Net Income (loss) for year | \$ | <u>(511)</u> | <u>(900)</u> |
| Equity beginning of year | | 14,338 | 15,238 |
| Equity end of year | \$ | <u>13,827</u> | <u>14,338</u> |
| | | ===== | ===== |

See accompanying notes to financial statements.

The Royal Astronomical Society of Canada
 Saskatoon Centre Incorporated
 Statements of Changes in Financial Position
 Years Ended September 30, 1996 and 1995

| | <u>1996</u> | <u>1995</u> |
|---|------------------|---------------------|
| Operating Activities: | | |
| Net earnings | \$ (511) | (900) |
| Item not requiring cash outlay: | | |
| Amortization | 633 | 633 |
| | 122 | (267) |
| Cash provided by (applied to) operating working capital; | | |
| Accounts Receivable | 35 | (35) |
| Deposit Cypress Hills | (60) | - |
| Prepaid Membership | (135) | (75) |
| Prepaid Expenses | 34 | (34) |
| Calendar Deposits | 55 | - |
| Promotional Items Payable | - | (119) |
| | <u>(71)</u> | <u>(263)</u> |
| Cash provided by (applied to) operations | <u>51</u> | <u>(530)</u> |
| Investing Activities: | | |
| Additions to equipment | (1,510) | (385) |
| Cash provided by (applied to) investing activities | <u>(1,510)</u> | <u>(385)</u> |
| Increase (decrease) in cash position | (1,459) | (915) |
| Cash position beginning of year | 4,499 | 5,414 |
| Cash position at end of year | \$ 3,040 | 4,499 |
| | ===== | ===== |
| Cash position at end of year is comprised of: | | |
| Cash | 294 | 482 |
| Savings | 2,746 | 4,017 |
| Net cash at end of year | \$ 3,040 | 4,499 |
| | ===== | ===== |

See accompanying notes to financial statements.

The Royal Astronomical Society of Canada
Saskatoon Centre Incorporated
Notes to Financial Statements
September 30, 1996

Significant Accounting Policies

- (a) Observatory and buildings are recorded at cost and are amortized using the straight-line method over 20 years.
- (b) Equipment is recorded at cost and is not amortized.
- (c) Library items are carried in the accounts at a nominal value of \$1, new additions are expensed during the current period.

| | | |
|-----------------------------|-------|----------|
| 1. Savings (Telescope Fund) | | |
| Opening balance | | \$ 4,017 |
| additions: | | |
| deposits | 190 | |
| interest | — 9 | 199 |
| | | 4,216 |
| withdrawals: | | |
| telescope additions | 1,470 | 1,470 |
| Closing balance | | \$ 2,746 |
| | | ===== |

Welcome New Members

A warm welcome is extended to the new Centre members. Please note that you can contact Rick Huziak, President, 665-3392 or Kim Mysyk, Membership Coordinator, 374-2485 anytime for Centre news and ideas.

Allan Casey, 120-9th St. E., Saskatoon, SK, S7N 0A2, ph. 653-0079

Ron Haughey, 1660 Blackwood Drive Prince Albert, SK, S6V 7C1, 763-1986

Highlights of January 20th General Meeting

This meeting will feature a special presentation on **Astronomical Education**. There will be presentations on **Volcanism on Io**, by Zachary Drew, **Teaching Astronomy to Schoolkids** (some of whom may take part), by Sandy Ferguson, and Paul Ferguson, and on **Fighting Light Pollution from the Naturalist Angle** by Rick Huziak. It will be at the regular time and place (see bottom of P. 3)

Saskatoon Skies is produced by volunteer labour on a monthly basis with summer double-issues. We welcome letters and submissions (articles, images, cartoons, drawings and diagrams are all welcome!) Contact Sandy Ferguson (931-3184 or Erich Keser (374-4262) for further details. Items may be sent as E-mail to **keser@duke.usask.ca**) as *plain unformatted ASCII text, with line returns and paragraph breaks only*. Signed articles do not necessarily represent the opinion of the Saskatoon Centre.

Last GENERAL MEETING December 16th, 1996

This was a special Meeting, held at Environment Canada's Weather Office, courtesy of Member Dan Kulak. We would like to thank Dan's Supervisor Paul Mallenson for his friendly, but very educational presentation on how the weather office and its Meteorologists work, and Dan for his tour and demonstrations of their state-of-the-art computer, networking and satellite down link equipment.

There was no Executive meeting. President Richard Huziak stressed the urgent need to RENEW MEMBERSHIPS, and handed out a "What's Going On?" sheet, the highlights of which were:

1. **Geminid Meteor Shower** (Dec 11-15th) peaked on the night of December 13-14th with a ZHR (zenith hourly rate) of 156 meteors per hour at 6PM, Saturday, local time. On Thursday night, Saskatoon meteor counts were 45 per hour.
2. **Quadrantid Meteors** will peak SHARPLY on the morning of Jan 2/3, 5 AM.
3. **Tuktoyaktuk Winter Star Party** an important event that some missed.
4. **Site Search:** Most people have still not looked at the Smuts Site, and there is another, very dark site in the Colonsay area to be looked at.

Junior Astronomer's Group

Next Meeting and Observing session has been re-scheduled to Friday, Jan. 17th. 7:30-8:30 PM, at the Alvin Buckwold School on 715 East Drive, (South of Market Mall, East of Preston). Call Sandy Ferguson for information: 931-3184.

Observing Sessions:

January Observing Session: at the Rystrom Observatory on Fri Jan. 10th, with a cloud/snow /blizzard date of Saturday Jan 12th.

February. Observing Session: at Rystrom on Fri. Feb. 7 or Sat Feb. 8.

Orion is shining gloriously overhead, and the skies are crisp. There is a cozy warm-up room full of charts and good company, the Centre's "Big Eye" for you to use, and Sadie to play with. Come on out! We can bring donuts and coffee too!

PLEASE call Darrell at 374-9278 to tell him you're coming!

In Memoriam:

"Reflections on a Mote of Dust"

Carl Sagan

We succeeded in taking that picture [from deep space], and if you look at it, you see a dot. That's here. That's home. That's us. On it, everyone you ever heard of, every human being who ever lived, lived out their lives. The aggregate of all the joys and sufferings, thousands of confidant religions, ideologies and economic doctrines, every hunter and forager, every hero and coward, every creator and destroyer of civilizations, every king and peasant, every young couple in love, every hopeful child, every mother and father, every superstar and every supreme leader, every saint and sinner in the history of our species, lived there on a mote of dust, suspended in a sunbeam.

The earth is a very small stage in a vast cosmic arena. Think of the rivers of blood spilled by all those generals and emperors so that in glory and in triumph they could become the momentary masters of a fraction of a dot. Think of the endless cruelties visited by the inhabitants of one corner of the dot on scarcely distinguishable inhabitants of some other corner of the dot. How frequent their misunderstandings, how eager they are to kill one another, how fervent their hatreds. Our posturings, our imagined self-importance, the delusions that we have some privileged position in the universe, are challenged by this point of pale light.

Our planet is a lonely speck in the great enveloping cosmic dark. In our obscurity - in all this vastness - there is no hint that help will come from elsewhere to save us from ourselves. It is up to us. It's been said that astronomy is a humbling, and I might add, a character-building experience. To my mind, there is perhaps no better demonstration of the folly of human conceits than this distant image of our tiny world. To me, it underscores our responsibility to deal more kindly and compassionately with one another and to preserve and cherish that blue dot, the only home we have ever known.

From the conclusion of a commencement address delivered 11 May, 1996.
Carl Sagan died at age 62 on 20 December, 1996.