NOVA NOTES

Halifax Centre

Sept-Oct 1985
Volume 16
Number 5

1985 Halifax Centre Executive

Honorary President - Dr. Murray Cunningham

President - Norman Scrimger
12 Lynwood Drive
HALIFAX, N.S. B3M 1Y9

Vice-President - Cathy McLeod
4 Mott Street
DARTMOUTH, N.S. B3A 2W4

Secretary - Ralph Fraser
40 Murray Hill Drive
DARTMOUTH, N.S. B2Y 3A8

Treasurer - Randall Brooks
71 Woodlawn Road
DARTMOUTH, N.S. B2W 2S2

NOVA NOTES Editor - Patrick Kelly
2 Arvida Avenue
HALIFAX, N.S. B3R 1K6

National Rep. - Darrin Parker
Room 7-1-2 High Rise 2
Saint Mary's University
HALIFAX, N.S. B3H 3C3

Librarian - David Chapman
8 Lakeview Avenue
DARTMOUTH N.S.

Observing Chairman - Gordon Hawkins
327 Arklow Drive
DARTMOUTH, N.S. B2W 4S1

Mailing Address - Halifax Centre, R.A.S.C.
c/o 1747 Summer Street
HALIFAX, N.S. B3H 3A6

NOTICE OF MEETINGS

Date: Friday, October 18th : 7:30 P.M.

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

Topic:

NOVA SCOTIA ASTRONOMY DAY

NOTE THAT WE WILL BE STARTING AT 7:30 RATHER THAN 8:00

see next page for details

Date: Friday, November 15th : 8:00 P.M.

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

Topic: to be announced

About the cover: The cover this issue shows a 16th century engraving depicting astronomers observing the heavens. One must assume that the artist was using considerable artistic license when he drew this one!

NOVA SCOTIA ASTRONOMY DAY - 1985

As you are no doubt aware, we have decided to hold Astronomy Day in October rather than in May as most other areas do. The reasons for this are that Nova Scotia's weather in May is not exactly conductive to astronomical activities, and also the fact that our membership year begins in October and thus any new members will get a full year's worth from their new membership. We have what we hope will be a wide variety of exhibits and activities, but we will need your help for some of them.

No Astronomy Day would be complete without telescopes, and we plan on having an observing session from the parking lot for the members of the general public. If you have a telecope, please bring it to the meeting as this will not only allow as many people as possible to view the wonders above, but also show people the wide variety of astronomical instruments available. In conjunction with the observing session, there will be an "orientation" session to show what constellations, planets etc. are visible this time of the year.

There will be several static displays as well. David Chapman, our librarian, will be on hand with lots of books as well as a sampling of astronomical maps from the past and present. I, (your roving editor) will be setting up a scale model of the solar system in the hope that it will help people get a feel for just how vast space is. We have a short film which will be shown in the auditorium along with a presentation of member's slides. We also hope to have a large number of astronomical posters etc. on display. Anyone who has anything else of an astronomical nature which you think would be of interest, feel free to bring it along and put it on display.

We plan to publicize this event as much as possible, so don't hesitate to let people know about it and be sure to come yourself fro what we hope will be the best Astronomy Day yet.

Halifax Centre

MESSIER MARATHON UPDATE

Once again, as editor, I have the pleasure to inform you that one of our member's has completed the task of observing all 110 Messier objects. You may recall from the last issue of NOVA NOTES, that David Chapman had been unable to finish his list at the Camping Observing weekend and in fact, was short by just one object. Well, David finally got the last one under much more favorable conditions from his backyard. It took him about a year and a half to complete his list and most of the objects were observed with binoculars and a C90. Congratulations on a job well done. Now that we have two members who have finished the Messier list, I guess we'll have to get them started on the New General Catalog!

I would like to hear from those of you who still haven't finished, just to see how things are coming along. I just checked and found that I have observed 70 and still have 40 to go. However, as I have a 60 mm refractor, I may have a bit of trouble with the rest as they are almost all galaxies, mostly in the Virgo cluster. (Messier's telecope was the same type, but they didn't have street lights in Paris back then). I hope to be finished sometime in the spring, unless I really go crazy and get up early in the morning in February, but it may be a bit to cold, even for me.

****

MEMEBERSHIP DUES

Once again, it is that time of the year. The dues are the same as last year: $20.00 for regular memberships; $12.50 for students and $300.00 for life membership. We would appreciate having your dues no later than the end of October, if possible. You can pay Randall Brooks, our treasurer, at the October meeting or send a cheque or money order payable to "Halifax Centre - R.A.S.C." to him at the Centre's address (see inside front cover).

THE TELESCOPE BUYER'S BLUES

"Yes sir!, What can I do for you? ", oozed the camera store salesman, complete with a 'Ken Doll' grin that would have been more appropriate on a box of Kellogg's Corn Flakes. "I was wondering if you could do me a favor." I blurted. The smile disappeared, replaced with the classic "Oh no!, one of those!" looks. "I'd like to order a telescope!" I say. Return to 'Ken Doll' grin. "Yes sir!, come right this way and we'll see what we can do...." And so it began. I was informed my telescope would take approximately 2 to 3 weeks to arrive. I agreed, gave the man 50 greenbacks, my name and number and proceeded out the door, whistling the theme from "Cosmos" while numerous Messier objects unfolded before my mind's eye.

Several days later, the telephone rang. (Oozing voice) "Mr. Pitcairn, this is so & so, remember? You ordered a telescope from us..." All right! And it's a clear night even! "It seems there is a slight problem, your scope is on factory back order at the warehouse and won't be available for 6 to 8 weeks. Do you still want to order it?" I steadied myself, my mind filled with visions of Messier objects, telescopes and camera store salesmen whirling into the infinite bowels of a black hole. But wait! Eight weeks will still be in time for the camping observing weekend. Go for it! "Yeah, go ahead and order it."

Ten weeks later, after the camping weekend. (crystal clear skies... moan!), I receive another call from my favorite salesman. "I'm afraid I have some bad news, I can't deliver your telescope until March of next...Hello', He:lo!... Mr. Pitcairn, are you still there?" Just what exactly is wrong, you may ask. Are you ready? It's Halley's Comet! All the media gab about the returning friend has excited the public into an orgy of telescope purchasing. Not only does the comet give every amateur astronomer the excuse he needs to finally convince his wife that the time is right to

spend 2000 smackers on a larger telescope, but I strongly suspect that every "Yuppie" that doesn't own a telescope has ordered one, expecting to see a great deal when they scrutinize Comet Halley later in the year.This wealthy group (largely south of the border) who own one of everything except a telescope, (after all, there was nothing to look at until now) are realizing it would be nice to see Halley's Comet from the deck of their yacht this winter.They are buying telescopes by the hundreds! Imagine the Earth shattering groan which will start on the east coast sometime this fall and spread westward with the darkening skies as by the thousands would-be amateur astronomers exclaim "I paid 2000 sams to see that!!"

Yes, my mistake was trying to buy this year, its next year, when all these short lived amateur astronomers decide that they would rather own an ultralight airplane, when the bargains in telescopes "USED ONLY ONCE!" will be flooding the classifieds!

Doug Pitcairn

****

To make an apple pie, you need wheat, a pinch of this and that, and the heat of an oven. The ingrediants are made of molecules - sugar, say, or water. The molecules in turn are made from atoms - carbon, oxygen, hydrogen and a few others. Where do these atoms come from? Except for hydrogen, theya re all made in stars. A star is a kind of cosmic kitchen inside which atoms of hydrogen are cooked into heavier atom. Stars condense from interstellar gas and dust which are composed mostly of hydrogen. But the hydrogen was made in the Big Bang, the explosion that began the Cosmos. If you wish to make an apple pie from scratch, you must first invent the universe.

- Carl Sagan
"Cosmos"

THE 1985 GENERAL ASSEMBLY
Edmonton, Alberta

First off, I would like to thank you for allowing me to travel to the 1985 General Assembly as your National Representative. The 1985 G.A. was my first and thus the best one I've ever attended, but beyond that I know that it was indeed a very well put together G.A. as not only myself, but the "G.A. veterans" also enjoyed it tremendously. The Edmonton Centre should be congratulated.

The weekend opened with a slide show and song contest, the latter of which was somewhere between entertaining and excruciating. It was enjoyed by all. From here on in it was a very busy schedule of social outings and business meetings (even busier for those of us who took time to eat and sleep, ha-ha).

The trips to Fort Edmonton, which by western standards is very old (160 years) and to the West Edmonton Mall, the largest shopping mall and indoor amusement park in the world, were of course great, but the real high light of the excursions was the Edmonton Space Sciences Centre.

The Edmonton Space Sciences Centre is a $15,000,000 complex devoted to, you guessed it, what RASCals like best next to clear skies. The structure includes the Margaret Zeidler planetarium, which despite having its $1,300 000 Zeiss star projector out for repairs due to an unfortunate accident, put on a most interesting show entitled "The Stars from China" using over 250 slide projectors. The Devonian Theatre houses a four story tall movie screen to accommodate the 70mm IMAX projector. This 220 seat theatre is one of only 50 around the world and the second largest in Canada. People with motion sickness BEWARE! The most dangerous section of this complex is the one which houses the (tax-free) science shop (astronomy oriented, of course) in which you (unfortunately) are free to buy all those wonderful things advertised in astronomy magazines.

Served at the banquet on Saturday night was some of the best tasting beef I've ever had. Also at the banquet, the Simon Newcombe Award's winner; Mr. Don Trombini of Connecticut was announced and the National Office will be forwarding two books to go along with the award; "The Stars for Everybody" by Simon Newcombe himself and "Colors of the Stars" by Malin Murdin. To conclude the banquet, Dr. R.F. Folinsbee gave a talk on meteorites. One comment mentioned by more than one member of the head table was that in the R.A.S.C. there seems to be no sharp dividing line between its amateur and professional members. Both types can (obviously) get together for a weekend in great numbers and never have any trouble with conversation.

Of course, not all time was spent touring the sights of Edmonton. Many hours were consumed in the various meetings and council meetings in which some very interesting and sometimes heated debate took place. If there are any questions about the council meetings, please don't hesitate to contact me, perhaps I may be of help. (Don't let all my notes go to waste.)

Perhaps one of the more interesting parts of the G.A. was the paper session. This gave members a chance to talk for 10 minutes (some tried fruitlessly for 11) on their pet projects which ranged from the daytime observing of 4th magnitude stars to astronomy in Saskatchewan schools to bright fireballs over Alberta (luck devils).

After the General Assembly on Sunday afternoon, a computer seminar was held to introduce the R.A.S.C. to the "Envoy 100" system. This is the main drive to link (via computer) the R.A.S.C. centres from coast to coast. This system offers much more than the present mail system in both speed and service for (estimated) about the same price. It also would allow members with the proper equipment to use the service personally i.e. electronic mail.

There are a few items that should interest

all members of the Halifax Centre. Mr. Ken Rowe (phone: 416-482-1427) of Toronto wants to create a Halley's Comet time capsule of AMATEUR observations, both scientific and non-scientific made by any member of the R.A.S.C. Also, our National News Letter has a new editor, Mr. Ian McGregor. It was made well known at the G.A. that there has been a shortage of "news" type material due to the fact that most news items arrive too late for publication. The assistant editor, Mr. Peter Jedicke has volunteered his phone number (519-455-5907) in hopes of receiving more material in time for the publisher's deadline.

The 1986 G.A. is in Winnipeg and the 1987 one in Toronto. The location of the 1988 G.A. has not been chosen yet, but an interesting proposal was made by Captain Raymond Auclair on behalf of the unattached members to hold the 1988 G.A. at the Canadian Coast Guard College in Sydney. This is being looked into. I also heard many favorable comments on the 1980 Halifax G.A. which seems to have set the standard for G.A.'s. A very frequent question (request?) was: "When is the next Halifax G.A.?"

Edmonton is a very beautiful city (they don't cut their trees for the sake of laying more concrete), but it is located 10 degrees higher in latitude than Halifax and thus they barely have an hour of darkness during the summer, which is perhaps the only thing more effective at discouraging night-time astronomy than east coast weather, except that when it is clear in Nova Scotia it's also night and not twilight!

To sum up, the G.A. was great and I learned more about the inner workings of the R.A.S.C. in those four days than in my five years as a member. I could run NOVA NOTES over budget if I told you everything I'd like to, but a picture (slide) is worth a thousand words and I've plenty of 'em. So I'll try and show a (reasonable?) number of them at one of the meetings this fall.

Darrin Parker

MEMBERSHIP SURVEY

The following survey is a "rerun" of a survey that was taken four years ago. Its purpose is to see how members feel about the way that the Halifax Centre is being run and to allow for constructive criticism as input in our efforts to provide you with what we hope will be the best possible range of activities etc. Please answer the questions by either filling in the blank or circling the appropriate response. You can either mail your replies to either myself or the centre (see inside front or back covers for mailing addresses) or bring them to either of the October or November meetings and give them to any member of the executive.

Note that although you do not have to give your name when filling out the questionnaire there are some questions (4,7, and 18) for which we will obviously need a name depending on you reply. These questions are marked with an asterix (*). Either put your name in the space below or contact any member of the executive.

NAME: .....

BACKGROUND INFORMATION

1. How many years have you been a member of the Halifax Centre?

a) <2 years b) 2-5 years c) >5 years

2. How many meetings did you attend from October 1984 to September 1985 inclusive?

a) none b) 1-4 c) 5-8 d) >8

3. Are you generally satisfied with what your membership provides?

a) yes b) no

*4. Would you like to be more actively involved in the planning and programming of the Centre's activities?

a) yes b) no

MEETING PROGRAMS / OBSERVING SESSIONS

5. Have you found the monthly meetings intersting and of value?

a) yes b) no c) not sure

6. Have you contributed in any way to these meetings?

a) yes b) no

*7. Would you be willing to contribute in the future?

a) yes b) no

8. Please list any topics that you would like to hear about at future meetings.

9. Would you like to know more about the interests of other members?

a) yes b) no

10. Do you own a telescope? If yes, please give aperture and type.

a) no b) yes ---> aperture
type

11. How many observing sessions have you attended in the past year?

a) none b) 1-4 c) 5-9 d) >9

12. If you were unable to attend many observing sessions, please give reason(s).

13. Have you attended any Camping Observing weekends? If not, please give reason(s)

14. You you favor a different location for observing sessions if a suitable site could be found? If so, do you have any suggestions for a location

a) no b) yes --> location?

PUBLICATIONS

15. Do you read NOVA NOTES?

a) always b) frequently c) seldom d) never

16. Are you satisfied with the content of NOVA NOTES?

a) yes b) no

17. Do you like the present format of NOVA NOTES?

a) yes b) no

*18. Would you like to write for NOVA NOTES?

a) yes b) no

19. Do you have any additional comments on NOVA NOTES?

OTHER ACTIVITIES

20. What other features/activities are you interested in. Please check the appropriate box or add you own comments.

Activity	Interested		
	Yes	No	Maybe
Societies Show			
Astronomy Day			
Observing Sessions			
Annual Banquet			
Camping/Obs weekend			
Meetings			
Telescope Making			
Member's Night			

Place any additional overall comments here:

Thank you for your time and co-operation in filling out this questionnaire. We look forward to receiving your replies.

Halifax Centre

For those of you who love doing your own calculations, "Practical Astronomy with your Calculator" by Peter Duffett-Smith is a must read. The main headings are: time, co-ordinate systems, the sun, the planets, comets and binary stars, and the moon and eclipses. The section on time deals mostly with converting from one time system to another or converting time from one form to another (i.e calendar date to Julian Date). The section on co-ordinate systems, obviously includes transformations between all of the astronomical co-ordinate systems (a handy chart shows which page changes each system into the other), as well as such things as rising and setting times, precession, parallax and a number of other topics.

The section on the sun concerns itself with the position of the sun, times of sunrise and sunset, twilight and the equation of time. The planets section can be used to compute the approximate position of the planets, including the perturbing effects of Jupiter and Saturn, the distance, phase, apparent brightness and angular sizes. The final chapter combines the information given for the planets and the sun, but as applied to the moon, along with a section on calculating eclipses.

Step by step instructions are provided, and any intermediate step already available in the text is referenced like a computer "subroutine". Also, any approximations made are noted and a bound for the error in the answers is given. Worked examples are provided with most cases and I found all of the steps easy to follow in the several examples I worked. I did not an error in one algoritm which DC found and noted. The one thing that may be a disappointment to those of you with computers is that the accuracy of most is not sufficient for the number of digits involved in these calculations.

Pat Kelly

MAN'S GREATEST DISCOVERY

The world today is entertained with discoveries in all fields of human endeavor. Over 400 000 years of man's pondering, questioning and experimenting have put civilization where it is today. In examining this period of man's cultural evolution, we find one discovery which surpasses all others. This discovery led people through the times of the Pharaohs, Roman Empire, the birth of Christianity, the Dark Ages, the Renaissance, the Industrial Revolution, the Great Wars and finally into the space age. "What is man's greatest discovery?", you ask.

In the days of our ancient ancestors, Homo erectus, the discovery of the use of fire altered history. No longer was man the hunted; he became the hunter. Think of how this must have broadened his horizons. To think that man suddenly found himself free to take charge of the night, where once only nocturnal predators reigned supreme. They were able to increase life expectancy by cooking meat that once contained life-shortening parasites. In the movie "Quest for Fire", we are jolted into the realization of the importance of this discovery. To these people, fire became the symbol of life and death.

It is not hard to imagine early man's thoughts as fire became a part of daily living. It was as central as the campfires and fireplaces of early North American settlers. The nature of fire itself acted as a catalyst, stimulating man's innate and insatiable curiosity. But what is fire exactly? Why are the pleasant sensations of light and heat given off? Why are some fires hotter than others?

To the first observers, fire was equated with producing heat and light. It also demanded sustenance -- any item that would burn. Conversely, anything producing heat or light, contained a fire within. The expression "the fire within him burns strongly" therefore suggested that this person had a big appetite. In other words, he was adding more fuel, or

food, to the fire. Today, of course, this phrase translates into a person with a strong will or desire.

The magic of fire held a special mystery and fascination more so 2500 years ago than now. Heraclitus of Ephesus, who ruled in the 5th and 6th centuries B.C. believed that fire was the first principle of all things. Fire was transformed into other elements and these other elements were turned into fire. "All things", he said "are forever in a state of flux. There is no birth and no death, but only a ceaseless transformation of the restless elements". Does this sound familiar? Consider Albert Einstein's formula $E=mc^2$

Another Greek philosopher, Empedocles of Agrigentum, who also lived in the 5th century B.C. Believed that there were four elements: water, air, fire and earth. Each element was composed of two qualitities as shown in figure 1 below. For example, fire is hot and dry, earth is cold and dry.

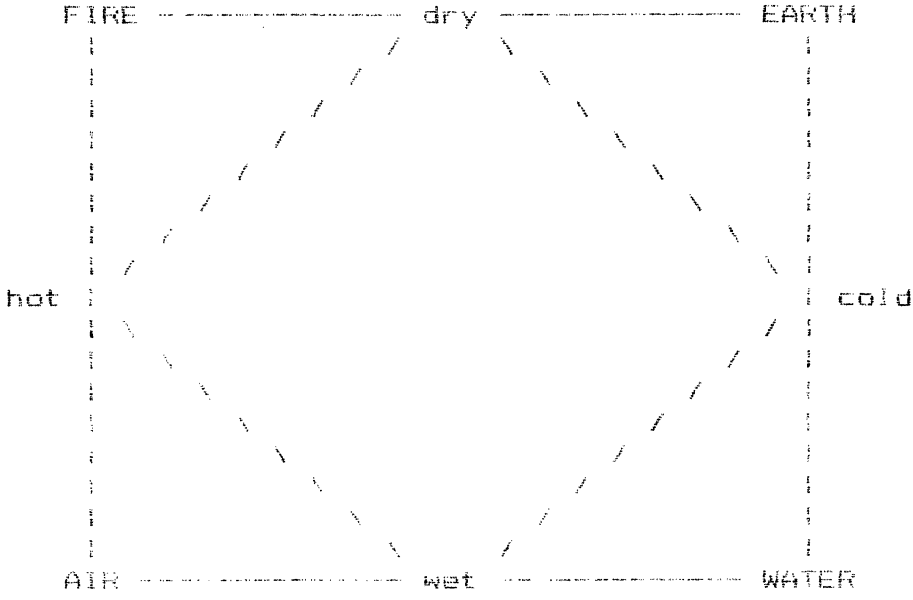


Figure 1

He further believed that these elements were constantly being brought together by love and just as constantly parted by hate, for Empedocles held that these two forces shared the rule of the world.

Long before the Greeks speculated as to the nature of fire, man discovered its ultimate use in recovering metals from their ores. First it was copper, a soft metal which could be molded, drawn, hammered and cast. Secondly, by trial and error, it was found that by adding small quantities of tin to copper a new product was formed: bronze. Bronze became a material for all purposes, the plastic of its age, for it was three times harder than copper. Needless to say, one discovery lead to another, advancing civilization by leaps and bounds.

Man soon surrounded himself with the fruits of his greatest discovery, but he still did not understand the nature of fire. as a matter of fact, no progress was made in this area for 1600 years. In 1730, chemists tried to dispell the theory of phylogiston as a last embodiment of material fire. Phylogiston was the imaginary element believed to cause combustion; in essence, fire. Chemists put this idea to rest by saying that fire was not a material any more than life was material. Fire, they determined, was a process of transformation and change by which material elements were recombined.

Reflecting back over man's use of fire,a trend becomes clear. As man so needed, he was able to increase the intensity or temperature of the flame. At first, man found that certain types of wood produced more heat than others. Alder, for example, will produce more heat per unit than willow. This was a subtle but profound observation. It was further discovered that a fire could be intensified by fanning it or forcing air around it. This idea developed into a system of bellows and well constructed furnaces, so necessary in maintaining high temperatures.

Once wood became exploited to its fullest, other sources of high energy fuels were sought. At first, coal supplied this need. It was

abundant, cheap, and produced more energy per unit than wood. See Figure 2. It was this black gold which led civilization into the industrial era and put man on track with the steam engine.

MATERIAL	ENERGY CONTENT (kJ/kg)
Wood	16 000
Coal	32 000
Hydrocarbons	44 000
Hydrogen	120 000
U^{235}	9×10^{10}
Plasma	$>2 \times 10^{13}$

Figure 2

However, it didn't take long for the great treasure to be found. Oil was convenient, relatively clean and cheap as well. If the wheel was responsible for getting civilization rolling, it was oil that got civilization flying. This hydrocarbon is versatile and readily combustible in various forms. Oil has influenced man's growth in uncountable ways.

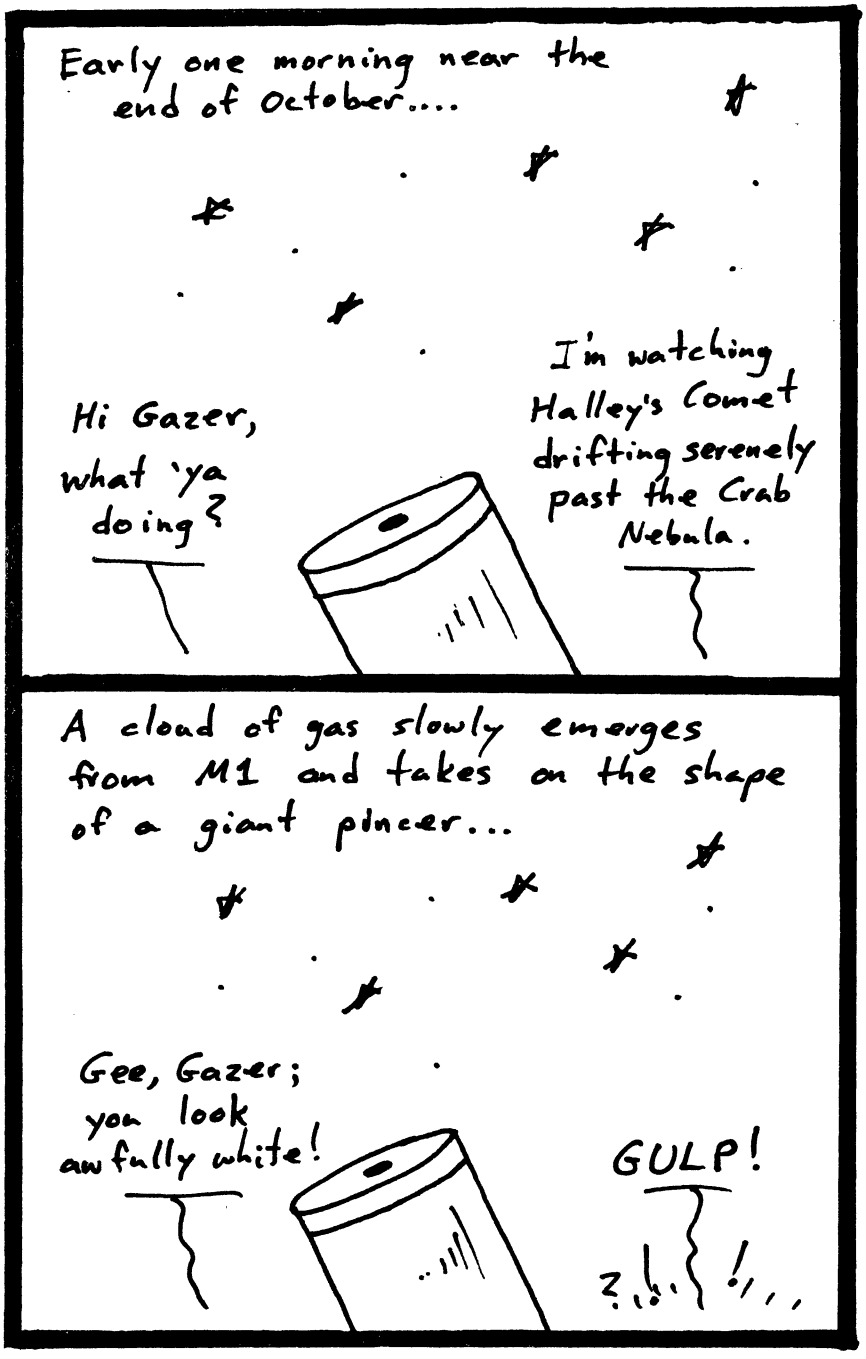
The use of fire is mankind's greatest success story. Both the oil lamp and the roaring Saturn V rocket had their purpose. Jacob Bronowski says "Physics is the knife that cuts into the grain of nature; fire the flaming sword, is the knife that cuts below the visible structure, into the stone."[1]

As I sit and ponder over the campfire, I am comforted by its warmth and light. Already I realize that this is a luxury of yesterday. The space age has produced far more efficient means of utilizing starlight. The fireplace is replaced by the microwave; the kerosene lamp by the fluorescent bulb. The way we see things has changed.

Somehow I believe that it was meant to be that we share a little of the sun's great energy, in the form of fire. After all, we are star people, the elements that form our bodies having been produced in the hottest fires in the universe.

Larry Coldwell

GAZER


Early one morning near the end of October....
Hi Gazer, what 'ya doing?
I'm watching Halley's Comet drifting serenely past the Crab Nebula.
A cloud of gas slowly emerges from M1 and takes on the shape of a giant pincer...
Gee, Gazer; you look awfully white!
GULP!
?!!
!!!

P. Kelly / D. Pitcairn

NOVA NOTES INDEX

September- October 1985 Volume 16/Number 5

NOVA NOTES is published bi-monthly by the Halifax Centre of the Royal Astronomical Society of Canada in January, March, May, July, September and November. Articles for the next issue should reach the editor by OCTOBER 18th 1985. Articles on any aspect of astronomy will be considered for publication. The editor is:

Patrick Kelly
2 Arvida Avenue
Halifax, Nova Scotia
B3R 1K6
477-8720

NOVA NOTES is printed courtesy of the Nova Scotia Museum

R. A. S. C. - HALIFAX CENTRE 1985 CALENDAR OF EVENTS

February 1985

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

March 1985

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

April 1985

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

May 1985

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

June 1985

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

July 1985

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

Key to calendars:

Meetings: outlined

Special days: shadowed

Observing sessions:

bold and underlined

Observing session alternates:

italics and underlined

August 1985

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

September 1985

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

October 1985

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

November 1985

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

December 1985

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

Observing sessions:

February 16 observing is in Bridgewater
March 16 observing of galaxies
April 14 is an occultation at 10:10 p.m. AST
May 18 observing is in Bridgewater
August 9,10,11 camping observing weekend
Perseid meteor shower (24-day old moon)
November 16 is the Leonids (5-day old moon)
December 14 is the Geminids (2-day old moon)

Meetings:

The 3rd Friday of each month at the N.S. Museum.

Special events:

March 6 Shapley lecture in Astronomy at St. Mary's University.
April 27 is International Astronomy Day.
May 18 in Bridgewater - a display of meteorites and a speaker.
June 28 - July 1 is the General Assembly.
Banquet will be on a Friday in May - yet to be announced - watch for it!
October 1 - 1986 Memberships due.
October 18 is Nova Scotia Astronomy Day - meeting and observing at the museum.

Halifax Centre
Royal Astronomical Society of Canada
c/o 1747 Summer Street
HALIFAX. Nova Scotia
Canada
B3H 3A6

ROYAL ASTRONOMICAL SOC OF CAN,
136 DUPONT ST,
TORONTO ONT,
M5R 1V2