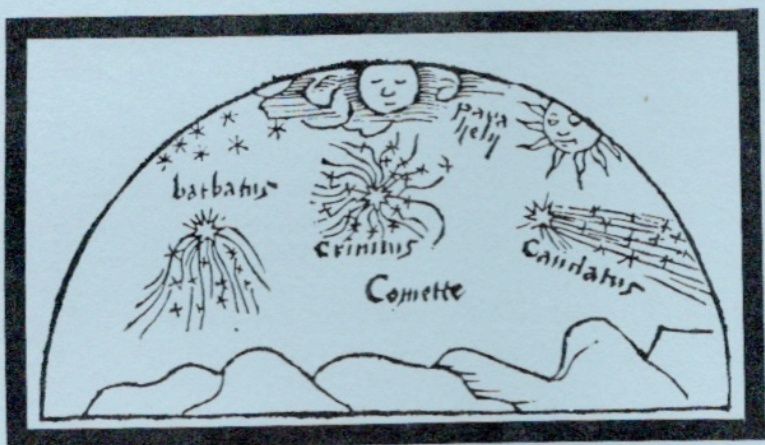


NOVA NOTES



Halifax Centre



July - Aug 1986
Volume 17
Number 4

17-4

1986 Halifax Centre Executive

Honorary President - Dr. Murray Cunningham

President - Norman Scrimger
12 Lynwood Drive
HALIFAX, N.S. B3M 1Y9
443-7455

Vice-President - Darrin Parker Rm.7-1-2
Saint Mary's University
HALIFAX, N.S. B3H 3C3
425-2626

Secretary - Ralph Fraser
40 Murray Hill Drive
DARTMOUTH, N.S. B2Y 3A8
466-5106

Treasurer - David Tindall
3231 Glendale Road
HALIFAX, N.S. B3L 3S4
455-7456

NOVA NOTES Editor - Patrick Kelly
2 Arvida Avenue
HALIFAX, N.S. B3R 1K6
477-8720

National Rep. - Doug Pitcairn
13 Ferguson Road
DARTMOUTH, N.S. B3A 4J8
463-7196

Librarian - David Chapman
8 Lakeview Avenue
DARTMOUTH N.S.
463-7664

Observing Chairman - Gordon Hawkins
327 Arklow Drive
DARTMOUTH, N.S. B2W 4S1
434-1787

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

Notice of Meetings

Date: Friday, August 1st - Monday August 4th

Place: West Point, Prince Edward Island

Topic: ANNUAL CAMPING OBSERVING WEEKEND
see inside for more details

There have been several events planned for the public over the course of the summer for which we would like to see as many people as possible turn out. A list of these can be found inside.

Date: Monday August 11th

Place: Green Bay near Bridgewater

Topic: Perseid Meteors Observing Session
see inside for more details

NOTE: The above list is tentative and subject to change.

About the cover: The cover this issue is reproduced from a 1512 edition of Aristotle's "Meteorologia". One can see comets and meteors, both of which are portrayed as being part of the Earth's atmosphere.

Editor's Report

I have just returned from the General Assembly in Winnipeg, and I must say that I thoroughly enjoyed myself. If you have never been to a G.A., make plans for the one in Toronto next year. I know I am already planning to go, whether I will be the Halifax Centre's representative or not! As I will be writing a report on the G.A. for the next issue of NOVA NOTES I won't say much about it here. There are several things though, that I would like to mention.

The Simon Newcombe Award is a national award and was initiated by the Halifax Centre to acknowledge excellence in literary skills among non-professional astronomers in the R.A.S.C. The award is made each year at the General Assembly by the representative of the Halifax Centre with the winner receiving two books on astronomy, one of which was written by Simon Newcombe. At our June meeting, and only six days before I was to leave for Winnipeg, it was announced at our executive meeting that we had heard from National Office and that there was a winner for the Simon Newcombe Award this year. The winner, although known to several executive members, was not mentioned at this time for reasons which will be clear shortly. It was decided that our librarian, David Chapman, select the books to be given, and he proceeded to do so. It was my great privilege at the G.A. to accept the Simon Newcombe Award from Roy Bishop on behalf of David Chapman who is this year's recipient! The paper which won him this award was on the subject of transits of Venus. Readers will probably recall it the subject as David wrote a less technical version for the last issue of NOVA NOTES. Congratulations Dave, and I hope you enjoy reading the books as much as you did choosing them!

Also from the G.A. comes the news that we are now the fifth largest centre after Toronto, Ottawa, Victoria and Calgary. Relating to membership, another thing to keep in mind is that the increase in life membership from \$300

to \$500 was approved but will not go into effect until October 1st. Thus, those of you who may have considered converting to a life membership but thought that the notice given was a little short, you can now think about it over the summer.

Speaking of the summer, since we only have one regular meeting throughout the summer months (the COW in August), and since people have a tendency to travel extensively during this time of the year I have included several events which you may wish to consider attending, depending on your whereabouts. Another reminder: just because you are on vacation, does not mean that you can't come out to the observing sessions! With Mars at its best in two years, you won't want to miss it. Check the dates in the back of NOVA NOTES.

Readers may also have noticed the new format of the mailing labels being used for NOVA NOTES. We now have all of our membership data stored safely away in a database in my office. If any of the information on your label is incorrect, please send me a note advising of any changes to be made. We are also starting to add phone numbers to our membership database, so if you want to be included, drop a note with your phone number on it. We have had several requests from members outside of Halifax to find out who in their area is a member for the possibility of meeting them. I have also noticed that almost every other centre's newsletter publishes an annual list of members for exactly the same reasons. Thus I plan to include in the next issue a list of all life, regular, youth and associate members of the Halifax Centre. Through it I hope that you will come to discover our greatest resource: our members.

I know that I will be seeing many of you over the summer, but for those that I don't, I hope that you all have a pleasant summer filled with good weather, good times and, hopefully, clear night skies.

Patrick Kelly

Camping Observing Weekend 1986

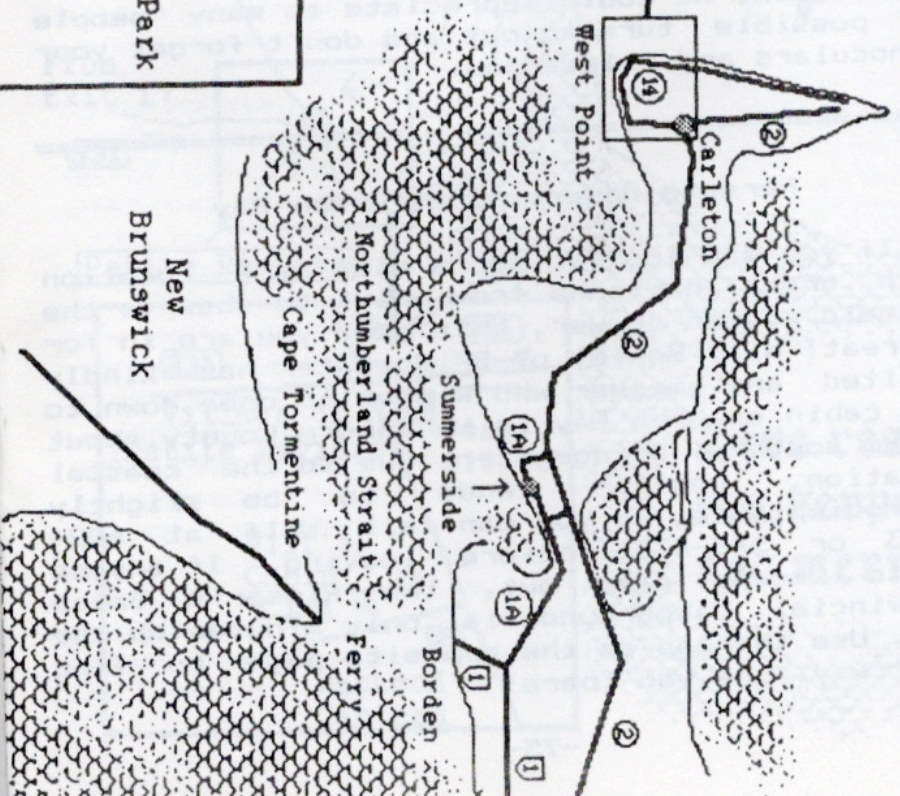
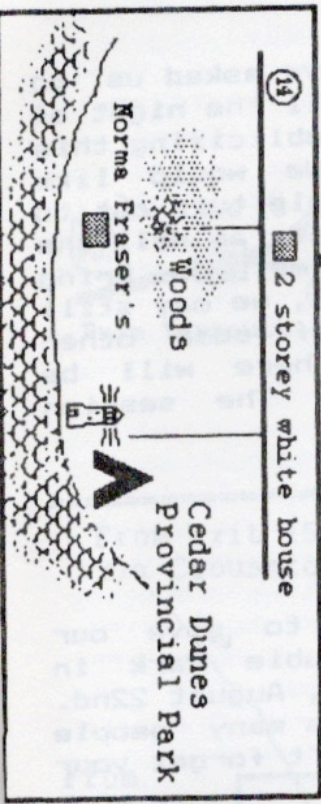
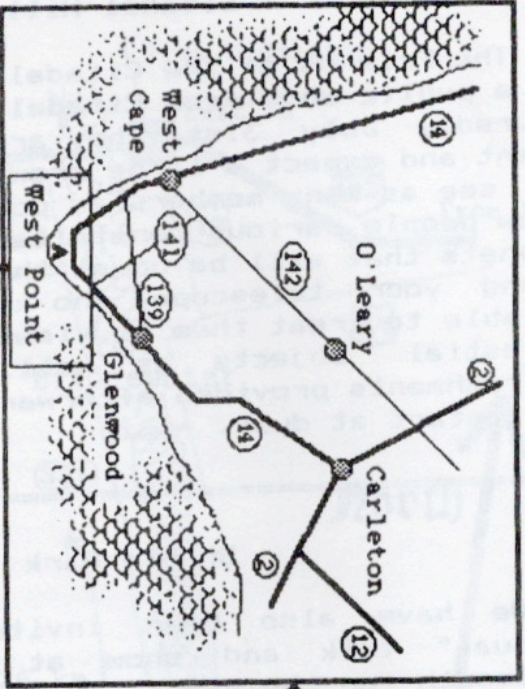
Norma Fraser has kindly invited us to use her property as an observing site for this year's Camping Observing Weekend. This year the COW will be held from August 1st through August 4th at West Point, Prince Edward Island. The actual observing site overlooks the Northumberland Strait and is quite dark. There is a provincial campground very close by as well as several bed and breakfast's in the immediate area. The surrounding area also has several inns and motels though these are further away from the actual observing site. More information on accommodation can be obtained by calling Prince Edward Island's tourist information center at 1-800-565-7421. The map on the opposite page will show you how to get to West Point. West Point is about 100 km from the Borden ferry and about 180 km from the Wood Islands ferry.

=====

Starfest '86

The North York Astronomical Association invites all astronomers to attend its fifth annual observing convention. The dates this year are August 8th and 9th. The weekend includes observing sessions, formal and informal slide presentations, workshops and a Twilight Talk. Observers are invited to bring their slides and telescopes and share their observing experiences. Among those appearing will be Terence Dickenson, Warren Morrison (who was awarded the Chant Medal at this year's G.A.), Michael Watson and Dog Clapp (with his portable observatory). This year the convention will be held at "The River Place", a private campground just north of Guelph, Ontario. There are also several hotels in the immediate area. If you are interested in obtaining either more information or a registration form, please contact the editor.

Map to Camping Observing Weekend Site



Summer Activities

Citadel Hill

The Friends of the Citadel have asked us to do a public show from Citadel Hill the night of Thursday July 31st. They are publicizing this event and expect a large crowd. We would like to see as many members as possible turn out to show people various constellations, as well the planets that will be up at the time. So bring along your telescope, who knows, we may still be able to treat them to views of some other celestial objects as well. There will be refreshments provided afterwards. The session will start at dusk.

=====

Shubie Park

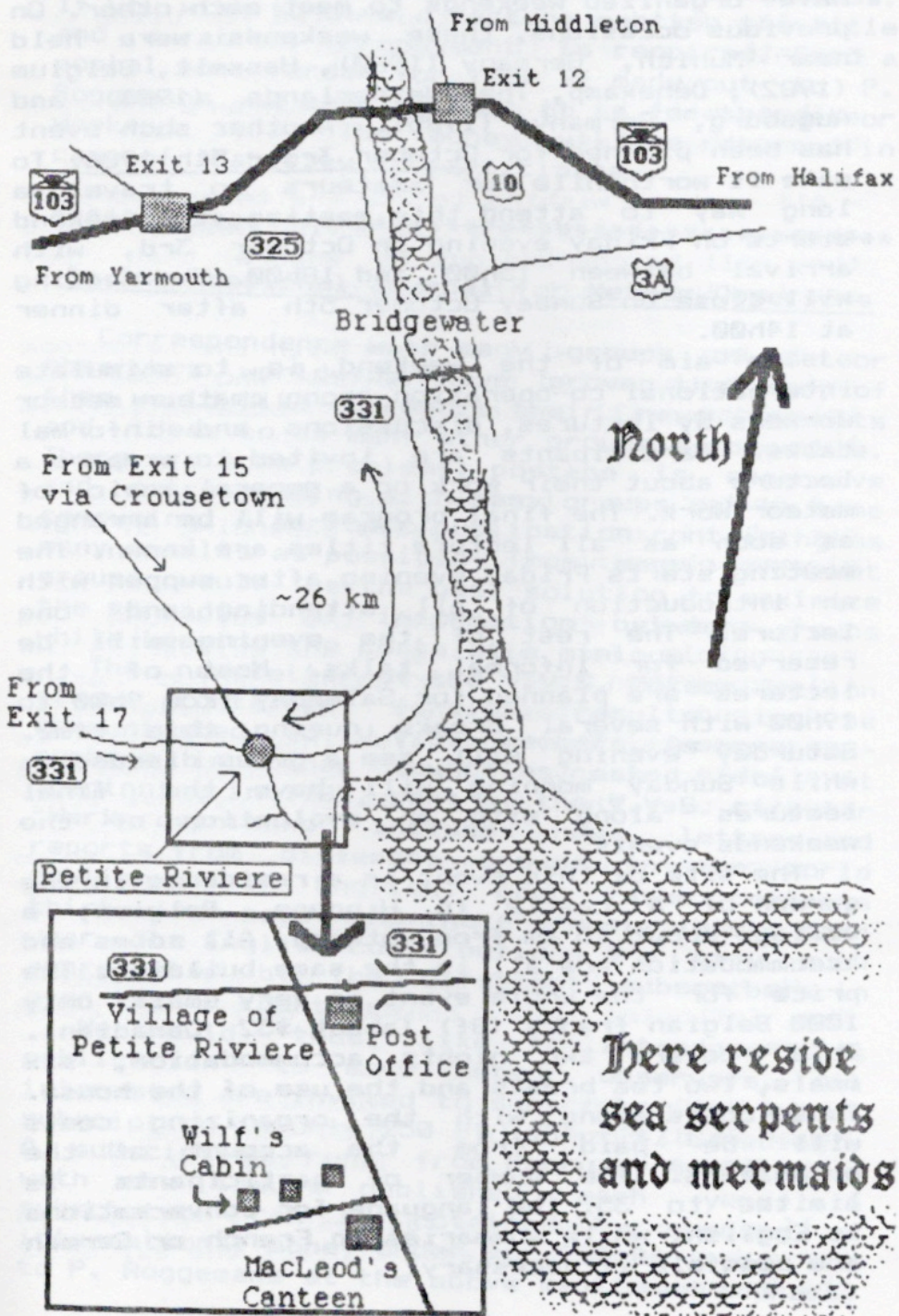
We have also been invited to give our "annual" talk and show at Shubie Park in Dartmouth on the night of Friday, August 22nd. Once again, we would appreciate as many people as possible turning out and don't forget your binoculars and telescopes.

=====

Perseid Observing at Green Bay

If you are looking for a nice dark location with great horizons from which to observe the Perseid meteor shower, this year you are in for a treat! Wilf Morley of Bridgewater has kindly invited any member who wishes to come down to his cabin on Gren Bay in Lunenburg County about 35 km south of Bridgewater. Due to the coastal location, weather tends to be slightly unpredictable, so you can call Wilf at 688-2943 or 543-4358 before leaving. If anyone would like to camp out, the Risser's Beach Provincial Campground is only minutes up the bay. Use the map on the opposite page to find your way. See you there!

Map to Wilf Morley's Cabin in Green Bay



International Meteor Weekend 1986

For several years European meteor observers have organized weekends to meet each other. On previous occasions, these weekends were held near Munich, Germany (1980), Hasselt, Belgium (1982), Denekamp, The Netherlands (1983) and Augsburg, Germany (1985). Another such event has been planned for October 3rd - 5th 1986. To make it worthwhile for amateurs to travel a long way to attend this meeting, the weekend starts on Friday evening on October 3rd, with arrival between 15h00 and 18h00. The meeting will close on Sunday October 5th after dinner at 14h00.

The aim of the weekend is to stimulate international co-operation among amateur meteor workers by lectures, discussions and informal talks. Participants are invited to prepare a lecture about their work or a general topic of meteor work. The final program will be arranged as soon as all lecture titles are known. The meeting starts Friday evening after supper with an introduction of all attending and one lecture. The rest of the evening will be reserved for informal talks. Most of the lectures are planned for Saturday from 9h00 to 19h00 with several breaks during this time. Saturday evening will see a group discussion while Sunday morning will have the final lectures along with an evaluation of the weekends events.

The site of this event is a residence in the garden of a castle in Hingene, Belgium; a village about 15 km from Antwerp. All rooms and accommodation are all in the same building. The price for the whole event is very small: only 1000 Belgian francs (Bf) (about \$32 Canadian). This covers two nights accommodation, six meals, two tea breaks and the use of the house. These costs along with the organizing costs will be paid from the account of the organizers. The number of participants is limited to 35. The language for conversations is English, while summaries in French or German are possible if necessary.

Centre Telescope Policy

After much deliberation, the executive has finally decided on a set of rules for using our recently acquired C8 telescope.

- There will be no user fee to members who wish to use the telescope.

- All members wishing to use the telescope must attend at least one observing session where they will be checked out to ensure that they are familiar with the telescope's operation.

- A log book will be kept with the telescope and it is expected that anyone who uses the telescope will record their observations in this log.

- A member may borrow the telescope for a period of up to two weeks depending on their planned observing program.

- A member who borrows the telescope is responsible for picking up and delivering the telescope when their borrowing period begins and ends unless they have made other arrangements. They must also insure that it is available at any regularly scheduled observing session over the term for which they have it.

=====

MISSING MEMBERS

We have lost track of two of our members. The following list contains their last known address:

David MacDonald
River Road, Spryfield
Life Member

Michael Grace
5289 Tobin St.
Halifax, N.S.

If you know the new address of either of these two members, please contact the editor or the treasurer.

Gawker's Report

Time: Tuesday June 3rd, 1986
Place: Beaverbank Road Observing Site
Present: D. Pitcairn, P. Kelly
M.V.M. (Minimum Visual Magnitude): 6.0
Weather conditions: Still clear air
Seeing: excellent
Equipment: B&L4000, 20x80 & 10x50 binoculars, 60 mm refractor
Objects observed: M3, M13, M51, M63, M85, M88, M91, M94, M98, M99, M100, M106, NGC 5195, NGC 7000 (North America Nebula, Pelican Nebula. In addition, we saw at least a dozen Tau-Herculid meteors. Quite by accident we noticed quite a few meteors were coming from the head of Hercules. A quick check of the Observer's Handbook showed that this night was the peak for this minor shower.

Time: Wednesday July 9th, 1986
Place: Kidston Lake
Present: G. Roberts, P. Kelly
M.V.M. (Minimum Visual Magnitude): 5.0
Weather conditions: Warm, large patches of cloud eventually turning to overcast. Of course, once we had packed up, the sky cleared completely.
Seeing: average to poor
Equipment: 20x80 binoculars, 60 mm refractor, C8
Objects observed: Venus, Saturn (plus Titan, Tethys, Dione and Rhea), Mars (no features visible due to low altitude and seeing; it sure is large, though), Nu Scorpii (double star), M4, M10, M12, M14, M26, M57, M80, M107, NGC 6366, NGC 6664, NGC 6712 and lots of fireflies.

The observing sessions consist of twenty observers in a circle, each assigned a particular area of sky to watch. At the center is the recorder who keeps track of the meteors. If the meteor is reported by one of the observers, the recorder gets high enough, then a second recorder is used. Two other members are the 20x80

compiled by Doug Pitcairn

Soviet Amateur Meteor Observers

Let us take a short trip to an observatory in Simferopol in the Crimea to visit amateurs at work.

In charge of the group of over seventy observers is Mr. V. Martynenko who has been teaching observers since 1952. His health, not too good at the present, does not keep him from his observers. "Study is number one, is it not?" he once wrote to me.

From September 1st to June 1st, the members are at the local university studying. Also on their program is work at the university similar to a lab class here, but longer and a bit more intense. On one occasion fifty observers showed up to observe the Geminid meteors but the weather was overcast. They were ready to leave, but Mr. Martynenko insisted they stay. Sure enough, one and a half hours later it cleared and they made observations until 3:30 A.M. despite the fact that it was -28 Celsius! The conclusion was that valuable data was gained, the students helped their marks at university and kept in shape all in one evening.

By June, the group prepares to go on a meteor expedition to the mountains or to Lake Baikal; no time to windsurf or fool around! The group usually leaves on June 25th and will not be back home until around the end of August. All expenses are paid for by the local trade unions.

Their equipment consists of: a pair of 20x104 binoculars (for faint meteors), a battery of cameras using both rotating shutters for determining meteor heights and gratings for studying meteor spectra, a short wave radio for time signals and meteor detection and a 60 mm f/12 telescope for solar viewing.

The observing sessions consist of twenty observers in a circle, each assigned a particular area of sky to watch. At the center is the recorder who keeps track of the meteors shouted out by the observers. If the meteor rate gets high enough, then a second recorder is used. Two other members man the 20x104

binoculars, one observing and the other recording. After about four hours, the groups change with a fresh group awakening to continue on while the previous group gets some sleep. This goes on all night, every night, until they leave. It takes the average observer either 10 years or a meteor count of 250 000 meteors to become a meteor observer.

During the day, the group briefly goes over their data from the previous night and do some rough counting and preliminary calculations. Then there is some time for relaxation. Some collect rocks, minerals and fossils for the museum at the observatory while others just relax. All equipment is checked before the observing sessions, then as twilight falls, they are ready to begin again.

Once all observing is completed, they pack up and return back home. Now the processing of the observations begins in earnest. Data is still collected for all of the meteor showers throughout the academic year, even in the middle of the winter. At times they go to the 1.27 metre reflector at the Crimean Astrophysical Observatory to observe Jupiter and Venus. Their own observatory has a 300 mm refractor which they made themselves, a spectohelioscope, a complete darkroom, a library and a lounge. A small house is used for those observers who stay overnight on the weekends. The group are now building a 520 mm reflector with money and material from the trade unions and the deputy soviet (similar to a mayor).

I send solar and meteor data to them which they use and at present we are working on a project investigating the relationship between solar activity and meteor rates. It is interesting to compare the popularity of astronomy in both the west and the U.S.S.R.

Michael Boschat

Star Clusters and Stellar Associations

From the earliest of times man has been observing the stars and using their intricate movements to guide him through the uncertainties of life. Some distant star clusters were also known by these early observers. Four open clusters: the Pleiades and Hyades in the constellation Taurus, the Praesepe (or Beehive) in Cancer and Coma Berenices were recognized long ago. The Pleiades was so important to some early people that its rising at sunset determined the start of their new year. The appearance to the naked eye of the Coma Berenices cluster led to the naming of this constellation after the hair of Berenice, wife of Ptolemy Euegetes of Egypt, 3rd century B.C., the only constellation named after an historical figure.

Several globular clusters, such as Omega Centauri and Messier 13 in Hercules are visible to the unaided eye only as fuzzy patches of light so very little attention was paid to these objects until after the invention of the telescope. The first recorded observation of a globular cluster, Messier 22 in Sagittarius, was made in 1665. The next, Omega Centauri, was recorded by the English astronomer and mathematician Edmund Halley in 1677, whom we know better for another discovery. Charles Messier made a catalogue of 107 "misty objects" in the late 18th century while at the same time, William Herschel began his own catalogues of star clusters.

These initial observations and investigations greatly assisted the understanding of the Galaxy. In 1917, Harlow Shapley of the Mount Wilson Observatory was able to determine, by studying the distances and distribution of globular clusters, that the galactic center lies in the region of Sagittarius. Using measurements of angular sizes and the distribution of open clusters, Robert Trumpler of the Lick Observatory was able to show in 1930 that light is absorbed as it travels through space. All of this means

very little unless we have a basic understanding of what star clusters really are.

The closest star to us, the Sun, is a single star. However, the majority of stars within the Milky Way Galaxy occur in groups of two or more, and many of these groups have a sufficient number of stars held together by mutual gravitation to be called clusters. These star clusters have been divided into groups called open clusters, globular clusters, and associations.

The open clusters are formations of from tens to many hundreds of stars and do not really have a well defined symmetrical arrangement. Globular clusters are older systems consisting of thousands to hundreds of thousands of stars that are closely packed together in a symmetrical, somewhat spherical form. The groups called associations are composed of a few dozen to hundreds of stars of a similar type and origin whose density in space is greater than that of the surrounding field. The composition of the stars in clusters also varies sufficiently to allow astronomers to group them separately. Stars in globular clusters are generally of the Population II type, which means that they are old stars. The brightest of these are red giants. In open clusters the majority of stars are younger Population I stars and can be found in all of the spectral types from O through M. The brightest stars in these clusters are very hot, blue stars. The major distinction of associations is that the greatest number of stars have similar characteristics such as a large number of hot, giant, blue stars.

The next time you look at the Pleiades cluster and its six bright naked eye objects, remember that with a telescope astronomers can see over one hundred stars in that same cluster. Clusters have also recently been studied in at least eight external galaxies with the total number known in these external galaxies far exceeding the number known in the Milky Way.

Peter Steffin

The Super Portable Observatory

Small enough to fit into the trunk of your car, big enough to house you and your eight-inch Cassegrain, fast enough to put up in ten minutes -- the super portable observatory.

No wind, no dew, you can observe or take pictures all night long in comfort. A Toronto Centre member said, upon seeing the first slides of the portable observatory, "Necessity is indeed the mother of invention."

It is not unusual to set up, get everything ready for your best yet photographic works of art, remembering to bring everything (for a change) only to lose the perfect night to pails of dew. Some nights there is no dew because of the slight breeze that manages to become a gust at twenty-nine minutes into a thirty minute photo. There had to be a solution. As only a roof will stop the dew and only walls will break the wind, an observatory was the answer -- but it must fit into the car. It must be at least six feet high and five feet wide to hold my telescope and myself. It also had to be cheap enough for my wife to understand.

The observatory sets up in the shape of an octagon, formed by four wall sections, hinged so that each section is self-supporting, and the shutters can remain down for easy one-person assembly. No tools are needed, screw eyes and hooks connect the sections that are not hinged.

The basic wall section is composed of two 4x2 plywood panels hinged together with four 2x1 shutters hinged to the top edge making a wall 4x6 feet when opened. Closed, this wall module folds down to 4x2 feet x 2.25 inches thick. After the four wall modules are positioned on a ground sheet to keep out moisture or snow, flip up the shutters and hook in the screw eyes. You are now ready for the roof.

The roof is made up of three sections, two side modules which when hinged open form two-thirds of the roof and which support the three-piece shutter assembly that slides between

them. The shutter can tilt, slide, open to the zenith or be completely closed. Two 1x2 inch hardwood struts with four captive 1/4 x 20 eyebolts keep this whole assembly together.

To track the stars, simply push up on the roof and rotate your body, and let it down again. Let down the next wall shutter and close the one that was open. Four or five right ascension shutters can be left open at one time, but then your observatory gets drafty and starts to look like a hot dog stand.

The roof only weighs 25 pounds. When setting up, each roof section requires a lift of less than 10 pounds. Each of the four wall sections weight 25 pounds. The whole observatory weighs 125 pounds, and compacts to a car trunk size of 4x2 feet x 14 inches. That is just about right. A lighter unit would not be as sturdy in a stiff breeze and a heavier unit would not be as easy to set up.

Any section that is not hinged can be unlatched and used as a door without disturbing a thing. The panel selected for access just straightens out on its hinges and allows exit and entrance.

The whole observatory can be built out of four and one-half sheets of 1/4 inch plywood for less than \$200. All straight saw cuts and construction took only three evenings. Painting took longer; for those who hate to paint -- you do not have to. Only the envious will see it in the dark and unless you leave it set up, it will never have to endure the ravages of sun or rain.

Now that you have walls, hang up your star maps, astrocards, clipboard, drive corrector controller, etc. I put in a couple of clip-on shelves for my camera lenses and filters. A six pocket shoe bag (thin when empty) is permanently attached to one wall and holds all my bulky accessories, rich field adapter, two-inch diagonal, f/5 photo accessories and eight-inch lens cover. I no longer spend half the night unpacking and packing each piece of equipment as I use it. There are many more functional things you can do with a portable

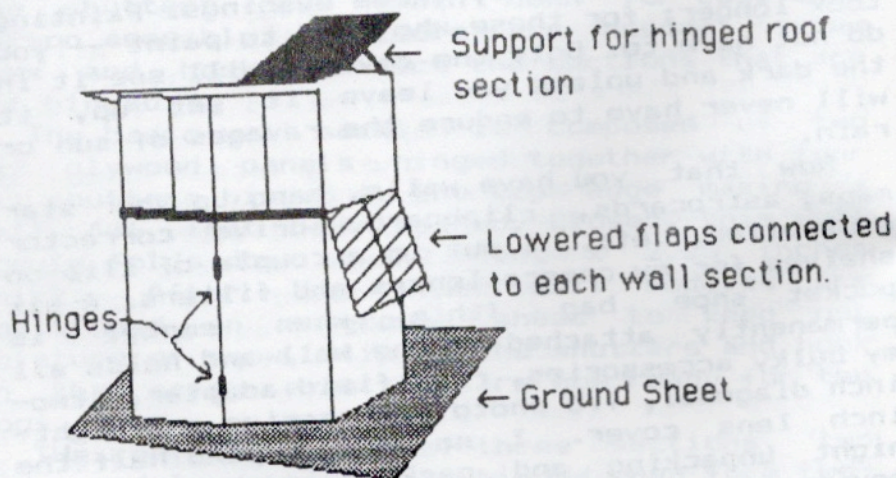
observatory now that you have a roof over your head.

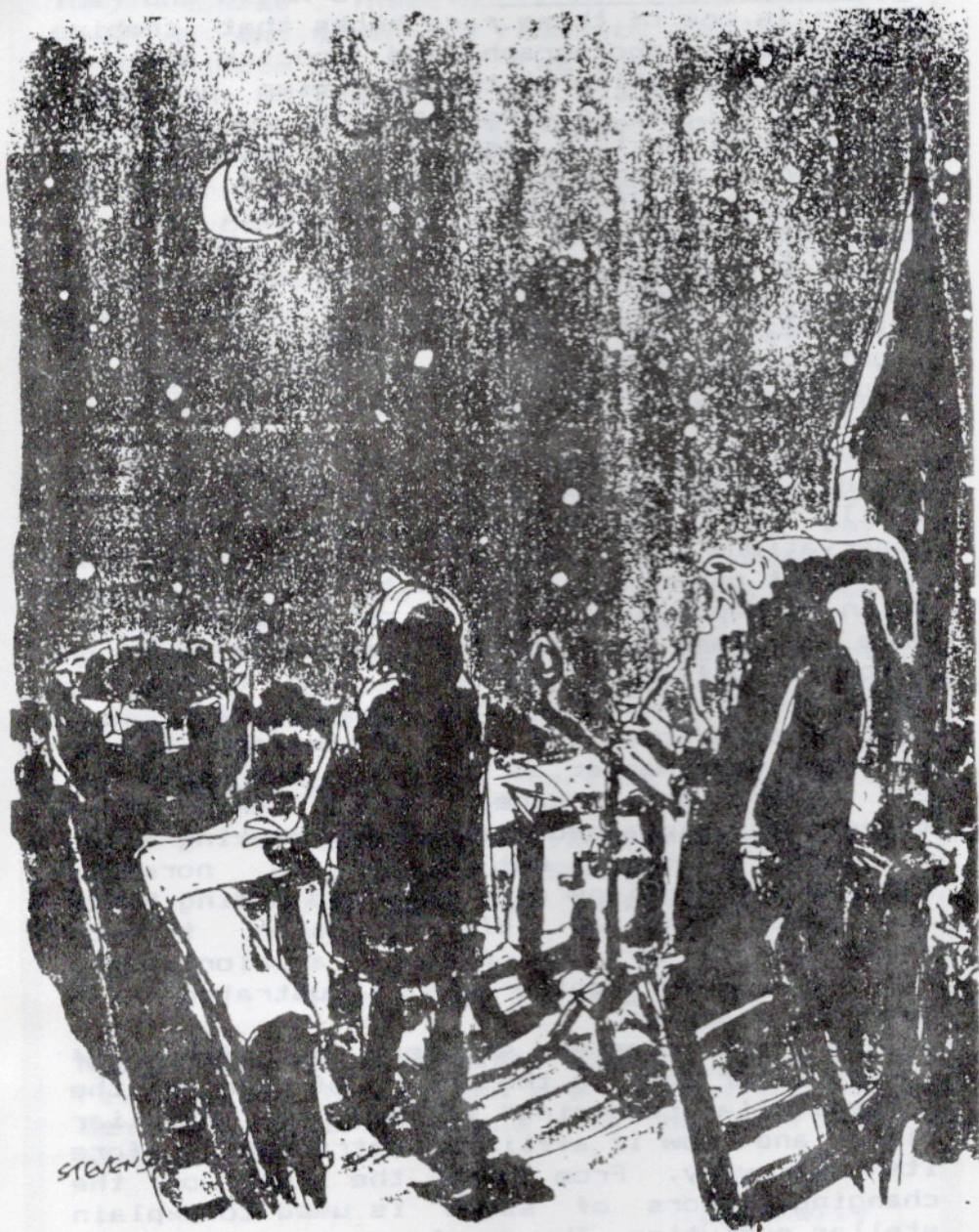
The portable observatory has turned out to be a most satisfying project. I no longer run the hair dryer, fumble around for maps and attachments and lose pictures to the elements that always prevail. During visual sessions I break the rules and have a small Coleman radiant heater beside my stool to warm my hands. It is comfortable, convenient and super portable and has become my most important astronomical accessory.

For more details and construction information on building your own portable observatory, write to Doug Clapp, 162 Chillery Avenue, Scarborough, Ontario, M1J 1M2.

Doug Clapp
reprinted from "Scope"
Toronto Centre

Editor's Note: You will find below a rough sketch that I made based on a photograph of the observatory that was published in "Scope" along with the above article.





STEVENS

"Something goes around something, but that's as far as I've got."

Bookwatch

Colours of the Stars by David Malin and Paul Murdin is one of those rare books that combine breathtaking photography and concise and easy to read text, while at the same time providing a wealth of interesting and constructive information. In this case, the subject examined is color as it applies both to naked eye and photographic astronomy. The authors begin by explaining what color is and how the human brain translates what the eye sees into the color that we observe. There are some interesting facts that the authors bring to light in this area and they should be required reading for anyone interested in observing the night sky.

The colors of the stars is then treated, giving explanations as to why star colors are subtle and also comparing historical observations of colored stars by several different observers. This section is followed by an in depth discussion of color photography. Some of the areas covered are the effects on color of different emulsions and developing techniques, including the manipulation that must be done to make a color photograph appear in the same manner as the human eye would see the object photographed. Among the other techniques explained are unsharp masking which is used to bring out detail in normally overexposed regions of plates and adding black and white archival plates taken through different filters to produce a color image. Both of these topics are illustrated with numerous examples.

The next chapter studies the effect of interstellar dust on the colors of objects, the "interstellar reddening" we are now familiar with, and how it afflicted astronomers before its discovery. From here the idea of the changing colors of stars is used to explain stellar evolution. The development of the H-R diagram and its role in studying clusters of stars is treated quite well.

The next two chapters are interrelated, being entitled "Nebulae from Stars" and "Stars from Nebulae". These sections cover planetary nebulae and supernova remnants and then detail such objects as H II regions, with special emphasis on the Orion and Eta Carinae nebulas. In fact, there are 14 images of the Orion Nebula which can be used to follow the progress of color astronomical photography.

The remainder of the text is devoted to the colors of galaxies and what their colors can teach us, not only about their evolutions and compositions, but also about the implications for cosmology because of the "red shift". Color profiles taken across both galaxies and star clusters are used to show how these objects can differ.

The value of this book can best be illustrated by the fact that I decided to read it (for this review) on the bus on the way to and from work and on coffee and lunch breaks. My big mistake was letting other people see it, in particular, Doug, several graduate students and our photography technician! Between the lot of them, it was all I could do to find the book, let alone read it.

The Colours of the Stars is published by:

C Cambridge University Press
3 32 East 57th Street
N New York, New York 10022
U U.S.A

ISBN 0 521 25714 X

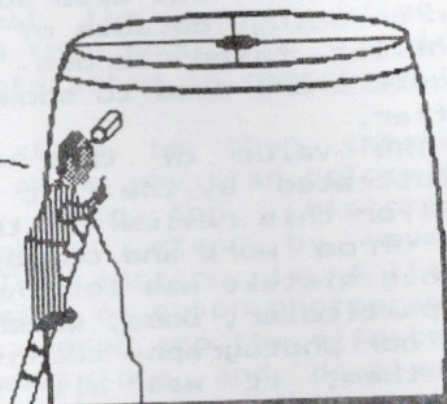
NOTE: Unless otherwise stated, all books reviewed in this column are part of the Halifax Gen Centre's library, and may be borrowed by members.

Pat Kelly

GA★ZER

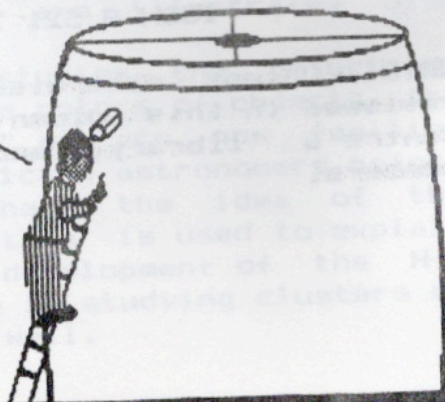
Are you sure this thing is safe?

Of course I am, I made it myself!



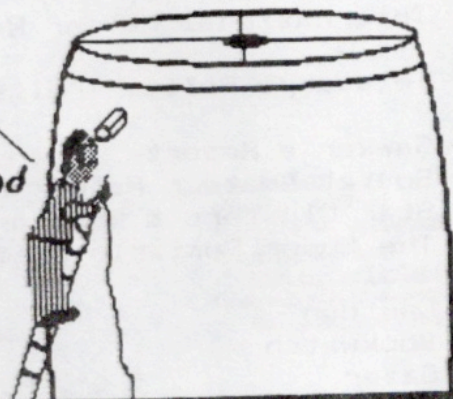
And this little gadget steers it?

Yeah. Just push the joystick whichever way you want to go.



So where do I go to find MS7?

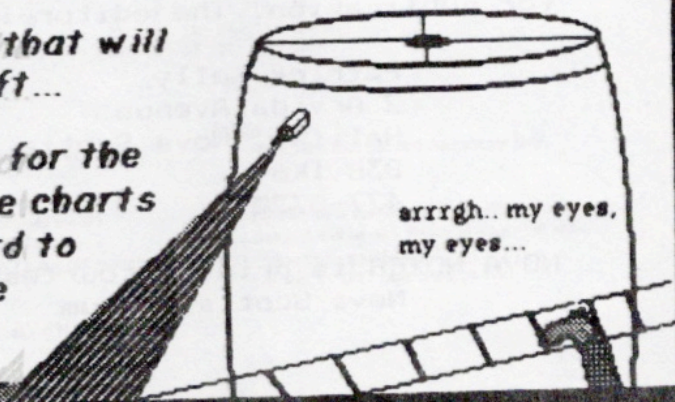
Well, according to my sky atlas you are half-way between it and Vega, so swing her about three degrees to the right.



Of course, that will be your left...

Oh, thanks for the light, these charts can be hard to reread in the dark.

arrrgh.. my eyes, my eyes...



NOVA NOTES INDEX

July - August 1986

Volume 17/Number 4

1986 Halifax Centre Executive	69
Notice of Meetings	70
Editor's Report	P. Kelly 71
COW / Starfest	Halifax Centre 73
Map to COW	Halifax Centre 74
Summer Activities	Halifax Centre 75
Map to Green Bay	Halifax Centre 76
International Meteor Weekend & Journal	Halifax Centre 77
Telescope Policy / Missing Members	Halifax Centre 79
Gawker's Report	D. Pitcairn 80
Soviet Amateur Meteor Observers	M. Boschat 81
Star Clusters & Stellar Assoc'ns	P. Steffin 83
The Super Portable Observatory	D. Clapp/"Scope" 85
Cartoon	Stevenson 88
Bookwatch	P. Kelly 89
Gazer	P. Kelly / D. Pitcairn 91

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 August 12th, 1986. 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 1986 CALENDAR OF EVENTS

January 1986

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	

February 1986

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 1986

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 1986

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 1986

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 1986

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			

July 1986

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	

August 1986

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 1986

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					

October 1986

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 1986

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 1986

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

Additional Observing sessions:

August 1,2,3,4 is camping observing weekend

Meteor Showers:

August 11 is the Perseids (6-day old moon)

November 16 is the Leonids (full moon)

December 14 is the Geminids (12-day old moon)

Meetings:

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

Special events:

April 19 is International Astronomy Day.

June 27-30 is the General Assembly.
Banquet will be on a Friday in May - yet to be announced - watch for it!

October 1 - 1987 Memberships due.