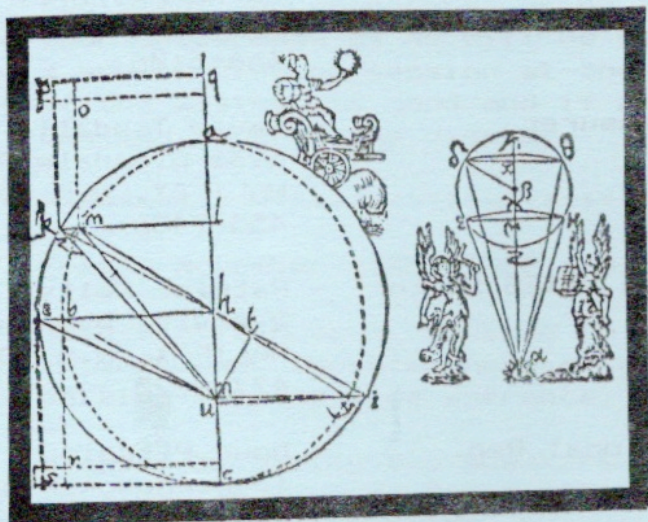


NOVA NOTES



Halifax Centre



Sept-Oct 1986
Volume 17
Number 5

17-5

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Notice of Meetings

Date: Friday October 17th, 1986 : 8:00 P.M.

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

Topic: NOVA SCOTIA ASTRONOMY DAY !
We hope to have several activities for you tonight, including displays of equipment and computers. Bring along your telescopes as we will be having a public viewing session at the Museum if the weather is good and if not, you can add them to the display.

Date: Friday November 21st, 1986 : 8:00 P.M.

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

Topic: We will be having two speakers for this meeting. Larry Bogan will be giving one of the talks while the other speaker is not yet confirmed. See the NOV-DEC issue of NOVA NOTES for more info.

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

About the cover: The cover this issue is reproduced from Kepler's 1609 work "Astronomia Nova" and is an illustration to explain his discovery of the elliptical orbit of Mars.

Editor's Report

Well, it has been one of those summers. The weather played havoc with all of our scheduled events, forcing the cancellation of our public observing sessions at Shubie Park and the Citadel, as well as the Perseid Party planned for Wilf Morley's at Green Bay. Even the C.O.W. was not exempt with only one good night. The gremlins seemed to have been out in full force this summer. Between the time that Norma Fraser gave me the directions to her cottage and the time of the C.O.W., her neighbours had the nerve to repaint their house a different color! Thus some, including myself, found the white 2 story house on the map rather hard to find! Our camping part of the C.O.W. had a bit of misfortune as well, as our brand new tent which we had just purchased for the trip (with three children, the old pup tent was a bit too small) turned out to have all the water repellent properties of a sieve! We did learn one thing, Pampers are also great for soaking up water from the inside of a tent. David Chapman was struck by gremlins as well, as he seems to have misplaced the power cord for his C90 while observing at the C.O.W. If anyone who was there came across or accidentally picked it up, please give him a call. His number is on the inside front cover.

The membership list which I had mentioned would be in this issue, was originally supposed to have been in the last issue. Having written all of the articles for the last issue as well as deleting all of the articles from the March - April issue, I found that my word processor had somehow completely trashed the database file which contained our membership list. Fortunately, it had been necessary for me to take a copy to the G.A. and so I had made a second copy for our treasurer's records. Since David still had that copy, I re-entered all of the information, this time on a Macintosh and made several backup copies of it just in case! You will find it in this issue. It includes all members of the Halifax Centre except for

associate members, and also two people who will be starting their memberships for 1987.

Speaking of Macintoshs, you may have noticed that the Gazer cartoon in the last issue was done on a Mac. I am planning to gradually move all of my word processor files for NOVA NOTES from the Apple IIe where they currently reside to a Mac Plus. This should allow for a greater variety of type fonts and sizes, and with the possibility of having the master copy, which is sent to the printers, run off on a laserwriter, I feel that it will give NOVA NOTES an even more professional appearance and make for easier reading.

Also this issue, the Gawker's Report has a new format whereby objects observed are listed by category and a new comments section has appeared. Anyone submitting new gawker reports would aid things greatly by including the category of each object observed. One last comment regarding the last issue. In the haste to get it to the printers I forgot to include a credit for the Gazer cartoon. It was based on an idea sent in by Len Larkin of Saint John. Thanks Len! If anyone else has ideas for Gazer cartoons, please send them in. Last but not least comes our annual reminder that....

MEMBERSHIP FEES ARE DUE!

It is also that time of the year to remind members (and those who are contemplating joining the R.A.S.C.) that the 1987 membership year starts October 1st. Your memberships can be renewed at the October meeting, or by mail (make your cheque payable to "Halifax Centre, R.A.S.C.", our mailing address is on the inside front cover). The membership fees are \$500.00 for a life membership, \$25.00 for a regular membership, \$15.00 for a youth membership (under 18) and \$5.00 for an associate membership.

Patrick Kelly

1986 General Assembly Report

I would like to thank all of the members of the Halifax Centre for providing me with an opportunity to represent you at this year's G.A. when our National Rep was unable to attend. Winnipeg is a beautiful city and the University of Manitoba (where we stayed) is one of the nicest (and largest) campuses I have seen. On Friday I attended the National Council meeting, which provided an opportunity to meet many of the people that I had only read about up until then. It also provided an insight into the way that the national organization is run. Later that evening everyone got together for the "Buffalo Bash" which featured a Murphy's Law Slide Contest (which was won by Leo Enright from Kingston for a double exposure of the sun and an aurora) and a Song Contest (which was won by the Winnipeg Centre). Both of these events proved to be extremely popular and will no doubt become regular features of future G.A.'s.

The same night we went out to the Winnipeg Centre's observatory. I was very impressed with their facilities. They have a C14 which is housed under a new Ashe dome, piers mounted in front on which members can mount their telescopes, and a large room full of reference material, etc. However, the highlight of the observing session was the most awesome display of the northern lights that I have ever seen. Bright green, yellow and red streamers and arcs that went right to the zenith!

Saturday morning began with the papers sessions, all of which were interesting. That afternoon we boarded several double decker buses and motored to downtown Winnipeg for a trip to the Museum of Man and Nature. Besides the museum, the complex also houses two other displays. One, called "Touch the Universe" lets you participate directly in all sorts of scientific curiosities with hands-on approach. The other, of course, is the planetarium and the show that we attended, called "Voyager Tales" was very well done. From there we went

on a leisurely cruise on the Red and Assiniboine rivers on the "River Rouge" cruise boat, which provided excellent meals and a chance for everyone to chat in a very relaxing atmosphere.

Sunday morning started with more papers, concluding with an audio-visual presentation of a trip to Australia to observe Halley's Comet by Michael Watson of the Toronto Centre. This extraordinary presentation made such an impact that it was shown again later at the banquet. The afternoon was set aside for the Annual Meeting at which many items of news were presented including news that the 1988 G.A. will be held in Victoria along with the Astronomical Society of the Pacific. After a long debate the increase in fees was approved. The new National Executive was installed as well, with Mary Gray of Ottawa beginning a two-year term as national president, Dr. Lloyd Higgs, also of Ottawa as first vice-president, Damien LeMay of Quebec as second vice-president and Dr. Ralph Chou of Toronto as national treasurer.

The banquet was held Sunday night with Roy Bishop presiding over events. After an excellent meal several awards were presented, including the Chant Medal to Warren Morrison of Kingston; the Service Award to Randall Brooks of Halifax and Leo Enright of Kingston; and the Simon Newcombe Award to David Chapman of Halifax. Following the presentation of awards for exhibits Dr. Bishop gave a fascinating talk on the uniqueness of the human optical system. I understand that it will be published in an upcoming issue of the Journal. All in all, this G.A. was an excellent event and the members of the Winnipeg Centre should be proud of the way that things went. I know that I enjoyed myself so much that I have already made plans to attend the 1987 G.A. in Toronto. I hope to see many of you there.

Patrick M. Kelly

Dept. of History of Science
Leicester University
University Road
Leicester, LE1 7AH
10 July, 1986

Dr. Norman Scrimger
President, Halifax Centre
Royal Astronomical Society of Canada
c/o 1747 Summer Street
Halifax, N.S.
B#H 3A6

Dear Norman,

Would you please thank the Executive and members of the Halifax Centre for nominating me for the Service Award. I would have liked to have been in Winnipeg to personally receive the Award, particularly since Dr. Bishop would have been the presenter.

I have always viewed my work on behalf of the Halifax Centre as fun. It has given me an opportunity to work with a lot of delightful and interesting people who share my interest in astronomy and who I now count among my best friends. Over the years my activities in the Centre have always been made easy and pleasurable because of the many members who have pitched in to assist in all the projects we have undertaken as a Centre. This consistent spirit of friendliness and co-operation makes the Halifax Centre perhaps unique among RASC centres and although we are only of moderate size, our members have had, in recent years, a substantial influence over its affairs and on the advancement of astronomy in the Maritimes. I am pleased to say that I count myself as only one of those Halifax members.

Diane and I miss our involvement in Centre activities and we hope to be back taking part once again in the not too distant future. Again, thank you for nominating me for this honour.

Sincerely,

Randall C. Brooks

PERSEID METEOR SHOWER 1986

Finally, a few clear nights for the Perseids! So, off we went on the night of August 12/13 along the 103 highway to a dark area 15 miles away. At 0h00 UT the camera is set up and we have a bite to eat before serious observing at 01h00 UT. The camera clicks and as usual, a meteor goes by in the other part of the sky! From 01h00 to 02h00 was good with quite a few meteors recorded, not to mention the "object" at 01h50. At present, the photos are still being analyzed. Below are my Perseid results:

| Date | UT | ZHR | Lim. m _v | Actual No. seen |
|-------|-------------|-----|---------------------|-----------------|
| 5/6 | 01h00-02h00 | 2 | 4.5 | 1 |
| 6/7 | 02h00-03h00 | 2 | 5.0 | 1 |
| 9/10 | 00h00-01h00 | 2 | 5.5 | 1 |
| | 01h00-02h00 | 2 | 5.5 | 1 |
| | 02h00-03h00 | 1 | 5.5 | 1 |
| 12/13 | 00h00-01h00 | 11 | 6.2 | 3 |
| | 01h00-02h00 | 48 | 6.2 | 15 |
| | 02h00-03h00 | 4 | 5.5 | 2 |
| | 03h00-04h00 | 9 | 5.5 | 3 |
| | 04h00-05h00 | 25 | 5.5 | 7 |
| 13/14 | 01h00-02h00 | 10 | 5.0 | 3 |
| | 02h00-03h00 | 8 | 5.0 | 2 |

ZHR is the Zenith Hourly Rate and is found by finding the altitude of the radiant of the shower and then applying corrections to get the actual number of meteors that would have been seen. There were a few bright meteors and I found that every third or fourth meteor left a train (smoke trail) lasting on average one and a half seconds. This year's Perseids were good. Let us hope the same for the upcoming showers, especially the Geminids.

Michael Boschat

The Mostly Cloudy Observing Weekend

When my father and I arrived on Friday afternoon, there was not much to look forward to. The weathermen were predicting rain for the duration of the C.O.W. After having pitched our tent we set off in search of Norma Fraser's cottage. This was easier said than done. Eventually, Norma found us and guided us to her house. Who would have thought to turn off the road just past the 2 story white house (which is actually red) and drive down a five foot wide cart track that winds its way between potato fields for a kilometre!

Dave Chapman and Gordon Hawkins also arrived that night. We were lulled to sleep by that pitter-patter sound that says "There will be no observing tonight" over and over again. On Saturday, Norman and family arrived. They were staying in the lighthouse. Darrin Parker also arrived on Saturday. Norma and her daughter Cathy hosted a barbeque for all of us R.A.S.C. folk and a large proportion of the population of that part of the island. We also met a new member of the R.A.S.C., David Killam, who was greeted by Norman with "Hi, I'm your President!"

We were all amazed when the sky cleared enough to, according to Norma, "sew a sailor a pair of pants", as none had seen so much blue sky for three months. But, of course, this did not last. So after we had all given up hope and had a large fire going on the beach a brilliant object was spotted over the sea. It's an airplane. No. No. It's Venus! No. No. It cannot be. Yes! Yes, it is! It's clearing! Fortunately, Norma does not have suspicious neighbours, At 3:30 A.M. Sunday morning, I was now alone observing from our campground and the Pleiades were well up in the sky. Twilight forced me to pack up. (For a list of objects observed, see "Gawker's Report") On Sunday (groan) my eyes were so baggy I have no clue what happened. Dave and Gordon left a few hours after I went to bed.

That evening we had another barbeque with plenty of shellfish thanks to Darrin and some VERY OBNOXIOUS popcorn. Never be misled by the name "Jiffy". Standing for an hour and a half under the rain shaking popcorn is not my idea of Jiffy! This was summed up by the quote, "That's weird, I'm not going to shake anymore". Later that night, some people arrived in our campground with a tent that had no fly, which they had never set up before, and it was pouring rain. These people were Pat Kelly and family. We left early Monday morning. All in all, an interesting weekend.

Hugh Thompson

=====

Gawker's Report

Time: Wednesday July 23rd, 1986
Place: Kidston Lake
Observers: G. Roberts, P. Kelly
Equipment: 20x80, 60 mm refractor, C8
Minimum Visual Magnitude: 5.0
Weather conditions: Warm, clear, calm
Seeing: very good

Objects observed:

Planets: Venus, Saturn, Mars (a polar cap and markings near the equator were easily visible)
Double Stars: Eta Cas, Iota Cas AB, Alpha CVn, Pi Boo, Beta Cyg, Xi Boo
Open Clusters: M18, M21, NGC 6645
Globular Clusters: M22, M28, NGC 6642
Nebulae: M8 (Lagoon Nebula), M17, M20 (Trifid Nebula)
Miscellaneous: M24

Time: Saturday August 2nd, 1986
Place: West Point, P.E.I.
Observers: H. Thompson The following people retired after midnight: T. Thompson, D. Parker,

N. Scrimger, D. Chapman, G. Hawkins, N. Fraser,
C. Fraser

Equipment: 6" Dobsonian, Centre's CB, 10"
Newtonian, 6" reflector, 7x50 binoculars

Minimum Visual Magnitude: 6.0

Weather conditions: Varied. Ranging from
overcast to haze with clear patches to very
clear.

Seeing: quite good

Comments: Not entirely a cloudy observing
weekend!

Objects observed:

Planets: Venus, Mars (one polar cap and two
dark surface markings seen), Jupiter (all four
Galilean moons and several bands), Saturn

Open Cluster: M7, M11, M15, M21, M26, M34, M39,
M45, M52, M103, H20 (suspected)

Globular Clusters: M2, M4, M13, M22, M28, M54,
M69, M70, M71, M80

Nebulae: M8 (Lagoon Nebula), M20 (Trifid
Nebula)

Galaxies: M31, M32, M33, M110

Planetary Nebulae: M27, M57

Time: Sunday August 10th, 1986

Place: Arvida Avenue

Observers: P. Kelly

Equipment: 1x7 binoculars (eyes)

Minimum Visual Magnitude: 5.5

Weather conditions: Warm, clear, calm

Seeing: very good

Objects observed:

Meteors: 4 sporadics, 8 Perseids (3 of 2nd mag.
4 of 3rd and 4 of 4th) in 1.5 hours of
observing from 22h30 to 24h00 ADT

Time: Wednesday August 13th, 1986
Place: Arvida Avenue
Observers: P. Kelly
Equipment: 1x7 binoculars (eyes)
Minimum Visual Magnitude: 4.5
Weather conditions: Calm with variable high haze
Seeing: good

Objects observed:

Meteors: 2 sporadics, 3 Perseids (2 of 1st mag. 1 of 2nd) in 1 hour of observing from 23h00 to 24h00 ADT

Time: Thursday August 14th, 1986
Place: Beaverbank Road Site
Observers: P. Kelly, D. Pitcairn, G. Roberts
Equipment: B&L 4000, 60 mm refractor, C8, 7x35, 10x50 and 20x80 binoculars
Minimum Visual Magnitude: 6.0
Weather conditions: Calm and clear
Seeing: excellent
Comments: The advantage of the 20x80's over the 10x50's was readily apparent when viewing the fainter NGC clusters most of which were barely visible with averted vision in the 10x50's. Binocular viewing makes it easier to grasp the actual relative positions of various objects relative to each other, something I have always found difficult when using a telescope, both because of the small field of view and the inverted image. I find myself preferring the binoculars over the telescope for general observing.

The Sky Atlas 2000 has definitely lived up to its expectations. It proved to be invaluable for the "cluster hopping" method of observing which allowed us to quickly find our way around, even over fairly large distances.

At one point we all had our telescopes trained on Jupiter and it was generally agreed that the view in the 60 mm refractor was slightly better than the view in both the C8

and the B&L 4000 ! -D.P.

Objects observed:

Planets: Jupiter with Io's shadow in transit,
Mars (no features visible, although it was
quite low by the time we got set up)

Galaxies: M31, M32, M74, M77, M109, M110 (NGC
205), NGC 1055

Planetary Nebulae: M76

Nebulae: IC 5146 (Cocoon Nebula)

Open Clusters: M39, M52, NGC 864 & 889 (Double
Cluster), NGC 7062, NGC 7082, NGC 7086, NGC
7209, NGC 7243, NGC 7245, NGC 7296, IC 1434

Time: Tuesday August 26th, 1986

Place: Arvida Avenue

Observers: P. Kelly

Equipment: 20x80 binoculars

Minimum Visual Magnitude: 6.0

Weather conditions: Calm and clear

Seeing: excellent

Comments: I was attempting to continue the
session that Doug and I had started by
continuing down into Perseus, but I was
hampered at the Double Cluster by the lights
from Halifax, the low altitude and the moon
which had just risen.

Objects observed:

Open Clusters: M39, M52, NGC 129, NGC 133, NGC
146, NGC 225, NGC 637, NGC 663, NGC 744, NGC
864 & 889 (Double Cluster), NGC 6811, NGC 6939
(faint and diffuse), NGC 7142, NGC 7160, NGC
7235, NGC 7245, NGC 7261, NGC 7281, NGC 7296,
NGC 7380, NGC 7419, NGC 7510, NGC 7762, NGC
7788, NGC 7789, NGC 7790, IC 1396, IC 1434

Time: Tuesday August 26th, 1986
Place: Lawrencetown Beach
Observers: Hugh, Tony and Kay Thomson (a family event!)
Equipment: 7x50 binoculars, 6" Dobsonian
Minimum Visual Magnitude: 6.0
Weather conditions: Very clear
Seeing: excellent
Comments: A very good site that is quite near Halifax

Objects Observed

Planets: Mars (not enough magnification to see any detail), Jupiter, Saturn
Open Clusters: Coathanger Cluster, Perseus Double Cluster

Time: Friday August 29th, 1986
Place: The Ovens (near Lunenburg)
Observers: P. Kelly
Equipment: 20x80 binoculars
Minimum Visual Magnitude: 6.0
Weather Conditions: Clear and cool with a light breeze
Seeing: excellent
Comments: I decided that it was so much fun going down the Milky Way with binoculars in one hand and my Sky Atlas 2000 in the other that I would try to go from Sagittarius to Cygnus over the weekend as the weather was supposed to be excellent. I got most of the way there this night, but was forced to stop after about an hour and a half by the cold.

Objects observed:

Planets: (naked eye) Jupiter, Mars, Saturn and Venus all visible at the same time.
Open Clusters: M11, M15, M16, M17, M18, M21, M23, M25, M26, NGC 6416, NGC 6425, NGC 6451, NGC 6546, NGC 6568, NGC 6583, NGC 6649, NGC 6664, NGC 6704, NGC 6716, H18
Globular Clusters: M4, M9, M19, M22, M28, M54,

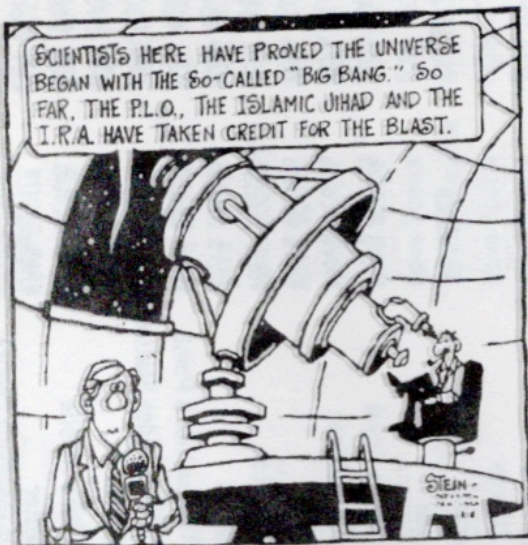
M62, M69, M70, NGC 6284, NGC 6293, NGC 6342
(faint), NGC 6356, NGC 6553, NGC 6544, NGC
6624, NGC 6638, NGC 6642, NGC 6712
Nebulae: M8 (Lagoon Nebula), M20 (Trifid
Nebula)
Miscellaneous: M24

Time: Saturday August 30th, 1986
Place: Arcadia (near Yarmouth)
Observers: P. Kelly
Equipment: 20x80 binoculars
Minimum Visual Magnitude: 6.0
Weather conditions: Calm and clear
Seeing: excellent
Comments: I picked up where I had left off the
previous night and continued on to Cygnus where
Doug and I had started previously.

Objects observed:

Open Clusters: M29, NGC 6682, NGC 6709, NGC
6774, NGC 6755, NGC 6756, NGC 6811, NGC 6823,
NGC 6830, NGC 6834, NGC 6866, NGC 6871, NGC
6883, NGC 6885, H20, IC 4756 (This is a
spectacular object. I'm sure this would be a
favorite if it had been on Messier's List.)
Globular Clusters: M56, M71, NGC 6934
Planetary Nebulae: M27
Nebulae: NGC 7000 & IC 5067-70 The North
America and Pelican Nebulae respectively were
directly overhead and so obvious that it
surprised even myself. The rift between the two
parts of the Pelican Nebula was very obvious.

compiled by Doug Pitcairn



PARTS WANTED

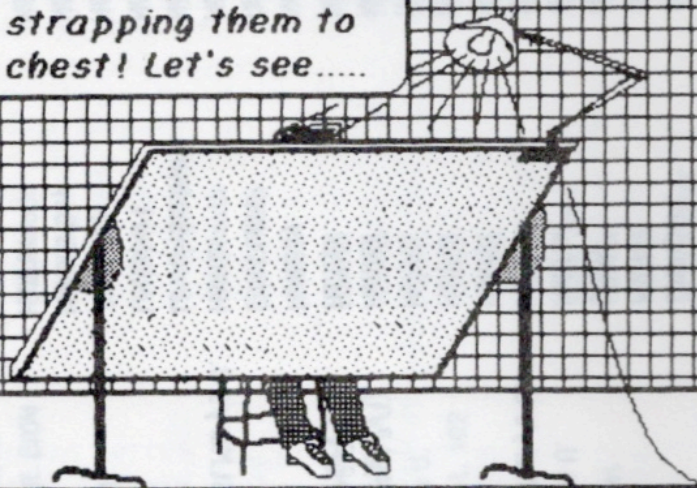
You may recall that the Centre recently obtained a wide field 125 mm (5-inch) lens from which we hoped to make a rich field refractor. Although we can make most of the telescope without too much difficulty, we hope to obtain second-hand parts for the eyepiece focusing rack and the tripod. If anyone has either of these parts and would like to donate them or sell them to the centre for a reasonable price, please contact Doug Pitcairn at 429-8300 Local 2152 during the day, or 463-7196 evenings.

ASTRO ADS

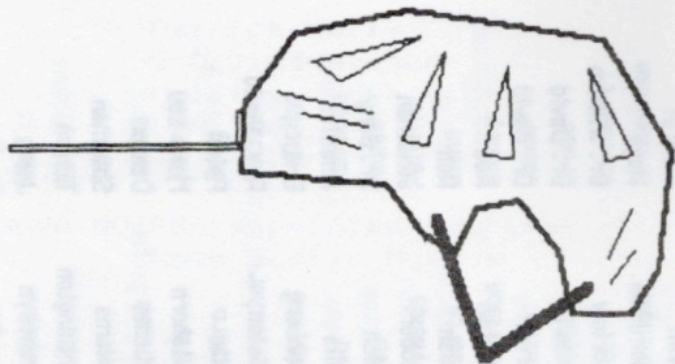
For Sale: 4.5 inch Tasco Newtonian. Optics in good shape (has been field tested). Equatorial mount, two eyepieces, and a Barlow. Excellent first telescope. In Sears catalogue for \$500, yours for \$150. Call Doug Pitcairn at 429-8300 Local 2152 during the day, or 463-7196 evenings.

GA☆ZER

There has to be a better way to hold up binoculars than strapping them to your chest! Let's see.....

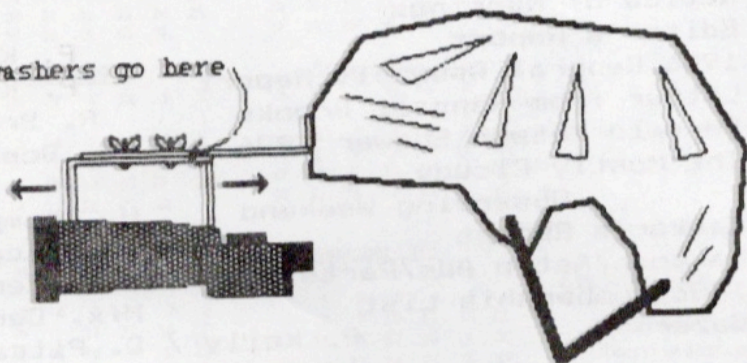


Start with an old hockey helmet and bolt a sturdy metal plate to the front of it....

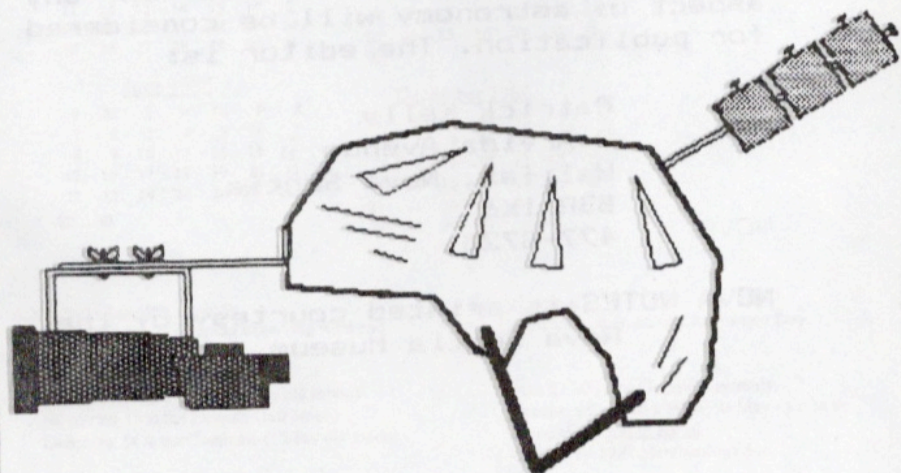


Add a bracket which bolts to the binoculars and wing nuts to allow for a justment in and out. Wsahers can be placed between the brackets to a just up and down.

washers go here



And for those who have 80 mm binoculars, we have "the counterbalance"



P. Kelly / D. Pitcairn

Idea by G. Roberts

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

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 Nova Scotia Museum

R. A. S. C. - HALIFAX CENTRE 1986 CALENDAR OF EVENTS

January 1986

| S | M | T | W | Th | F | S |
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February 1986

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March 1986

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April 1986

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June 1986

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July 1986

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| | | | 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 | |

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.