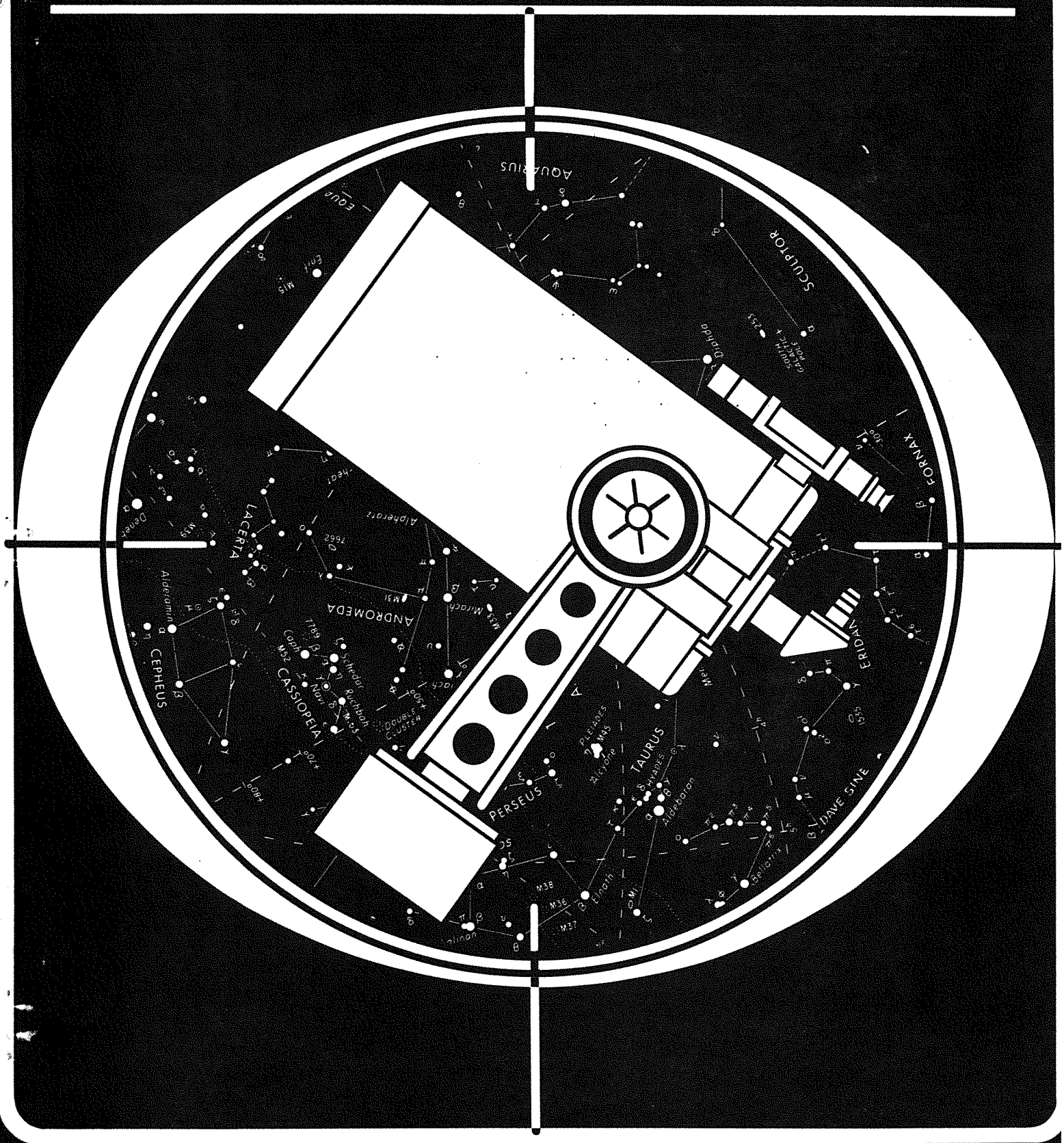
WINNICENTRICS

OFFICIAL PUBLICATION OF THE R.A.S.C. WINNIPEG CENTRE.



VOL 21 No. 5 W I N N I C E N T R I C S 1982
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EDITORIAL SPOTLIGHT.
To all our friends and members of the Winnipeg Centre.

On behalf of the Editorial Committee of Winnicentrics - Guy and Barbara Westcott, Giselle Runge, Andrew Lawless, Dave Sine and myself. Please accept our good wishes for the Holiday Season and into the New Year.

Since my term as Editor of "Winnicentrics" ends with this issue, I wish to say that my experience with "Winnicentrics" has been both rewarding and enjoyable. The reorganization of the Editorial Committee plus the new cover and content of the magazine, has made "Winnicentrics" a winner this past year. I extend my thanks and appreciation to everyone on the committee, and to those members and non-members who contributed their ideas, articles and most of all time. To the next editor of "Winnicentrics", I offer my best wishes.

Sincerely,
Brenda Belkin

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NOV. & DEC. MEETINGS

NOVEMBER 12th. 1982 FRIDAY..... 8:30pm.
ROOM 217, LOCKHART HALL, UNIVERSITY OF WINNIPEG.
PROGRAMME: Mr Ken Walsh, Head Systems Engineer at Bristol Aerospace, will be giving a talk about Upper Atmospheric Research. This should prove to be a very pictorial and interesting lecture as Ken has some excellent slides of the aurora taken by satellite.

YOUR 1983 OBSERVERS HANDBOOKS WILL ALSO BE AVAILABLE FOR PICK UP AT THIS MEETING...IF YOU HAVE PAID YOUR DUES...IF NOT YOU MAY PAY THEM AT THIS MEETING.

DECEMBER 10th. 1982 FRIDAY..... 8:30pm.
ROOM 217, LOCKHART HALL, UNIVERSITY OF WINNIPEG.
PROGRAMME: Dr. Richard Bochonko will be demonstrating the correct usage of star charts, globes and other devices for telling you what you're looking at.

COFFEE AND DONUTS WILL BE AVAILABLE AT BOTH THESE MEETINGS.

NOTICE TO ALL OTHER CENTRES OF THE RASC. WITH EFFECT FROM JANUARY 1983 WINNICENTRICS WILL COST $2.00 per CALENDAR YEAR. IF YOU WISH TO CONTINUE RECEIVING THE MAGAZINE PLEASE FORWARD THIS AMOUNT TO THE WINNIPEG CENTRE. THIS CHARGE IS DUE TO THE EXCESSIVE COST OF POSTAGE WHICH IS AT THE MOMENT BORNE BY THE MEMBERS OF THE WINNIPEG CENTRE. EACH CENTRE MEMBER THIS YEAR HAS PAID AN EXTRA $2.00 TOWARDS MAILING COSTS. THANK YOU.

CENTRE SCENE

WINNIPEG CENTRE HALLOWEEN PARTY.

The Winnipeg Centre 2nd Halloween Party was held very successfully on October 30th, 1982. Approximately 45 people showed up in equisitely produced costumes. This year, as last, thanks go to the Belkins for doing food production and to Brenda, especially, for the delicious carrot cake and the organization of the function. This year displayed full bar facilities which were appreciated by many members (I am still trying to get the recipe for the punch). Various prizes for costumes were donated by: Radio Shack, Don's Camera Shop, CFRW - Q94, Odeon Morton theatres, Sam The Camera Man. The Centre thanks all these business for their genorous donations towards our function. A good time was had by all present and we are not looking forward to future functions organized in the same way.

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For the last six Monday evenings the Glenlea observatory complex has been used to the fullest. Mr. Westcott and Mr Lawless have been lecturing to the University of Winnipeg 1st year astronomy classes. Although the weather has totally refused to co-operate, some semblence of order was pulled out of the mud, rain and cold. When it is cloudy slide shows and recognition lectures are the order of the day, on clear evenings the Fall skies can be seen in all their splendour. The course will be extended this year to make up for all the bad weather that the students have been plagued with.

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With effect from the 1st Novèmber the winter regulations are in effect at the Glenlea Observatory. All members must go out in pairs to Glenlea with TWO cars in attendance. All use of the observatory must be booked through the observatory Director Mr Lawless. No use is to be made of the observatory equipment for teaching purposes or for non-members use without the express permission of the Centre Council. Any member found ignoring these regulations will have all observatory privileges suspended. The rules are made for your own safety.

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Any member wishing to by a share in an observatory to be set up at a dark sky site, south west or south east of the city please either contact Guy Westcott, or Andrew Lawless. The shares are $20 each. Members may purchase more than one share.

The observatory is a 12 ft. metal dome with building. It is hoped to eventually have a 10 inch Newtonian f4.5 telescope installed at any site selected.

MINUTES (CONDENSED) OF THE SEPTEMBER/OCTOBER GENERAL MEETINGS OF THE RASC WINNIPEG CENTRE

September 10, 1982. The meeting was called to order by the Acting President, Mr. Westcott, at 8:32 p.m.

The Social Secretary, Miss Belkin, was offered the floor and she announced the 2nd Annual Winnipeg Centre Halloween Party, which is to be held on Saturday, October 30th. A good turnout is expected this year, the more the merrier.

Mr. Westcott stated that this month's issue of Winnicentrics was just an election filler edition, complete with ballot and stamped envelope inside. Members were urged to mark their ballots and send them in. He stated that there were 3 vacant positions on Council. It was announced that the Winnicentrics had won the award for the best improved newsletter at the Saskatoon G.A. A few centre members have purchased a 12ft. observatory dome and are asking if any other centre members would care to join them in the use of the dome and in trying to find a dark site for it. It was announced that membership fees would be increased to $37.00 for this year as the extra money was needed to pay for the postage of Winnicentrics.

The guest speaker for the evening was Mr. Bill Krosney, talking about general observation for amateur astronomers. Mr. Krosney's talk was very interesting and may have answered many questions that the newcomers to the field of astronomy would like to ask. He spoke about observing and photographing very young crescent moons. His talk ended at 9:47 p.m. Mr.Westcott stated that the centre has the present room booked until June 1983 and he asked the Librarian for his report. The Librarian announced that the library was flourishing but would members please return books as it was necessary to do an inventory. Mr. Westcott and Mr. Gamache then showed slides of their trip through the United States to Tucson, Arizona, visiting numerous observatories on the way. Their talk ended at 10:55 p.m. Mr. Mario Therrien would be leaving the centre for Brandon, after this meeting, he said. The centre wished him well at his new job. Motion to close the meeting was made at 11:10 p.m.

October 15, 1982. 19 members and one non-member in attendance. The meeting was delayed by fire in the University complex. Called to order by the President at 8:45 p.m. The following positions for the executive were elected by acclaimation:

President - Mr. Guy Westcott — 1st Vice-President - Mr. Andrew Lawless
2nd Vice- President - Mr.Dave Sine. — Treasurer - Mr. Bud Fairley
Secretary - Mr. Stan Runge.

Fr. Michiels was appointed to oversee the count of the mail in ballots for the three council positions open. During the ballot count the movie "Solar Eclipse 1979", depicting the efforts of the Saskatoon RASC centre, was shown. The results of the ballot were brought forward and announced by the President. Results as follows: Miss B. Belkin elected for a term of 3 years, Mr. Wayne Jaworski elected for a term of 3 years and Mr. Lorence Mlodzinski elected for a term of 2 years. Mr. Stan Runge made a motion that the ballots be destroyed. Seconded by Mr. Del Stevens. Motion carried.

Mr. Westcott announced that the Winnicentrics, as of next issue, would be accepting advertising to help with the cost of production. He also announced a lecture at the Winnipeg Camera Club on November 9th on an exchange basis. The remainder of the evening was taken up by films supplied by Mr. Chris Rutkowski, one of which depicted Winnipeg Centre Council Meetings. The film title was: "Meetings, Bloody Meetings", starring John Cleese. Motion to adjourn at 10:20 p.m. by Andrew Lawless, seconded and carried.

4.

T R E A S U R E R'S R E P O R T

OCTOBER 1, 1981 TO SEPTEMBER 24, 1982

REVENUE:		
Membership fees	$ 2460.50	
Life member grant	8.00	
Awards & Donations	1227.50	
Sale of Handbooks	8.00	
General Assembly	83.00	
TOTAL REVENUE	$ 3787.00	$ 3787.00
EXPENDITURES:		
Fees remitted to N.O.	$ 780.00	
Meetings & Newsletters	1126.35	
Awards & Donations	1179.94	
Observatory Expenses	975.00	
TOTAL EXPENDITURES	$ 4061.29	$ 4061.29
Deficit on Operations		($ 274.29)
Balance from 1981		691.53
Balance to Sept. 25/82		$ 417.24
Payable to National Office on Observatory Loan		$ 375.00
Observatory insurance due by September 30, 1982		$ 192.00

DR Stevens

Treasurer

BUMP & GRIND

By Mario C. Therrien.

In our last episode, we had gotten as far as fine grinding our mirror. Now, in order to achieve a truly reflective surface, it must be polished to a surface tolerance of 0.000001 inch (or 0.0001 mm). Sounds impossible, you say? Naw, it's easy ... just follow the recipe...

Remember that pitch you bought way back when? It is now time to take it out of mothballs and use it. You will need the following additional items; an empty large tomato can (16 oz.), a hair dryer (hand-held), a 3' x 1' piece of construction paper (cardboard), an inexpensive, coarse-textured plastic shower curtain, and a 2" wide paint brush. With these items at hand, you are ready to produce your polishing tool.

Although one person can effectively do the following procedure, it would be easier on one's nerves if two people were present. Place your pitch in the tomato can and heat it on the stove at a medium setting, watching carefully that the pitch does not start to smoke or boil upon melting. The pitch is ready to use when it resembles molasses. Stir the pitch often to keep it uniform. Cut a strip of the construction paper (white cardboard) that is $2\frac{1}{2}$ inches wide and 3 feet long. Wind this strip around the outside of your tool snugly, so that a "collar" is formed that is about $1\frac{1}{2}$ inches deep. Secure the collar firmly with large elastic bands.

Next, gently heat the surface or your tool with the hair dryer for about 3 to 5 minutes. Then pour the pitch onto the tool quickly and evenly, and allow it to cool overnight. Do not move the tool! When sufficiently cooled, remove the elastic bands and collar from your pitch-tool assembly. The pitch surface now requires marking and shaping. First, using the low setting, gently heat the surface of the pitch for about 1 to 2 minutes. Then place a 1 by 1 foot square of shower curtain material atop the pitch, followed quickly by your mirror atop the plastic. Be sure your mirror is aligned with the tool. Then, place a board atop the back side of the mirror with some weights (about 10 lbs or 3 kg.). Leave this arrangement overnight. The following day, remove the weights, board, and mirror (carefully). Then carefully peel off the plastic (it may be hard to remove). Your polishing tool is now the shape of your mirror, has a stippled surface, and is ready to use!

The next thing to do is prepared a thin slurry of your polishing compound (jeweller's rouge or cerium oxide). Mix 4 parts water to 1 part polishing compound and thoroughly paint the mixture onto the surface of your tool. Then place your mirror atop the tool and commence polishing byusing short strokes that are center-aligned (not off-center). Do not polish for more than five minutes at a time, and allow 5 minutes between sessions. Always make sure that your tool is wet (or you will deeply regret it!) and never let your fingers touch the outer edge of your mirror. Also, you should check your pitch surface to see if it is deforming or "wearing down". If so, repeat the procedure for marking and shaping your pitch. You must be patient, as polishing is a slow process that may take as long as all the previous work.

Now, you may ask - "How do I know when my mirror is polished? How will I know if I have the correct (parabaloid) surface on my mirror?" This is where science (the physics of optics) enters in: There are two possible instruments one can use to "test" the optical surface of your mirror. They are the Foucault tester and Null tester. Though either one can be built with relative ease, it is generally best for a first-time telescope-maker to buy a tester. Both are easy to use, are commercially available at most equipment firms, and are usually inexpensive. Most also come with complete instructions (strongly advised) and some are sold as completely assembled kits.

In order to determine if your mirror is thoroughly and correctly polished, you must use a Foucault or Null Tester. First, determine the exact focal length of your mirror by placing the mirror upright on a steady, suitable stand (say, a desk), in

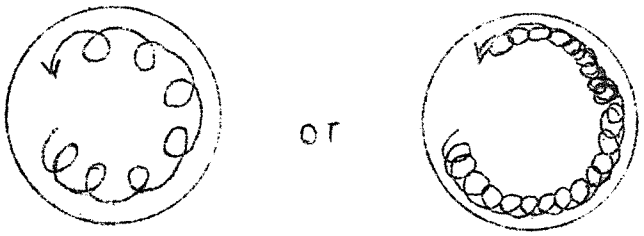
a darkened room. Next, place a source of pinpoint light (a penlight flashlight or light shining through a pinhole) about 4 feet from the mirror and slightly to the right of the mirror's center. Using a single sheet of white paper, place the paper upright next to the light. You should see a faint, blurred circle of light on the paper. Move the paper forward until a sharp point of light (or sharp disk of light) appears on the paper. Mark the exact spot of the sharpest image and measure the distance to the mirror surface. It should be around 36" (95 cm) or less. This is the spot where you place your testing instrument.

1. Determining a polished surface. You can easily determine if your mirror is polished by looking through your tester. If the surface appears smooth and even, it is completely polished.

2. The parabolizing process. Your mirror is not yet suitable for use, as its' surface is (or should be) spherical. Your mirror surface must be paraboloid to obtain a well-focused image. The parabolizing of your mirror is accomplished by tracing a small "Figure 8" on your polishing tool with your mirror. This is done only after your mirror is completely polished and providing the mirror surface is spherical. Your test image will make your mirror surface appear as a salad bowl (a smooth concave surface), if it is spherical.

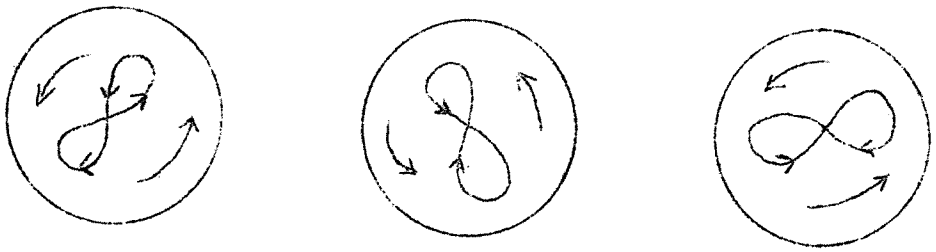
   A. Sphericizing a non-spherical mirror. If your mirror is not spherical to start with, making small circles with your mirror around the tool center (See Fig. 1) should correct your mirror to spherical.

   Figure 1



   B. The Parabolizing Stroke. This stroke is a simple, small figure 8 traced onto your polishing tool (see Fig. 2) with your mirror. The same rules apply as with other strokes and normal polishing.

   Figure 2



3. The Parabolic Image. You should have completed at least two complete "Walk-arounds" of your workbench, using the parabolizing stroke, before looking at your mirror surface with your tester. You have completed your task of parabolizing when 75% of your mirror surface looks concave and the outer 25% appears flat, as seen through the Foucault or Null testers. However, problems often may (and do) occur during the parabolizing process. Here are the major problems and how to best correct them.

A. Undercorrection. The image of the mirror surface has a small (or almost no) flat edge. Try making smaller "Figure 8's".

B. Overcorrection. The mirror surface image appears convex (hyperboloid) instead of concave. Use very tight small circles (close to the center) until the convex image reappears.

C. Uneven surface. The "funny house" effect. This requires re-sphericizing the mirror with circular or back-and-forth strokes. The problem results from either poor control of mirror movements or polishing for too long at any given time.

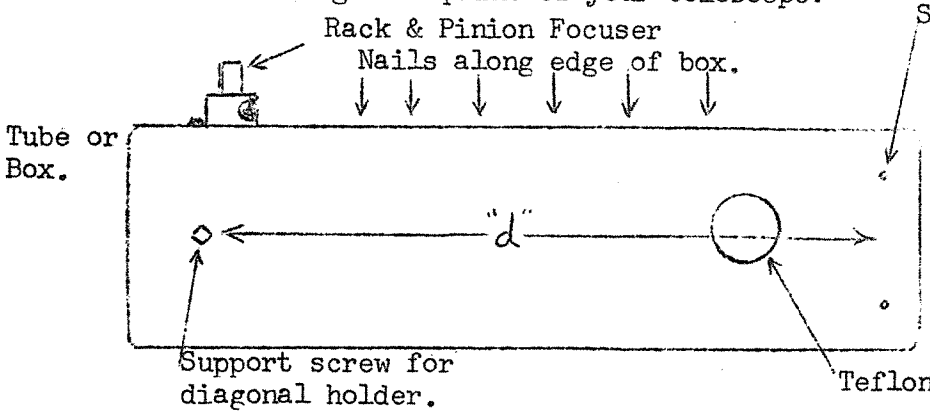
4. Aluminizing the mirror. If you've got that elusive parabolized surface on your mirror, you are the proud makerof a minor miracle! Now you require a reflective coating to make it a true mirror. Do not try to coat it yourself (it's not worth it). Pack it very securely in a wooden crate filled with sawdust and/or styrofoam chips. Place a heavy velour cloth securely over the mirror surface - insure it heavily and send it off to Coulter Optics (after an initial letter asking for prices, shipping instructions, etc.) Why a plug for Coulter Optics? From experience, nobody does it better ... even if it does cost a bit more - it's worth it. They have an excellent reputation and follow-up service, should mistakes occur for whatever reason.

5. Assembling your telescope. By far, the simplest type of telescope to make is a box - Dobsonian. Following is a list of the items required:

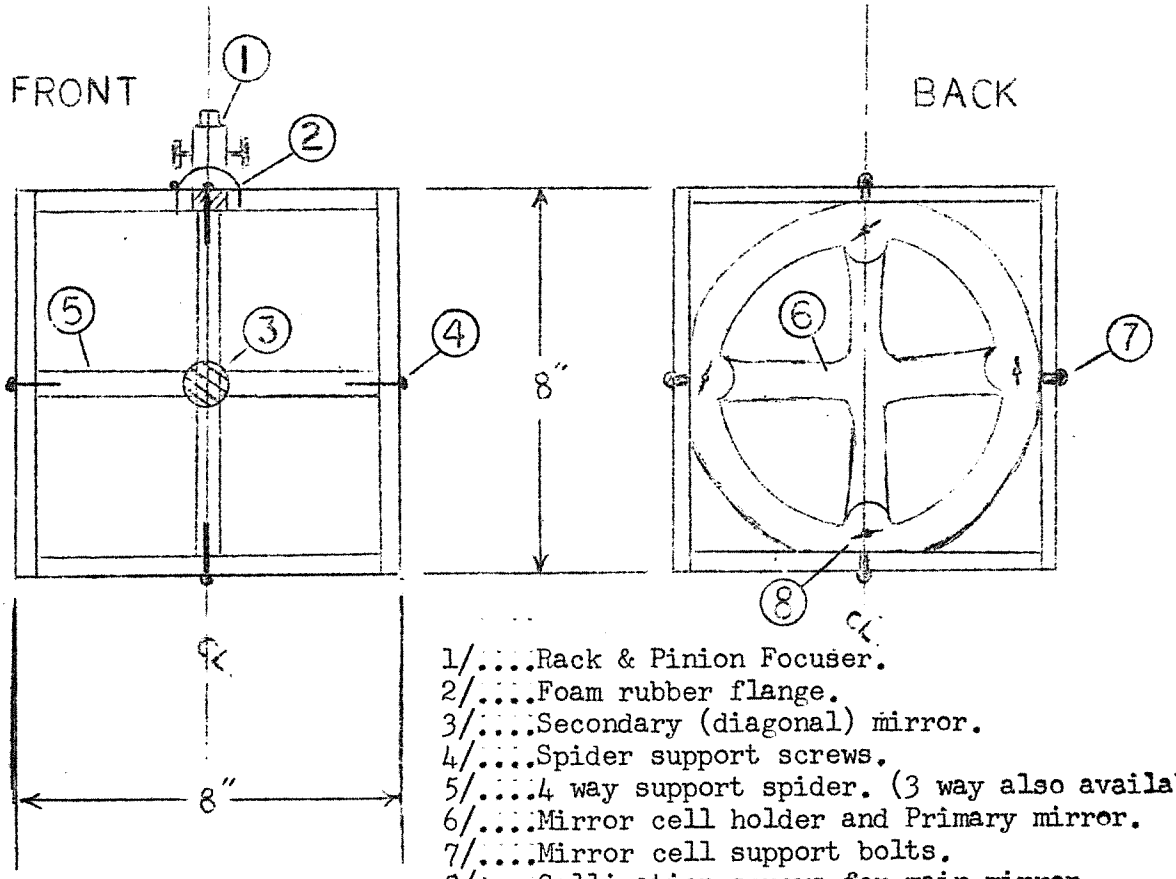
4 8" x 1" hardwood planks in 4-foot sections
1 box of 1" long cabinet nails (approx. 25-50 nails)
1 box of 25 $\frac{3}{4}$" long $\frac{1}{4}$" width cabinet screws
4 2' x 2' x $1\frac{1}{2}$" (or 2") wood blocks
2 teflon plumbing caps, 4" diameter and 1" thick (or more)
1 $1\frac{1}{4}$" O.D. rack and pinion eyepiece holder
1 cast aluminum mirror cell for 6" mirror
1 spider diagonal holder
1 6" x 6" x 3" piece of foam rubber
1 3/8" power drill with $\frac{1}{4}$" drill bits and 1" "cookie cutter" drill bit.
1 screwdriver
1 band saw or hand saw

The above list does not have to be adhered to strictly. For example, you can substitute the "spider" type diagonal mirror holder with a "rod" type or any other type; or you need not necessarily use cabinet nails, any 1" long 1/8 to 1/4" wide nails would do, and so on. Certain items, such as the diagonal mirror, have no substitutes, however.

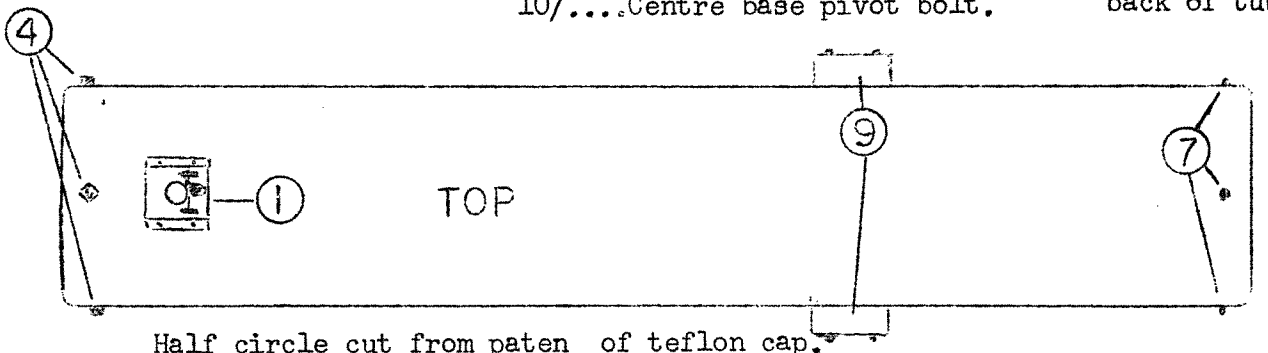
Here is a rough blueprint of your telescope:



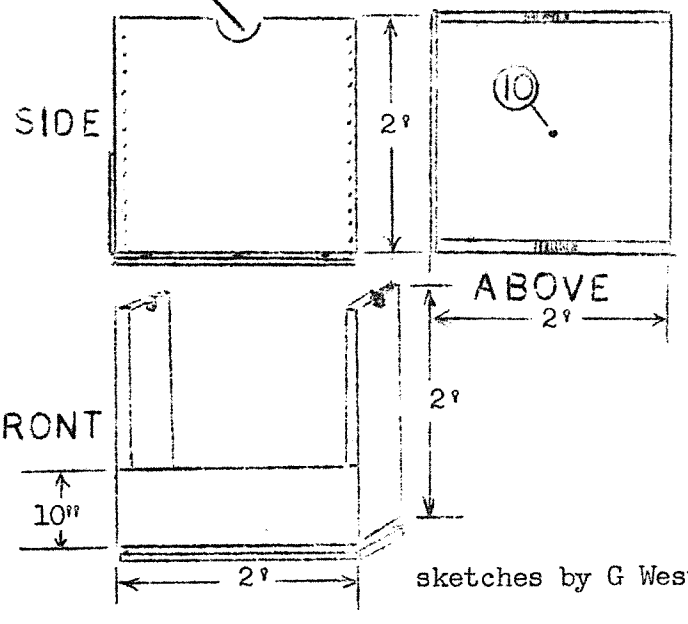
Note: Length from mirror surface to diagonal mirror surface is
F.L. (Focal length) - 4.25" = d
tube (box) length should be 6" more than "d".
Ex: F.L. = 36"
d = 31.75"
Box length = 37.75"



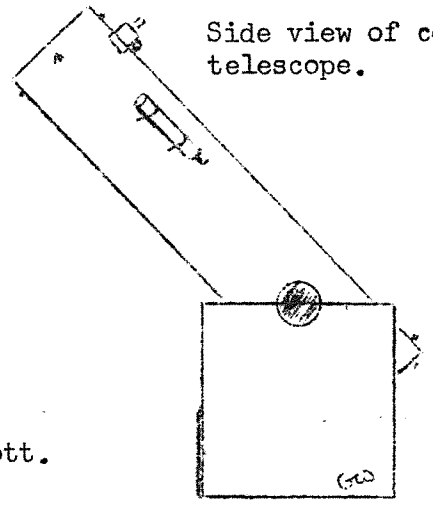
1/....Rack & Pinion Focuser.
2/....Foam rubber flange.
3/....Secondary (diagonal) mirror.
4/....Spider support screws.
5/....4 way support spider. (3 way also available)
6/....Mirror cell holder and Primary mirror.
7/....Mirror cell support bolts.
8/....Collimation screws for main mirror.
9/....Teflon caps(should be 1/8 the distance from back of tube.)
10/...Centre base pivot bolt.



Half circle cut from paten of teflon cap.



sketches by G Westcott.



Side view of completed telescope.

This plan is very basic and can be altered and amended in many ways. You do not have to have your scope be of only one style, either. Any Newtonian style mount, such as cylindrical fork or equatorial mounts, using cardboard or metal tubes are also quite suitable, albeit more complicated to build.

6. The Final step: Collamation. Collamation is the proper alignment of your optical train. Coarse collamation is simple. Simply look down the eyepiece barrel of your scope (with eyepiece removed), while the scope is pointed at a blank wall or the sky. You should see the main mirror, a reflection of your diagonal support and mirror, and your eye. Adjust your mirror cell and diagonal support so that your eye appears at the very center of the mirror and that the entire mirror is visible while looking straight forward. This is not as easy as it may seem, so patience is a must. Once you have coarse collamated your scope, you can fine collamate it by looking at a bright star (say, Vega) with your low power eyepiece in place. You should see a "star" effect with either four "points" or three, when in sharp focus. If the "points" are not of equal length, gently move your cell and diagonal mount (via adjustment screws until all "points" are equidistant. Next, bring your star slightly out of focus. You will (or should) see a bright inner dot surrounded by a ring of light - a sort of "bullseye" effect. When the dot is in the center of the circle, your optics are aligned and ready for use.

Your work is done!! All you need to do is relax, and enjoy your stargazing through the instrument you have built with your own hands. And you will be secure in the knowledge that sado-masochism does have a useful outlet...

HAPPY GRINDING

COMET NEWS

by Guy Westcott.

COMET HALLEY RECOVERED.....

Halley's Comet the object of a search by astronomers worldwide has been detected for the first time on its current approach to the sun. It was rediscovered by astronomers at the California Institute of Technology.

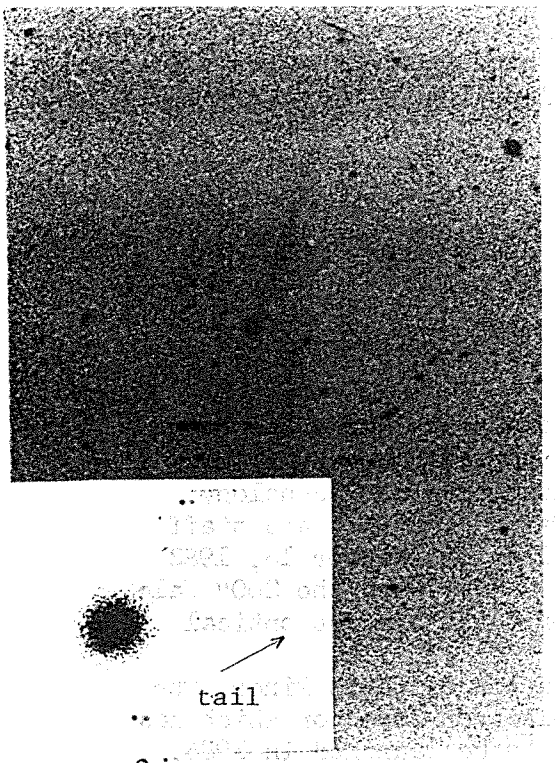
The astronomers, led by graduate student David C. Jewitt and staff member G. Edward Danielson first found Comet Halley on October 16, 1982 they reverified their observations on October 19. They used the 200" Hale telescope at Cal. Techs mount Palomar observatory, the largest optical telescope in the United States.

At the moment the comet is in the constellation of Canis Minor. The astronomers found the comet using an advanced electron detector which has been developed for use with the space telescope to be launched in 1986. The discovery has been reported to the International Astronomical Union in Cambridge, Mass.

The comet was detected at 11 AU or about a billion miles from both the Earth and sun. It is now 1.5 AU beyond the orbit of Saturn. At present the comet is very faint because it is not close enough to the sun to have the solar radiation thaw out the material needed to cause the characteristic glowing head and the brilliant tail. The comet is now roughly fifty million times too faint to be seen by the naked eye, or about magnitude 24.3. The detector used to find the comet is known as - Prime Focus Universal Extra Galactic Instrument - or PFUEGI, which was developed at Cal. Tech. It is basically an 800 x 800 unit array of supersensitive electronic light detectors called Charged Couple Device or CCD.

These devices have proved far more sensitive than the photographic plates usually used by astronomers. Combining the 200" telescope with the modern TV type detectors enables the astronomers to record faint images like that of Halley's Comet. A decade ago it would not have been found using this telescope alone.
Observation attempts at the comet were made on several nights. The light that finally reached the telescope on Oct. 16 was sunlight that had bounced off of Halley's comet 1½ hours earlier. The telescope was aimed at an area where JPL predictions placed the comet. The PFUEGI was then exposed to starlight for 408 seconds at a time, in frames 10 to 15 minutes apart. The comet was detected on 6 frames taken on Oct 16 and then confirmed on Oct 19. The comet had moved significantly from frame to frame.
Halley's Comet has a mass of about a billion tons and developes a tail many millions of miles long as it approaches the sun. It travels between the orbits of Mercury and Venus and out to beyond the orbit of Neptune in a highly elliptical orbit and is inclined at the Ascending Node by 58°.

On this approach it will be intensely studied by a number of international space probes. Because comets are samples of the primitive solar system scientists are hoping to learn much about the origin and the formation of planets by studying Halley's Comet.



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Comet Austin 1982g has been one of the most widely observed comets of recent years, reaching naked-eye visibility for some observers in dark sky sites, and also attracting public interest as some news papers published the finder chart for the comet. It brightened continually up to mid-July and there were several outbursts which were well documented. A brilliant condensation and enhanced and lengthened tail were noticed on August 1, this apparently lasted for less than 36 hours. Just a day later the coma had lost its condensation and the tail was almost invisible. Dr Michel Festou, CNRS, France reported that the International Ultraviolet Explorer satellite saw a three fold enhancement in OH emission on Aug.1. During August and on til mid-September many observers noted a thin, faint plasma tail up to 2° visually and 5.2° photographically. Above are two photographs that I took of the comet from the Glenlea observatory site. The insert is a close-up of the coma taken through the Celestron 14 on Ilford XP-1 the other shot is a negative print from a Fuji color 400 slide. The close up was a five minute exposure at f11, the other shot was a fifteen minute exposure piggy-backed on the C-14 through a 200mm lens system. For those of you who still want to find comet Austin here are updated co-ordinates. Nov. 17 - 13h04.7m +32°53' mag. 11.7
Nov. 27 - 13h03.2m +33°20' mag. 12.1 Dec. 7 - 12h59.4m +34°16' mag. 12.4
Dec. 17 - 12h52.3m +35°41' mag. 12.7 Dec. 27 - 12h40.9m +37°31' mag. 12.9
Jan. 6, 1983 - 12h24.6m +39°35' mag. 13.2 Jan. 16 - 12h02.8m +41°40' mag. 13.4

DATA PROBE

By Brenda Belkin.

Q. I recently purchased a home computer with a decent memory capacity (32k) and color graphics. I intend to become fluent in my computer's version of BASIC and would like to write some programmes pertaining to Astronomy. Can you suggest some "fun" programme ideas?

A. As more and more people purchase home computer systems, there will be a trend to move away from purchased software as the demands for more specific programmes increases - say for example, the programmes that an amateur astronomer would find handy. Why not write a computer version of the "Observer's Handbook"? This is a relatively simple programme to write and would take full advantage of your computer's information retrieval ability.

Let's say that you want to enter an M object or NGC object on your computer screen, and when you press the return key, a wealth of information about that object will be listed on your screen. To follow is a simple programme (written in one version of Microsoft Basic) that will do just that for you. I've included a RUN section so that you can see just how the programme works.

```
5   REMARK FIND INFO ON M OR NGC OBJECTS
10  ? "WELCOME TO THE COMPUTER VERSION OF";
15  ? "THE 'OBSERVERS HANDBOOK'." :?:?:?
20  ? "PLEASE KEY IN 'M' AND NUMBER";
25  INPUT "OR 'NGC' AND NUMBER."; N$
30  RESTORE
35  READ, A$, E$, C$, T$, R, D, M, O$
40  IF A$=N$ THEN GOTO 100
45  IF A$="END" THEN GOTO 50
50  RESTORE
55  READ, A$, E$, C$, T$, R, D, M, O$
60  IF E$=N$ THEN GOTO 100
65  IF E$="END" THEN GOTO 70
70  ? N$; "CANNOT BE FOUND IN MY MEMORY BANKS"
75  ?:? "MAY I BE OF SOME HELP WITH";
80  INPUT "ANOTHER OBJECT"; B$
85  IF B$="NO" THEN ?:?"THANK YOU FOR YOUR TIME.":GOTO 90
86  IF B$="YES" THEN GOTO 20
90  END

100 ?:? "HERE IS THE INFORMATION YOU REQUESTED."
105 ? "IHOPE IT IS OF SOME USE TO YOU."
110 ?:?:?
115 ? A$ :?:? "NGC :"; E$ :?
120 ? "CONSTELLATION :"; C$
125 ? "TYPE:"; T$ : ?"R.A. :";R;"(HRS/MIN)
130 ? "DEC.:";D;"(DEG/MIN)
135 ? "APPARENT VISUAL MAGNITUDE:";M
140 ? "OBSERVATION NOTES:"; O$:?:?
145 ? "WOULD YOU LIKE ME TO DISPLAY THE INFORMATION";
150 INPUT "ONCE MORE"; B$
155 IF B$="NO" THEN GOTO 75
160 GOTO 100
200 DATA M1, NGC 1952, TAURUS, SN-CRAB NEBULA, 5 33.3, 2201
201 DATA 8.4, WINTER - NEED TELESCOPE
210 DATA NGC 7000, NGC 7000, CYGNUS, NEB-NORTH AMERICAN
211 DATA 20 58.2,+44 14, 22, FALL - PHOTOGRAPHIC
```

```
RUN

WELCOME TO THE COMPUTER VERSION OF
THE 'OBSERVERS HANDBOOK'.

PLEASE KEY IN 'M' AND NUMBER
OR 'NGC' AND NUMBER.? M1

HERE IS THE INFORMATION YOU REQUESTED
I HOPE IT IS OF SOME USE TO YOU.

M1
NGC:NGC 1952
CONSTELLATION: TAURIS
TYPE: SN-CRAB NEBULA
R.A: 5.33.3 (HRS/MIN)
DEC: 2201 (DEG/MIN)
APPARENT VISUAL MAGNITUDE: 8.4
OBSERVATION NOTES: WINTER - NEED TELESCOPE

WOULD YOU LIKE ME TO DISPLAY THE INFORMATION
ONCE MORE? NO

MAY I BE OF SOME HELP WITH
ANOTHER OBJECT? NO

THANK YOU FOR YOUR TIME.
```

If you typed in M13 and the computer could not find information on M13, it would have typed "M13 CANNOT BE FOUND IN MY MEMORY BANKS. MAY I BE OF SOME HELP WITH ANOTHER OBJECT?" If you typed YES, the computer would then ask you to key in the object name. If you typed NO, the computer would have thanked you for your time. Notice that this programme leaves you with many options. By answering the computer's questions, you know exactly what the computer will do next. Notice also that you can expand this programme to include the objects distance from SOL, its size, in minutes of arc or actual size in LYs etc. etc.

IMPORTANT NOTES: Since I do not have access to a computer with BASIC, I was unable to run this programme before press time. I would appreciate those members in the Winnipeg Centre who do own a computer to try this programme (modifying it to your own computers basic) and let me know if there are any "bugs" in the programme.
One thing that I should mention is that the question marks, "?" in the programme are used for interrogation (of course you say) or as an abbreviation for the word "PRINT" Check with your manual for your computer's equivalent.
FOR YOUR INFORMATION.....
The new 1983 Radio Shack Catalogue and the new Computer products catalogue are available from Mr Westcott if you want a copy.
Mr Westcott is now also the Dealer for all LUMICON products in Manitoba should you require any astronomical products or gas hypering kits please speak with him before you buy. It is cheaper to order through the dealer than to order direct by yourself. All prepaid orders have shipping paid by LUMICON. See LUMICON advertisement this issue. ALL PRICES ARE IN U.S. DOLLARS.

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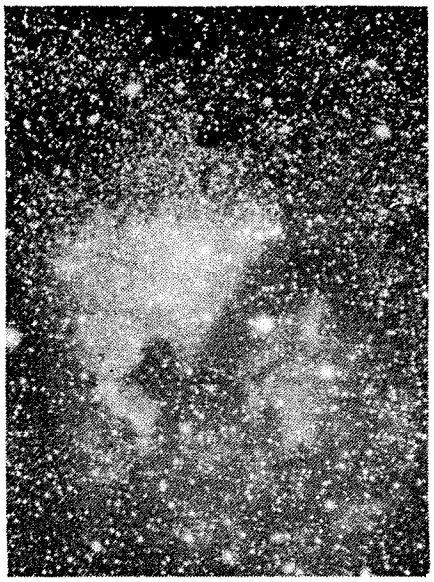
LUMICON H-ALPHA PASS FILTER

Without any filter



16 minutes, NO FILTER. Low contrast; enlarged fuzzy star images.

With H-ALPHA PASS FILTER

32 minutes with LUMICON H-ALPHA PASS FILTER. High contrast; pinpoint star images

$29.95 – $49.95

Use the LUMICON H-ALPHA PASS FILTER to achieve amazing contrast gain and image sharpness in astrophotography with camera lenses. It is the best filter near cities. The H-ALPHA PASS FILTER is an ideal match with B&W hypered Technical Pan 2415 film, and is highly recommended for all f/4 or faster lenses of any focal length.

Image Sharpness: Yields pinpoint star images that rival Schmidt camera photos, as shown on this page.

Contrast Gain: Up to ten times (10X) higher contrast for emission nebulae. Ideal for very faint nebulae.

Transmission: Fully AR coated. 90% at 656nm (H-Alpha line). Zero (total blocking) below 630nm. Absorbs all visible light pollution.

Filter Factor: 1.5X for nebulae, 3X for stars using 2415 film.

The North American Nebula (NGC7000) and Pelican Nebula (IC5067) in Cygnus. These two comparison photos were taken the same night on the same roll of hypered 2415 film, using the same Soligar 200mm f/2.8 telephoto lens at full aperture. (This lens is described on the following sheet.) Both photos were printed on the same Grade 3, medium contrast paper. Note how the photo on the right has pinpoint star images rivaling photos taken with Schmidt cameras.

LUMICON H-ALPHA PASS FILTER**

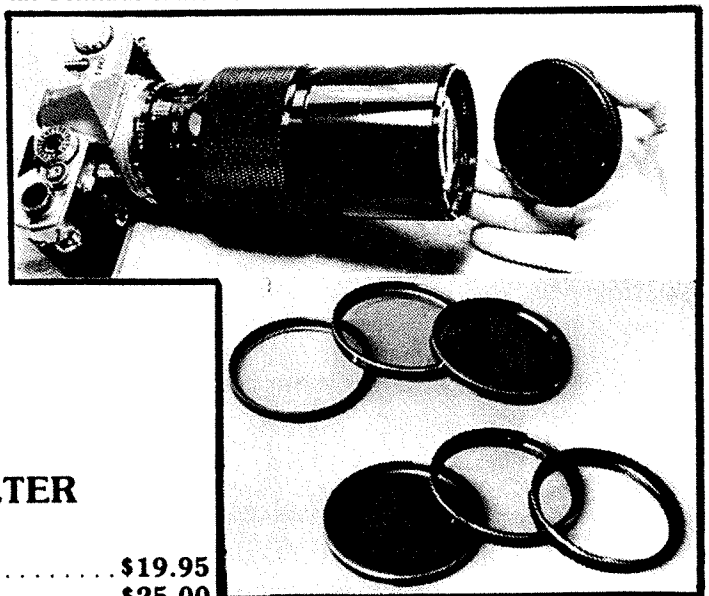
Please specify lens filter thread diameter 48mm. . .	**$29.95**
46, 49, 52mm	**$34.95**
52(58mm & adapter), 55, 58, 62mm	**$39.95**
67, 72, 77mm	**$46.95**
82mm	**$49.95**
48mm, with male & female T-threads	**$39.95**
*41mm infrared absorbing filter for eye-safe solar observing **$18.00**	**($38 in cell)**

***Caution:** DO NOT use visually to observe the sun. Eye injury could result. Requires infrared absorbing filter.

****Caution:** DO NOT use the H-ALPHA PASS FILTER with standard B&W films like Kodak Tri-X, Plus-X, Pan-X, Ilford HP-5, Polariod 3000, etc. You will record nothing! Only use hypered 2415 (best) or 103a-E, 103a-F.

LUMICON MINUS VIOLET FILTER

Please specify lens filter thread diameter	
48mm	**$19.95**
46, 49, 52mm	**$25.00**
52(58mm & adapter), 55, 58, 62mm	**$29.95**
62(72mm & adapter), 67, 72, 77mm	**$39.95**
82mm (for B&W photography only)	**$25.00**



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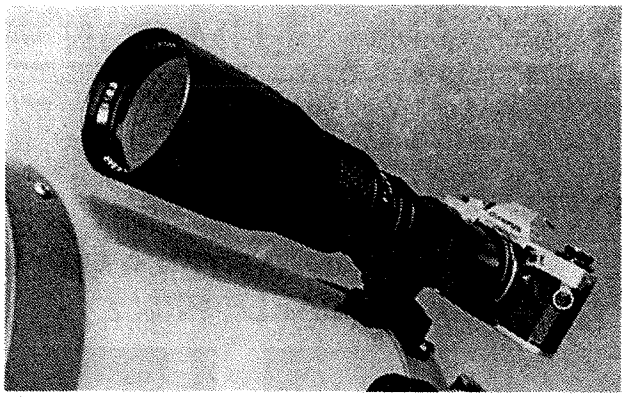
Call (415) 447-9570 for information or charge card orders.

Lagoon Nebula M-8, Trifid Nebula M-20, and open cluster M-21. Photo with LUMICON 400mm f/6.3 ASTROGRAPHIC LENS SYSTEM.
Note the pinpoint star images!
20 minutes on hypered 2415 film with 72mm LUMICON MINUS VIOLET FILTER.

400mm f/6.3 SYSTEM $149



LUMICON 400mm f/6.3 ASTROGRAPHIC LENS SYSTEM includes a mounting clamp allowing 360° rotation for picture composition. Also includes a 72mm MINUS VIOLET FILTER and lens hood. *Guaranteed to yield edge-to-edge pinpoint star images at full aperture!*

The LUMICON 400mm f/6.3 ASTROGRAPHIC LENS SYSTEM is an amazing value (specify camera type) **only $149.**

LUMICON 300mm f/5.6 SYSTEM includes identical features as above, with 58mm MINUS VIOLET FILTER, 360° rotation allowance, and lens hood. (Specify camera type) **only $129.**

HELPFULL ACCESSORIES

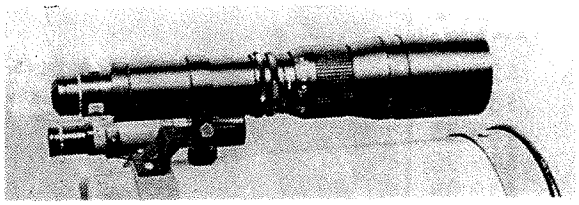
Piggyback bracket, specify C-5, C-8, Meade 2080, 2120 . . . . . **$25.00**

Piggyback mount for Newtonians with full tilting capability (see photo). Specify tube diameter **$20.00**

Illuminated reticle eyepiece system, Meade 12mm eyepiece with dual crosslines & battery pack (regularly $59.95) . **$55**

SUPER FINDER CONVERSION KIT

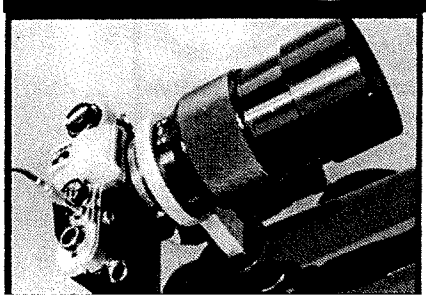
Convert the above 400mm lens into a superb 12X64mm finderscope (the 300mm lens becomes a 10X54mm finder).



Note how much bigger it is compared to a standard 6X30mm finderscope.
Kit includes a LUMICON 30mm wide 50° field 1¼" eyepiece and eyepiece adapter **only $39.95.**

California Nebula, NGC1499 in Perseus. Photo with SOLIGAR 200mm f/2.8 ASTROGRAPHIC LENS SYSTEM at full aperture! This very faint nebulae required the fastest lens system. 40 minutes on hypered 2415 film with a 72mm LUMICON H-APLHA PASS FILTER. Note the high contrast!

LUMICON



FASTEST LENS SYSTEM

This Soligar 200mm f/2.8 telephoto is perfect for faint nebulae like the North American Nebula, California Nebula, Horsehead Nebula, etc. Specify camera type ($269.50 list price) **only $159.**

III. CARGO BAY.

By Derek Hartloper, Engineering
University of Manitoba.

Since its conception in the early 1970's, the space shuttle has been intended to transport large volumes. The design of the cargo bay has played a major role in shaping the space shuttle. Once a routine program has been instituted, the use of the shuttle's cargo bay will virtually replace all satellite and data-gathering rocket launches that occur today.

The cargo bay will be used in an increasing number of ways in the future. By the mid 1980's NASA expects the orbiter to totally replace all major astronomical and solar physics sounding rocket flights. This is because sounding rockets are becoming unproductive due to their short observing times. Also, the space shuttle program will start replacing rocket launched satellite flights. The cost of a shuttle-launched satellite will be about one quarter of today's cost.

An example of the difference in efficiency between the shuttle and sounding rocket capabilities is the cost of information difference. Sounding rockets, with an observing time of roughly 300 seconds, cost approximately 300,000 dollars per flight. With a typical data collection rate of 500,000 bits per second, a rocket collects 150 million bits. The shuttle, on a regular basis, would cost 1.03 million dollars for a similar mission, but over a period of 24 hours could collect 100 million million data bits. The cost per bit data ratios would then be .2 cents/bit for a sounding rocket as compared to .01 cents/bit for a shuttle flight.

The internal structure of the orbiter's cargo bay is similar to that in today's jetliners. Payload attachment points are located along the length of the cargo bay and are adaptable for fastening most types of solid cargo. Handrails are also located through out the payload area to permit space-suited astronauts to maneuver easily.

Inside an orbiter's cargo bay are many devices that aid the viewing and handling of cargo. The single most important device for handling cargo is the Canadian-built manipulator arm. Called the Canadarm, this is a remote manipulator system that is used to deploy and retrieve cargoes of up to 30,000 kg. The arm is a complex machine 15.2m long and has shoulder, elbow, and wrist joints that employ an electronic hand called an end effector. The arm can be manipulated manually or by computer through the control of motors that, through the joints, position, deflect, and turn the end effector.

Through the use of toggle switches in the case of manual control, or computers in the cabin, the Canadarm will be used for handling cargoes of up to 18m and 4.6m in diameter. A 30,000 kg. mass can be deployed within an accuracy of five degrees of altitude (angle) and plus or minus 5.0 mm in relation to the shuttle. The cargo bay can accommodate one or two manipulator arms. The arms are mounted on either the left or right sides of the cargo bay.

The Detatched Experiment Carrier will be a self-propelled box measuring 10 m^3 in volume. Under radio controled guidance this carrier will operate at distances of up to 2.8 km from the orbiter. In another mode the experiment carrier will carry a television camera linked to the orbiter. This will greatly increase the on-board astronaut's view of his immediate surroundings. An important role of the detatched carrier will be to inspect the orbiter's heat shield.

The Orbital Transfer Vehicles will simply be liquid or solid fuel boosters used to propel cargoes to radii above that of an orbiting shuttle. Stored in the cargo bay, these booster and cargo assemblies will be removed by the manipulator arm and then activated by the crew inside the shuttle.

The Manned Maneuvering Units being designed for shuttle crew use will fill many roles They will support space construction and satellite servicing and will greatly increase the crew's capability to service equipment in the shuttle payload bay area.

There are two related versions of manned vehicles. The Open Cherry-Picker will be used in early flights to provide locomotion for a space-suited astronaut as a means of deploying and retracting cargo-bay mounted experiments. The Closed Cherry-Picker will be

able to perform the same types of operations on a larger scale. These pressurized work stations for up to two people are intended for eventual self-propulsion, but initially will be attached to the Canadarm. In this configuration, the cherry-picker will extend the mobility and flexibility of the arm through use of its two 6 ft. long manipulation arm-extenders.

An orbiter's crew of up to seven people have many jobs in connection with the cargo bay. They must open and close the payload doors, deploy the cooling radiators, operate, and stow the manipulator arm, and activate the lights and television cameras in the payload bay. Besides these tasks, each crew member will have specific jobs to do. The crew members trained for specific tasks in the payload bay are called payload specialists. Up to four payload specialists may accompany the two pilots and a mission specialist on a shuttle flight. In-flight access to and from the cargo bay is through an air-lock on the middeck. The airlock permits entrances and exits to and from the cargo bay without affecting the pressurized cabin.

There are very many payloads the shuttle cargo bay can accommodate. Payloads destined for use in the eighties will have been planned from four to five years ahead of time. The shuttle is programmed to carry roughly one-third commercial, one-third scientific, and one-third military payloads.

Major cargoes are large-volume cargoes scheduled for the eighties and will encompass many areas of science and industry, and will be composed of the most sophisticated and costly equipment ever used in space.

The Spacelab program is being financed by ten European nations and is under the control of the European Space Agency. In effect, the spacelabs are programs within the shuttle program. Spacelab flights will consist of various combinations of enclosed and exposed pallet-mounted experiments. From twenty to thirty per cent of all shuttle flights will carry a spacelab in one version or another. A spacelab will be composed of various combinations of either a single or a double enclosed module and/or up to five exposed pallets. In its lab module form, the enclosed spacelab provides a shirt-sleeved working environment for scientific experimenting. Both modules have regular laboratory fixtures and are fully pressurized and climate-controlled. In its double module configuration, Spacelab can accommodate all four payload specialists at once.

Pallets are open platforms that bridge the diameter of the cargo bay and expose materials and equipment directly to space. Examples of pallet-mounted equipment include telescopes, radar antennae, and the so-called lidar experiments that measure the effects of natural and manmade disturbances on the earth's atmosphere. These experiments can be controlled from the shuttle's flight deck, from a spacelab module, or from a command station on earth.

Perhaps the most awaited for cargo the shuttle is scheduled to launch in the eighties will occur in 1985, when the 45 ft. long space telescope is deployed. This telescope will be able to see objects seven times as far and one-fiftieth as bright and will encompass 350 times the volume of any earth-based telescope. With its range, the space telescope will be able to closely study quasars, pulsars, and galaxies. Other telescopes planned for use are the Solar Optical Telescope and the Shuttle Infrared Telescope. Scheduled for launching in 1987, these are both the most powerful instruments of their types to be taken into orbit.

Communications satellites and military satellites will make up the bulk of the satellite launches taken over by the shuttle in the 1980's. New communications networks will be established by nations not yet employing satellite systems.

Modest class payloads constitute those that operate separately from the shuttle and are not so large as to be called major cargo. Experiments of Opportunity are experiments that launch and retrieve totally self-operating, data collecting experiments. These experiments will be stored in the carge bay on pallets or at attachment points.

The orbiter will also carry Getaway Specials. These are small self-contained experiments in canisters that will simply stand inside the cargo bay, exposed to space. This concept makes public and corporate participation in the shuttle program possible, because the per-flight cost of a "special" will be from three to ten thousand dollars. The canisters must be self-powered and self-running. The shuttle crew will simply turn them on and off. So far, over 300 getaway specials have been reserved by companies and nations worldwide.

The space shuttle's cargo bay provides a means of private and national exploitation of space. The shuttles program, and its cargo carrying capacity broaden the horizons of space to an almost unlimited extent. The projects planned for deployment in the eighties will provide great advances in the scientific and communications fields. With its ability to transport devices that will remain in orbit, and construct space-based structures, the space shuttle and the use of its cargo bay will open up the space frontier.

(condensed and edited for publication)
(by Brenda Belkin.)

Visionaries would make Venus like Earth

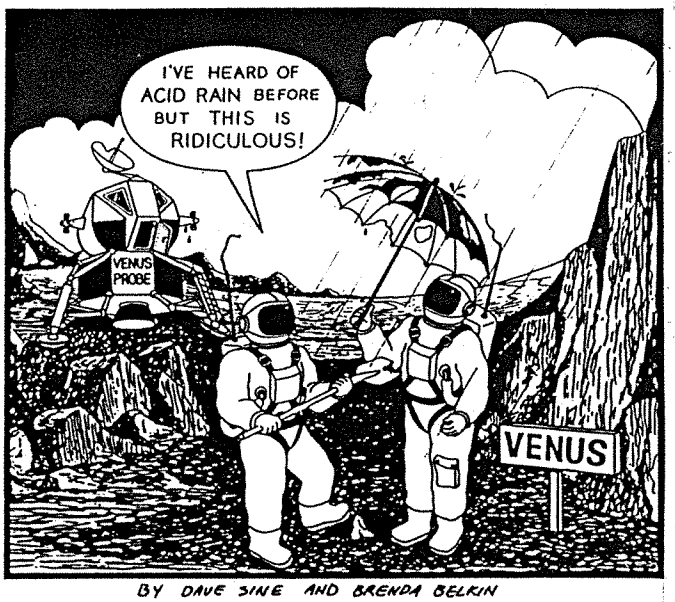
OUTER SPACE
Terence Dickinson

Because the planet Venus is so similar to the Earth in size, mass and surface gravity, some researchers have offset their disappointment at its inhospitable surface conditions - where temperatures exceed the melting point of lead - by suggesting that with a little intervention by human technology, Venus could be made like Earth. In 1965 Cornell University astronomer Carl Sagan said that Venus might be transformed through microbiological planetary engineering. He suggested that the clouds of Venus could be seeded with the micro-organisms where they would live a wholly aerial life, suspended by the turbulence that stirs the clouds. The best choice, Sagan speculated, is blue-green algae. The algae would change the atmosphere by extracting water and carbon dioxide, and discharge oxygen into the clouds through the process of photosynthesis. The planets surface would cool down to a temperature that would support hardy planets and animals from Earth, eventually being suitable for human colonization.

Terraforming Venus has now caught on. Dozens of writers have repeated the same scenario, postulating that the transformation from Venuslike to Earthlike might take as little as a few centuries.

This vision has recently been placed under the magnifying glass, and the conclusion is that the project is far beyond our present or projected technology. According to an analysis by James Oberg, simple algae seeding will not work. The major roadblocks, writes Oberg, is that the spin of Venus is too slow. A day on Venus is 59 Earth days long followed by a long 59 nights. There would be an enormous heat build up in the day and an extended nightly deep-freeze.

Even if the stifling atmosphere could be removed and the rotation of the planet speeded up, it would still take centuries for the rocks on the surface to cool down from their 460° Celsius. Venus's lack of a natural magnetic field may also pose a yet undetermined biological effect on reproductive processes. Any favorable conditions developed on Venus would soon deteriorate due to the intensity of the sunlight which would constantly be acting to reverse the process. The incoming radiation will have to be perpetually reduced in order to maintain a habitable Earthlike climate.



BY DAVE SINE AND BRENDA BELKIN

SKY NOTES

by Brenda Belkin.

On December 22nd, the sun will reach the winter solstice. In Winnipeg the sun will reach an altitude of $23\frac{1}{2}^{\circ}$ above the horizon at local noon.

MERCURY: Nov 15 RA 15h 08m Decl. -17° 26'
Dec 15 RA 15h 28m Decl. -25° 32'

On November 1, Mercury is 0.7°S of Saturn. Mercury and Venus are close throughout the month.

VENUS: Nov 15 RA 15h 31m Decl. -18° 36'
Dec 15 RA 18h 12m Decl. -24° 09'

Both months are unfavorable for observing Venus.

MARS:
JUPITER:
SATURN: These planets are not in favorable positions for easy observing during November. However, Saturn becomes progressively more visible in the morning sky. Late in December, Saturn is well up in the southeast at sunrise.

LUNAR NOTES

Phase	November	December
Full	1	1
Last 1/4	8	7
New	15	15
First 1/4	23	23

There will be a total eclipse of the moon on December 30, 1982.

Eclipse Event	Time (Local Winnipeg CST)
Moon enters penumbra	03:21
Moon enters umbra	04:19
Totality begins	05:27
Mid-totality	05:58
End totality	06:28
Moon leaves umbra	07:36
Moon leaves penumbra	08:35
Sunrise, December 31, 1982	08:28 CST

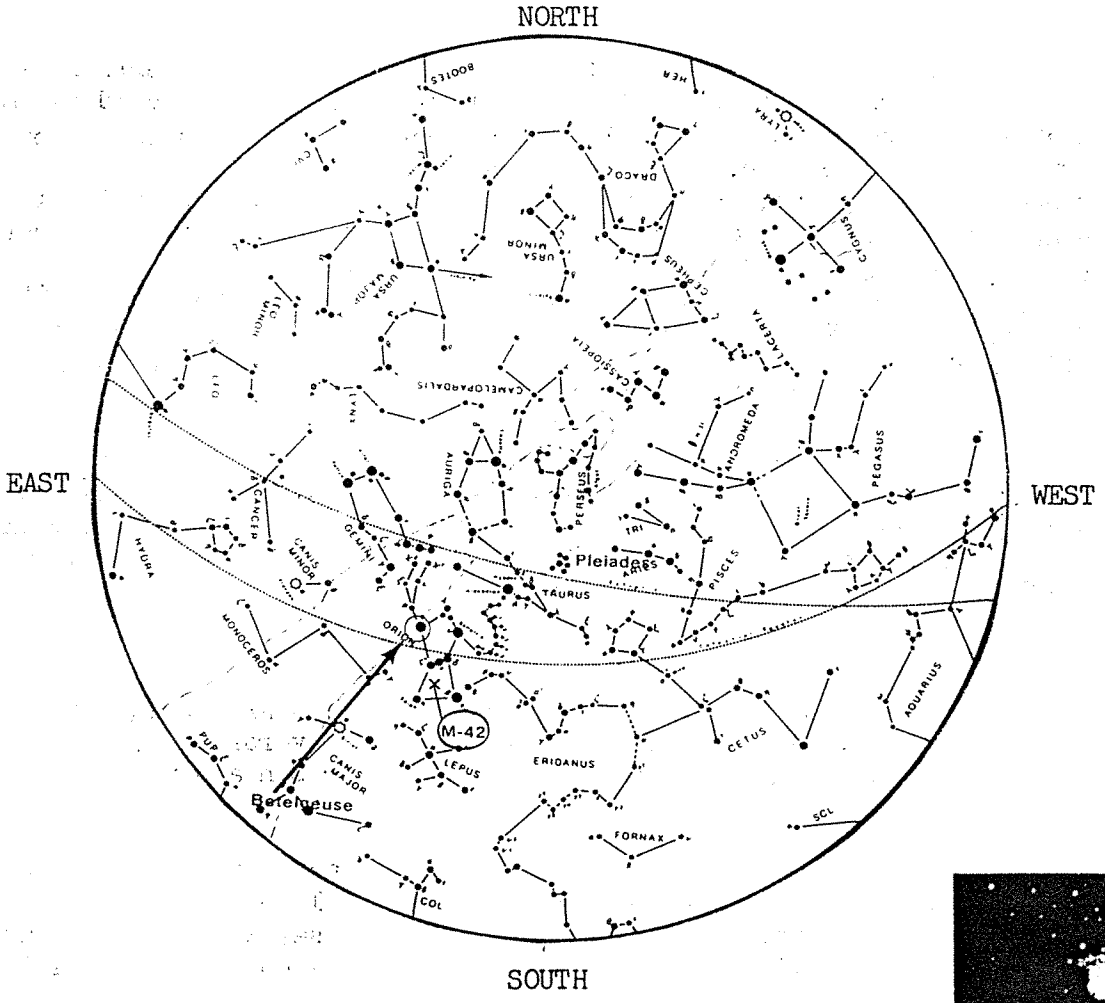
I really don't know how many people in the Centre will wish to face the cold nighttime December air to observe this eclipse, but if you plan to do so, I salute you. For those people who ruined a few photos during the July 5-6 eclipse, here's another chance. For a list of photographic and observing projects, please refer to "An Amateur's Check List" which appeared in the July/August issue of "Winnicentrics".

Meteor Showers, etc.

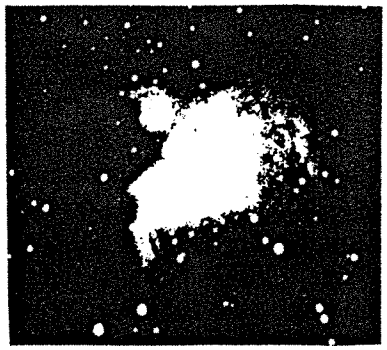
Three major visual meteor showers will delight us this November and December. The S. Taurids on Nov. 2 is not so favorable with that full moon beaming in all its splendor. However, the Leonids on Nov. 17 will probably be spectacular. A new moon with a SOHR* of 15, together with a 71 km/s rate through the Earth's atmosphere should prompt many a 50 mm lens/tripod duo into a field. The Geminids on Dec. 14 will be

another favorable shower. There will be another New Moon and a SOHR of 50 with speeds up to 35 km/s. Remember the best time to observe meteor showers is after midnight.
*SOHR - Single Observer Hourly Rate.

To use this map, hold overhead and turn it so that the directions marked around the map's horizons match the true directions. This map works best on: Nov. 15/ Dec. 1, 15/ Jan. 1, 15.



Stellar birth can be witnessed in the Great Orion Nebula (M-42). It appears as a star like object in the Sword of Orion. The centre star like object in the Sword is in actual fact a vast cloud of gas, containing young hot stars. It is these young hot stars that make the nebula fluoresce. Stars are still forming in this colorful gas cloud.



200mm f3.5 10 min.
Tri-X G. Westcott.

18. CHARLIE'S Whirld.

by Don Harron.

Yer Erth in Yer Soler Sistern

Most peeple think the whirled is a ball, but they'd be mostly yer teeny agers. After they git old, they'll find out it's a bit flat at both ends. That's on accounta finely gittin' dizzy resolving on its own axes.

I hate to tell you this, but yer Erth is not the senter of yer Soler Sistern. It's jist a small dark objeck spaced out among yer other plants, like Murkry, Marse, and Venis. None of them is too lifely ether, on accounta we is all fixed stars, cut off before our primetime by the great Vetnary-Aryan-in-the-sky giving us the final spade.

Yer Son

These plants is jist sons of yer Son, havin' bin thrown off from yer Soler's Plexus during a gas attack. The fack that yer Erth is manely made up of hard, cold gas makes you wunder wear yer shortage come from. A son, by deafnishun, is a large mass of hot gas that shines by its own light. (I got one, too, name of Orville.)

Like it er not, yer Son is not the big cheese neether.* We used to think it was the biggest star in our blue hevven, on accounta it's the sentral heeting fer the rest of us. But it jist happens to be only the hottest thing in our Gal-Ex-Laxy.**

The rest of us plants is just dead bodies hoovering around yer Son's oar-bit, and by hinkus yer Son must be one boiler room of a place. Sides bein' a millyun times bigger'n Erth, it's more'n a thousand times in heat. The figgers is Assternomic (wich means far out), but on the face of it I'd say was ten thousand Fornheat...give er take a deegree.

See thru a glass darkly during yer E-Clips and you'll find yer Son as a lot more goin' fer it than peers on the surfs. What looks like yer overdun frydegg is reely yer Son's Corona Corona, wich sounds to me like a lotta blue smoke but is realy a millyun miles of gas on fire. And that's what gits lit up yer Northend lights, also known as yer Boring Alice at Aurora.

Yer Plants

As I sed before, yer plants begun as jist spots offa yer Son and grew cold till they become big Cosmical blackheds. And the more far out in yer Universal they flu, the bigger they got fer their boots. Let's start with yer nearest to yer Son and most compact, Murkry.

Murkry: Most peeple don't think of Murkry as yer avrage Compact, but she's yer smallest and most hothouse of yer plants. On accounta the heat's on all the time, there's some as says the place has no atmosfear. That seems kinda mean to say when nobuddy has ever give it a visit. There's no tellin' what some wimmen asternuts could do with a little ulteerier deck-ratin'.

*GREEN FEETSNOTE: Some peeple think the moon still is.

**HOT FEETSNOTE: Yer Galexlaxy is a tecknickle term fer our pertickler bar of yer Milky Way.

Venis: Not so torrid and not so much in heat as you'd think. She's our nextdoor naybor and, since she's the brightest lite in our local firmaminit, she's called yer Evening Star and can be seen in the erly edition even before yer Twilit Zone.

Yer Serviet Roosians sent one of them Unmanly Spooknuts up to look at her, but nothin' could be seen on accounta yer Smog. Three of them Spaced Men got sent to Sighbeerier for this, on accounta yer Krumlin Commizars thot they'd all gone fer a dirty Weekend to Loss Angles, Callfornya.

By the way, don't pay no tension to other Jogfree books. There are no canals on Venis. That'd be yer Marse.

Marse: Our naybor on t'other side. Not so much in heat, but seems to be in season as yer vegetatin seems to change from blew-green to cow-brown, wich proves that the place is more than jist desserts. It may be that yer canals is meerly melting Marse bars, but it still looks like our Trench river sisterm when seen on yer Telepathyscope.

Joopter: If youse wanta git into Steller Reelstate, buy Joopter, the biggest of yer plants. All you can catch lookin' thru yer tellyscope is a buncha Big Bands, but I hear that's all comin' back...yer Big Band Eara.

Slattern: Not so big as yer Joopter, but more fur out, and can row-tate rings around the rest of them. Close-up, looks like a big Frizzbee what got preggerunt.

Yeranus: Hung well back at the end of yer Universal. Seems to mind its own pees and kews and keeps its mean distants from the rest of us.

Napchewin: Sounds wet, don't it? Mebbe it gits some run-off from yer Milky Way, but it's so darn far-out nobuddy's herd from it.

Plutoe: Yer dog star, wich is mebbe why it's the furthest out-side. It may have bin a throw-off unleashed from yer Napchewin. Scientificks are not even sure if it's a plant but, bein' Plutoe, it sure leans t'word other plants.

Three Fases at Eve: Yer Moon

Now let's git this strait. I don't know how to brake it to you, but every plant's gotta moon (and sometimes three er four er more) in Utter Spaceland. When you see yer Moon out the car winder, that's ars all right. But if you was studdying up yer Pastronomy in one of yer Observeyertorys, you'd see yer Plant Slattern has got ten moons. I mean all at once, not jist like ours havin' a peeriod every 29 days. Imagine what ten moons wud do to yer berth rate with all the yung cupples parked down by Prospeck Point watching the submarine races! Things must be jumpin' on Joopter cuz they got twelve moons, and evry one of them resolvin' to go the wrong way, jist like them kids parked down by Prospeck Point.

Nothin' much to say about our moon, sept that it travels in a illipstickle ore-bit round us and is compleatly uninhibited...altho' them Asternuts from yer Emission Controls did talk about comin' across a lot of differnt craters when they was gittin' the rocks off with their Loonier Model.

Other Plantoids: Cumits and Meatiers

If yuh see a long, long tale a-winding between yer heavenly dead bodies some nite, that'd be yer Cumit. They don't come too offen. We've had yer Bill Haley's purty reglar round the clock, and last year we had one that dint never show, yer Ko-hoteks. Yer Cumit is a dirty ice cube that don't hand around too long on accounta them hot gases burnin' off its tale end. But, fer a one-nite stand, you can't beat it.

Yer Meatier is smaller than yer Cumit, sort of a haff-Assteroid that probly broke off from sum other plant. My theery is that, bean so compack, yer avrage Meatier is probly a chip offa yer old Murkry.

We once had a Meatier land on the back fallow, back in 1934, and we made a little munny chargin' toureeists 25 sense a head fer to look at it. But the guvermint step in and said we hadda pay tax on the incum from our Murkry Meatier on accounta it cum from a broad and was considered Imported Iron.

Other Flashers in yer Cosmickal Pan:

Yer Shooty star is not a Cumit, but more of a Go-it. Jist a flash in the pan of yer Big Dippy, gitting burnt off too fast and taleing off into nothing, unlike some of our big shooty stars on Erth, like John Wane er Frank Shooter.

Yer Pole Star is the thing that's allus bein' pointed at by yer Big Diaper. It's so durn far away, the light from this North Star takes more'n forty years to git here. (I don't mean the Parry Sound North Star. Its news is never more than too weaks old.)

Yer Queerzars is big Red fellas winking at us every millenema. We only recent got cosmick wind of them and don't know how long they bin radio active. You'd have to travel thru yer light yeers and yer dark fer to git at them, fer they're even beyond our Universal-Internashunal.

Yer Flying Sorcerer is man-maid, what they call yer Unindemnifiable Flying Objeck. When Premeer Turdo whispers under his breth in the Common House at yer Leader of yer Opposite Posishun, he sez "U.F.O." This brung a lotta trubble to us United Farmers of Ontario when we had our Animal Husbandry Convention in Ottawa...they wunt let us put U.F.O. after our names becuz they sed it was the kinda langwidge only fit fer a Prime Minister.

From the book Charlie Farquharson's Jogfree of Canada by Don Harron, Gage Publishing Ltd., 1974, Toronto.

ROUND ABOUT SCIENCE..... All about Al?

A display about Albert Einstein was on View in the Science Library up until the end of October. Prepared by RASC Winnipeg Centre librarian, Chris Rutkowski, the exhibit included photographs, papers by and articles about Einstein.
All about UFOs..... Guy Westcott and Chris Rutkowski were the guests on the CBC program "Questionnaire" on Wednesday September 8. Both centre members had the arduous task of answering phone-in questions about the UFO phenomenon.

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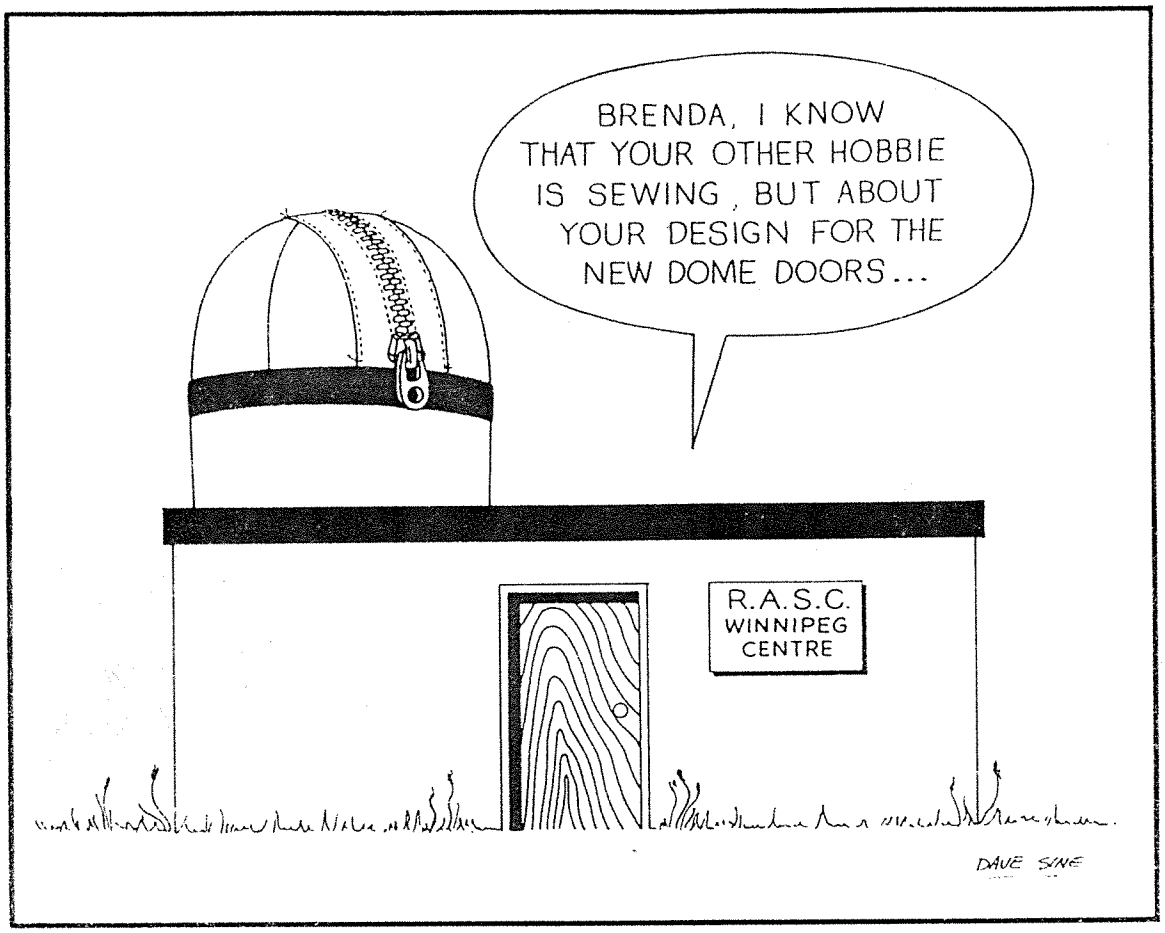

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