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Orbit

Hamilton Centre RASC
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Orbit

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M27: The Dumbbell

Last month, we showed you the Coathanger, CR399 in Vulpecula. This month, here is the Dumbbell Nebula. Around February 6th, you should be able to find Comet Hale Bopp just a few degrees below M27.

Contents:

Editorial

Will the wonders never cease? I had the pleasure of a combined business trip and vacation to Edinburgh, Scotland at the end of last month, and in Scotland we had perfectly clear skies on 3 of 7 evenings. The flight in was a long one, about 6 hours with a decent tail wind, but there was plenty of opportunity for star-gazing out the window of the Boeing 747. It is truly amazing how much sky you can see once above 37,000 feet. All of our familiar northern constellations like The Plough as it is known (Ursa Major) were easily visible. I would estimate that you can see 25-30 degrees of sky out the airplane window, and maybe a little more if you don't mind butting your head against the inner plastic surface. It really helps if the TV and lights are off or down low, because glare is pretty serious. In any case, this was enough to keep me amused for a good part of the trip.

After a day or two in Edinburgh, we journeyed up Calton Hill, to the sight of the Edinburgh City Observatory. This site features the Old Observatory building (1700s), the City Observatory building (1790s), Nelson's column, and the National Monument to the Napoleonic wars. And has the most beautiful view of the city, unbeaten expect perhaps by the view from Edinburgh Castle. Unfortunately, this is not tourist season, so the facility is closed until April, where they apparently have a 3D slide show. (Shades of the McLaughlin Planetarium ?).

Subsequent to being left to rot in the prison cells under Edinburgh Castle, I managed to escape by chiseling out the stone work using an old copy of the Observer's Handbook. Rapelling down the side of the sheer basalt face by knotting some occultation timing pages together, I managed to find my way back to the Bed&Breakfast (Guest House). Later that evening, Pauline (my wife) and I were treated to some of the best skies I have seen in a long time, and all this right from the city. My wife quickly picked up the names of a few of the constellations, and was able to point them out on subsequent evenings. All of this by the way from this Urban Centre! Perhaps their use of full cutoff, Low Pressure Sodium lighting, and a public campaign against Light Pollution is working. - *Colin Haig*

P.S. From last month's cover, CR399 = Collinder 399, one of the reasons I like those obscure objects. ☆

Membership Application

Application for Membership in the Hamilton Centre of the RASC. Annual membership officially commences October 1. We welcome people of all ages, skills, and interests in things Astronomical. Please make your cheque payable to: "RASC Hamilton Centre" and mail to the Treasurer c/o the address on the back. Associate membership is for those in other Astronomy Clubs. Please state the club. Full members receive: The Observer's Handbook ($20 value), Journal of RASC ($70 value), SkyNews ($22 value), and many other great privileges, including discounts on popular magazines, supplies and cool stuff. There is a Free 3 month Trial available - send no money! Info: Leave a message at: (905) 689-0266. ☆

MEMBERSHIP INFORMATION	
NAME:	
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ADDRESS (2/2):	
CITY:	
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PAYMENT OPTIONS		
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VOLUNTARY DONATION:		
TOTAL:		
Circle one:	**NEW Member**	**RENEWAL**

Centre Calendar

Monthly Meetings are held by the Hamilton Centre at McMaster University Medical Centre Ewart Angus 1A4 8pm.
Feb. 6 - Speaker: Tim Griffis - The Role of CO_2 in Planetary Atmospheres
Mar. 6 - Bruce Collier - The Aurora and AIr Glow
Apr. 3 - Dr. Dennis Shaw - Is (Was) There Life on Mars?

Other Events:
Feb. 14 - Hamilton Amateur Astronomers, Spectator Building, 7:30pm
Feb. 15 - Telescope Collimation and Maintenance - McMaster B148, 1:00pm
Mar 1 - RASC National Meeting, London Ontario 75th Anniversary
Mar. 15 - Amateur Astronomy Weather and Internet

Observatory Directions: From Hamilton or Guelph:

- Hwy 6 N of Hamilton, take Concession 7 East eastbound, cross Centre rd.
- Continue on 7E, keep going past the rail tracks, proceed to near the end.
- Our gate is on the south side on the last lot (south west).

From Mississauga or Milton:

- Britannia Road past Hwy 25, Guelph Line, Cedar Springs to end
- South 1 block on Milborough TownLine to Concession 7 East.

Our gate is on the south side on the last lot (south west)
Hamilton Centre Observatory 43° 23' 26" N 79° 55' 22" W

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The President's Monthly Report

I guess that by complaining about the cloudy weather for the past few months, I have gotten what I asked for. Sure there have been a few amazingly clear nights over the past month (more than most of the entire fall and winter put together) but most have been unbelievably cold. But being the nut that I am I made a point of going out on a few of them. So I managed to sneak a peak at Saturn before it is too late, view some of my favorite winter objects and even catch a brief very, very early morning view of Comet Hale-Bopp. All of this very cold weather observing will hopefully have me prepared for my mid-February trip to one of my research sites in Churchill, MB.

Those of us who ventured out to the general meeting last month were treated to a great talk by Doug Welch on variable stars. I am sure that Doug has gotten a few people ready to start their own variable star project. There are so many possible interesting projects open to amateurs in this branch of the hobby, and the Centre's observatory is very well equipped to handle projects on many levels. Thus, we are going to have a variable star workshop at the observatory some time in the spring, with the help of Doug. We have all that the visual variable observer would need, from binoculars to Dobsonian telescopes, and for those who might want to tackle a more technical variable project the site also has an excellent photometer and CCD camera. Charles Baetsen and myself have both done some variable star work in the past couple of years with the photometer, and would be happy to help anyone get started. So I would encourage anyone who can't wait until the workshop to give Doug, Charles or myself a call. The observatory library also has many variable star books, for the beginner to the more advanced and theoretical types, in addition to several sets of AAVSO finder charts.

Well into our busy winter season, we have Tim Griffis of the Climate and Atmospheric Research Lab at McMaster University, speaking at our January meeting. Tim's topic will be on the importance of carbon dioxide in planetary atmospheres. Bruce Collier will be our March general meeting speaker. Bruce's talk will be on the aurora and air glow, and anyone who has seen Bruce talk before can attest that this promises to be

one of our best talks of the year. We once again swing back to our Mars theme in April with a visit from Dr. Denis Shaw, from the department of Geology, McMaster University. Dr. Shaw is a meteorite expert and fellow of the Meteoric Society who will speak on the possibility of life on Mars (Past, present and future) and the Martian meteorite.

There is a slight change in our observing workshop schedule. Due to Orbit not getting out in time last month and the snow storm on the evening of our meeting, the workshop on "The Internet and Weather Prediction for the Amateur Astronomer" will be postponed until Saturday, March 15, at the observatory. Saturday, February 15 will be our "Telescope Collimation and Maintenance Workshop" at the observatory, which was much requested after Les Nagy's talk a few months ago. Finally, sometime in March we will try and put together our introductory astrophotography workshop. In addition, if anyone has any ideas or suggestions for a workshop, discussion group or general meeting speaker please let me know.

I will once again request volunteers to help the club in the areas of public education and PR and advertising. People are needed to help our very busy public education director, Carmen Martino, with shows at the observatory and at the planetarium at McMaster. Once again experience is not necessary, we will teach you everything you need to know about the equipment and shows. Anyone interested in any of these two jobs should contact myself or see me at one of the meetings.

Finally, the board of directors is currently working on new membership classes which may be in place by the time you read this. The first will be an adjustment to our associate member class. Associate members will no longer be required to be a member of another astronomical organization. Anyone who wishes to become a member of the Hamilton Centre and use its facilities, news letters, etc. without being a member of the RASC may purchase this membership. The price will remain at $30.00 and associate member privileges will not change; they will enjoy all the same rights and privileges as do the Hamilton Centre RASC members (observatory keys, Orbit, the ability to sit on the board of directors, etc.), without receiving any national (RASC) publications. We will also be introducing an Associate Student

19 -[Feb 02] NEAR, Solar Conjunction
19 - Mars Lecture, Pasadena, California
19 -[Feb 01] Giant and Dwarf Stars Lecture, Balboa Park, California
20 - Galileo, 2nd Europa Flyby (Orbit 6)
20 - 35th Anniversary (1962), Friendship 7 Launch (John Glenn)

22 - Thor-2A Delta 2 Launch (Norway/USA)
22-28 - Supernova 1987A - Ten Years After Workshop, La Serena, Chile
23 - Galileo, Orbital Trim Maneuver #21 (OTM-21)
23 - Asteroid 1991 CS Near-Earth Flyby (0.2229 AU)
23 - 10th Anniversary (1987) of Supernova 1987A Explosion
24 - Asteroid 64 Angelina at Opposition (10.3 Magnitude)
24 - Comet Hale-Bopp Lecture, Los Angeles, California
25 -[Feb 02] Intelsat 801 Ariane 4 Launch
26 - Progress M-34 Launch (Russia)
26 - Asteroid 386 Siegena Occults PPM 153989 (9.1 Magnitude Star)
26 -[Feb 02] Galileo Lecture, Balboa Park, California
27 -[Jan 31] Bernard Lyot's 100th Birthday (1897)
28 - Comet Hale-Bopp Crosses the Ecliptic Plane

March 1997
?? - Feng Yun-2B Long March 4 Launch (China)
?? - Iridium-2 Delta 2 Launch
01 - Asteroid 139 Juewa at Opposition (10.5 Magnitude)
01 -[Jan 30] Southern Michigan Amateur Astronomy Conference, Michigan
01 - 15th Anniversary (1982), Venera 13 Venus Flyby/Landing (USSR)
02 - Mercury Passes 0.8 Degrees from Venus
02 - Asteroid 16 Psyche at Opposition (10.3 Magnitude)
02 - Asteroid 71 Niobe at Opposition (10.5 Magnitude)
03 - 25th Anniversary (1972), Pioneer 10 Launch (Jupiter/ Saturn Flyby)
03-05 - All-Sky X-Ray Observations in the Next Decade Workshop, Wako, Japan
04 -[Feb 05] Comet Hale-Bopp Directly Above The Sun (1.04 AU)
04 -[Feb 05] Comet 1997 B1 Kobayashi at Perihelion (2.062 AU)
04-08 - Workshop on Mutual Events and Astrometry of Planetary Satellites, Catania, Italy
05 - Tempo-2 Atlas-2A Launch
05 - 15th Anniversary (1982), Venera 14 Venus Flyby/Landing (USSR)
06 - RASC Hamilton Centre Meeting 8pm MUMC 1A4
07 - John Herschel's 205th Birthday (1792)

15 - RASC Hamilton Centre "Amateur Astronomy, Weather, and the Internet" Workshop - by Rich Petrone

05 -[Jan 31] Comet Hale-Bopp Lecture, Balboa Park, California
05 - Control of Small Spacecraft Workshop, Breckenridge, Colorado
05 - 30th Anniversary (1967), Lunar Orbiter 3 Launch
06 -[Jan 31] Comet 1997 A1 Closest Approach to Earth (3.17 AU)
06 - Galileo, Orbital Trim Maneuver #19 (OTM-19)
06 - Comet Holt-Olmstead Perihelion (2.15 AU)
06 - Venus Passes 0.3 Degrees South of Jupiter
06 -[Feb 01] Building Real Buildings on Mars Lecture, Boston Massachusetts
06 - RASC Hamilton Centre Meeting 8pm MUMC 1A4
07 - Chinese Year 4634 Begins
07 - Mercury Passes 1.4 Degrees South of Neptune
07 - Venus Passes 0.2 Degrees South of Uranus
07 - Asteroid 936 Kunigunde Occults PPM 265431 (9.1 Magnitude Star)
07 - Asteroid 511 Davida Occults PPM 119290 (10.2 Magnitude Star)
07 - 20th Anniversary (1977), Soyuz 24 Launch (USSR)

08 - 5th Anniversary (1992), Ulysses Flyby of Jupiter
10 -[Feb 05] Soyuz TM-25 Launch (Russia)
10 - Asteroid 451 Patientia Occults GSC 2471-1267 (9.8 Magnitude Star)
10 - Comet Shoemaker-Holt 2 Closest Approach to Earth (1.9245 AU)
11 - STS-82 Launch, Discovery, Hubble Space Telescope Servicing Mission 2
11 -[Feb 02] VSOP-Muses-B M-5 Launch (Japan)
12 - Mercury Passes 1 Degree South of Jupiter
12 -[Jan 29] Apollo to Landsat Lecture, Washington DC
12 -[Jan 31] Components Fit For Space Seminar, Swindon, U.K.
12 - 50th Anniversary (1947), Sikhote-Alin Meteorite Shower
13 -[Feb 02] USAF Titan 4B Launch (1st Launch of Titan 4B)
13 - Mercury Passes 0.9 Degrees South of Uranus
13 - Workshop on Solar Sail Propulsion, Pasadena, California
13-16 - 3rd Mtg of Eur. Planetary Cometary Observers, Violau, Germany
14 - 25th Anniversary (1972), Luna 20 Launch(Soviet Moon sample return)
14-16 - Geology of Earth from Space Educator Conference, Pasadena, CA

15 - RASC Hamilton Centre "Telescope Collimating and Maintenance Workshop" at the McMaster BSB B148 - by Les Nagy
15 - JCSat-4 Atlas-2AS Launch
15 - Wagman Winterfest, Russellton, Pennsylvania
16 - Galileo, Orbital Trim Maneuver #20 (OTM-20)
16 - Iridium-1 Delta 2 Launch
16 - Jupiter Passes 0.2 Degrees North of Uranus
17 -[Jan 29] Carl Sagan Public Memorial, Pasadena, California
18 - Asteroid 445 Edna Occults PPM 068862 (6.9 Magnitude Star)
18 - Asteroid 100 Hekate Occults PPM 128061 (9.3 Magnitude Star)

membership, which will be similar to the Associate member but at a much reduced rate. As soon as the details are finalized they will be announced, possibly by the time of our general meeting. If not March's Orbit will definitely provide the new information.

Well I've probably once again grown tiresome so I will say goodbye. I hope to see you at the workshop on the 15th and the general meeting. Remember to hang by your thumbs and happy observing!

Cheers,
Richard Petrone
525-9140 x24082
petronrm@mcmail.cis.mcmaster.ca☆

Proposed Membership Classifications

RASC Life Member *$900*
All RASC Member benefits, as long as you are are still here on Earth to enjoy them.

RASC Member *$49*
All 3 publications
Full Voting Privileges
National Events and Benefits
Nation-wide Visiting privileges
All local privileges

RASC Student *$35.50*
As above, must be under 21

Associate Member *$30*
All local privileges
No affiliations or other club membership needed**

*Associate Student** *$20*
As above, must be under 21

* = New
** = Changed

Minutes of January Board Meeting

Richard Petrone, Mike Jefferson and Colin Haig met with the intention of convening a board meeting, as scheduled and published in Orbit. Unfortunately, no other board members arrived. Ray Badgerow has indicated his work schedule would cause him to miss the occasional board meeting. No other board member had indicated their inability to attend. The board meeting was therefore cancelled due to lack of quorum. A replacement meeting was scheduled for February 6, 1997 at 7:30pm.
- *Colin Haig*☆

The Care and Cleaning of Optics

Many people have asked me about the best way to care for, and clean their telescope optics and eyepieces. Usually, I go into length about cleaning solutions and techniques but I always seem to forget to mention the most important point. DON'T CLEAN YOUR OPTICS!

Let me explain. The surfaces of lenses and mirrors are fairly robust and can survive years of use with proper care. This does not mean that they are indestructible. Their surfaces usually have some kind of coating that can wear away or get scratched from rubbing during the cleaning process. So given this, the best way to clean your optics is to keep them from getting dirty in the first place. This is the ideal, and things always conspire to ruin this ideal, so I will now provide some ideas on cleaning lenses and mirrors.

Don't Clean Your Optics

Keep them away from Pocket Lint

Do Not Disassemble Eyepieces to Clean Them

Don't Touch your Mirrors

The most handled piece of optical equipment is the eyepiece, and as such it is the most susceptible to dirt and scratches. Probably the top two reasons for dirt on eyepieces are:
1. Fingerprints from fumbling to retrieve them from pockets
2. Eyelashes oils and dust.

Obviously the best way to store your eyepieces is in a handy box (with a small heater inside for the winter) so that one can see them before putting one's hands on them, and pocket lint is avoided. As far as eyelash fall-out is concerned, there is no solution. Eyepieces should be inspected for dirt and dust as soon as the observing session is over and cleaned only if necessary. It is important to inspect as soon as possible because finger prints, and eyelash gunk contain oils and other chemicals that can permanently damage the

across the street to Pizza Hut afterwards for munchies and beer.

For inquires, contact Joe O'Neil at (519) 679-8840 or e-mail: Joneil@obs.empath.on.ca
☆

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Space Calendar Courtesy of NASA

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There's Something Happening Just about Every Day!
[Note: M = Magnitude, Occ. = Occults]

February 1997
?? - Mabuhay-1 Long March Launch (Philippines/China)
01 - Rover Roundup, Santa Monica, California
01 - Venus Passes 1 Degree South of Neptune
01 - Asteroid 20 Massalia Occults 9.4 Magnitude Star
02 - 20th Anniversary (1977), Burnup of Salyut 4 Space Station (USSR)
02-05 - 6th Annual US-Finnish Auroral Dynamics Workshop, Melbourne, FL
03 -[Jan 29] Carl Sagan Public Memorial, Ithaca, New York
03 - Comet Russell 4 Perihelion (2.23 AU)
04 -[Feb 05] Mars Pathfinder, Trajectory Correction Maneuver #2 (TCM-2), Ok
04 - Asteroid 84 Klio Occults PPM 091967 (9.9 Magnitude Star)
04-05 - In Situ Resource Utilization Meeting, Houston, Texas

brew lens cleaning solution is for cleaning, not for "star partying"!

If anyone has any question or additions, please contact me.

Les Nagy
E-mail: lnagy@netaccess.on.ca
Phone: 905-388-1011
☆

London Centre 75th Anniversary

This year marks the 75th anniversary of the London Centre. To celebrate, a few events are planned on the weekend of Saturday, March 1st, of which all RASCer's (or HAA) are invited to attend.

Starting Friday night (Feb 28th), a Pool Party ($5 a head) will be held in downtown London at the Raddison Hotel. this even will be attended both by local members and National Council members. Afterward, just down the street at the home of Sue & Joe O'Neil, an open house featuring traditional Lebanese food and other munchies will be held.

On Saturday from 10 am to 4 pm, the National Council will hold it's National meeting in the London Convention centre , right across the street from the Raddison Hotel. Connected to the Raddison by a covered, overhead walkway, a hospitality suite will be open for any RASCer's in the area from 12 Noon to 12 midnight.

At 6:30 pm, again in the London Convention Centre, the Annual London Centre Banquet will be held. The talk will start at 8:00 pm, and guest speaker will be Dr. Paul Chodas, native Londoner and orbital specialist with JPL. Tickets for the banquet are $23 each or $45 a couple.

On a different tack, David Levy is rumoured to be in London on the night of Friday, Feb 21st, the monthly meeting of the London Centre. David is not here as a speaker, but as a guest, and any RASCal wishing to meet David and socialize afterwards is more than welcome to attend our meeting. Masonville Mall, in the "Common Room", 7-9 pm, retiring

coatings on the lenses. But before trying to remove this kind of contamination, some important steps must be followed. One rule first; DO NOT DISASSEMBLE EYEPIECES TO CLEAN THEM. Eyepieces are assembled in a clean room,
and unless there is a specific need to take one apart, they should not need internal cleaning.

To begin the lens cleaning procedure, dust must be blown off of the surface using a clean air or gas jet. Do not try to blow it off with your mouth as saliva and the donut you are eating can get on the lens. Use a camera cleaning brush/bulb or any of the "Dust-Off" spray cans that can be purchased at camera stores such as Camtech. Once the loose dust is removed, it won't be there to scratch the surface of the lens while you grind away at the lens with tissue.

Using a Q-Tip wetted with a small amount of lens cleaning solution, gently wipe the surface in a circular motion from the outside in towards the centre. Use as light a pressure as possible, and slowly twist the Q-Tip between you fingers against the direction of the wipe so as to present clean wiping material to the surface as you pick up crud. Immediately, and gently, wipe off the surface to dry it with either a dry Q-Tip, or a lint free tissue or wipe. If the surface still looks dirty, repeat. Your results will improve with practice, but the care taken will directly determine the life of the lenses.

Mirrors are to be treated with even more care, and less often. The mirrors in telescopes usually are not subject to the same kind of dirt that eyepieces, nor are refractor objectives for that matter, so they do not need to be cleaned as often. In the case of mirrors, the contaminants on the surface are usually things like dust and condensation. The dust itself is not that damaging and only interferes with the telescopes performance by slightly reducing the contrast of images by scattering light. But after a while, the dust can react with the water and other pollutants in the condensation to make it stick and perhaps to change benign qualities to something more damaging to the surface of the mirror. Mirrors should be dusted occasionally using "Dust-Off", but not brushed or touched physi-

cally.

If the mirror is getting grungy (your tastes will vary), it is time to give it a bath. Actually, the first method I will describe is more like a shower. After removing the mirror from its cell, place it face up in a sink. Flow some warm water over it from the tap and stop the water. Aim the stream at the centre and use sufficient flow to produce a sheet of flow evenly around the whole mirror. This initial step is for removing any loose dirt. Next, dribble some dish detergent all around the surface of the mirror and perhaps add some water to make if flow. Rock the mirror around to distribute the detergent evenly and then let it sit for a few minutes, 10-20 should be enough for all but the most stubborn dirt. Rinse the mirror off using the method mentioned above until there appears to be no detergent left, and then an additional minute. As soon as you turn off the tap water, tip the mirror up un edge and flush thoroughly with distilled water. Tap water contains minerals and chemicals which should not be allowed to stay on the surface. Once you are satisfied that the surface is cleanly rinsed, blow off any water drops using "Dust-off". Do not let water spots dry on the surface as they will leave semi-permanent marks. One can read a lot about the condition of the mirror surface by the way the water runs off. A clean, perfect mirror will not let water wet the surface, it will bead up and run off without a trace.

The second method for cleaning mirrors is for the worst grunge. All one needs to do is place the mirror in a bath of 50%distilled water, 50% pure alcohol, and add about a tablespoon of dish detergent for a liter of solution. This also makes a relatively good alternative to commercial lens cleaning solutions. The alcohol used must be of laboratory grade or close to it. The alcohol that can be obtained from a drug store will probably not be any good as it usually contains smelly stuff and sometimes some oils which are not good for cleaning. A good Vodka can be used if there is nothing else available. Make sure that you use warm water, not hot because the thermal shock could crack the mirror. The mirror can sit in this bath for a day or two if needed. Rinse the mirror when done as described in the preceding method. If you have something that is particularly tenacious, it is usually best to leave it on the mirror, but if your are brave and steady of hand it can be picked off with a toothpick or fingernail. Or alternatively, if it is believed that a bad spot is scattering enough light to be of concern, paint the spot with flat black.

Refractor objectives can be treated in a similar fashion to eyepiece lenses, but remember that one can be too fastidious for the good of the lens. I have seem some objectives that look like a car's paint that has been through too many car washes. Again with objective lenses, DON'T TAKE THEM APART UNLESS YOU HAVE A SPECIFIC REASON.

Don't take the objective lens cell apart

Use a special Lens Cleaning Cloth

Don't Rub the Lens Surface

Schmidt-Cassegrain telescope corrector lenses can be cleaned using the eyepiece method or the mirror method, depending on the severity of cleaning required. If the mirror cleaning method is used, remember to not let the surfaces of the corrector lens touch any thing. Of course, a Q-Tip is not appropriate for large lenses; use a lint free wipe or tissue.

A few other things need to be mentioned. Water means slippery hands, especially when soap is involved, so be extremely careful when handling mirrors and lenses. Try to avoid leaving lenses wet with dew or condensation, warm them up and get them dry. There are certain types of fungi that love to eat lens coatings. There are special lens cleaning clothes available at camera stores, particularly at Camtech, which are specifically made to prevent scratching and some are treated with special chemicals to aid in cleaning. With any tissue, wipe, or cloth, DO NOT RUB HARD!

An alternative to an electric heater for eyepiece boxes is available in the form of latent heat hand warmers. These are the kind that you place in boiling water to rejuvenate, and snap a small disc in the centre to activate for about 3-4 hours of heat.

Egg crates do not make good eyepiece boxes. Stand reflecting telescopes so that the primary faces down during storage. Saliva is abrasive. Never lay a lens on a hard surface, use a lens cloth as a pad. The home-