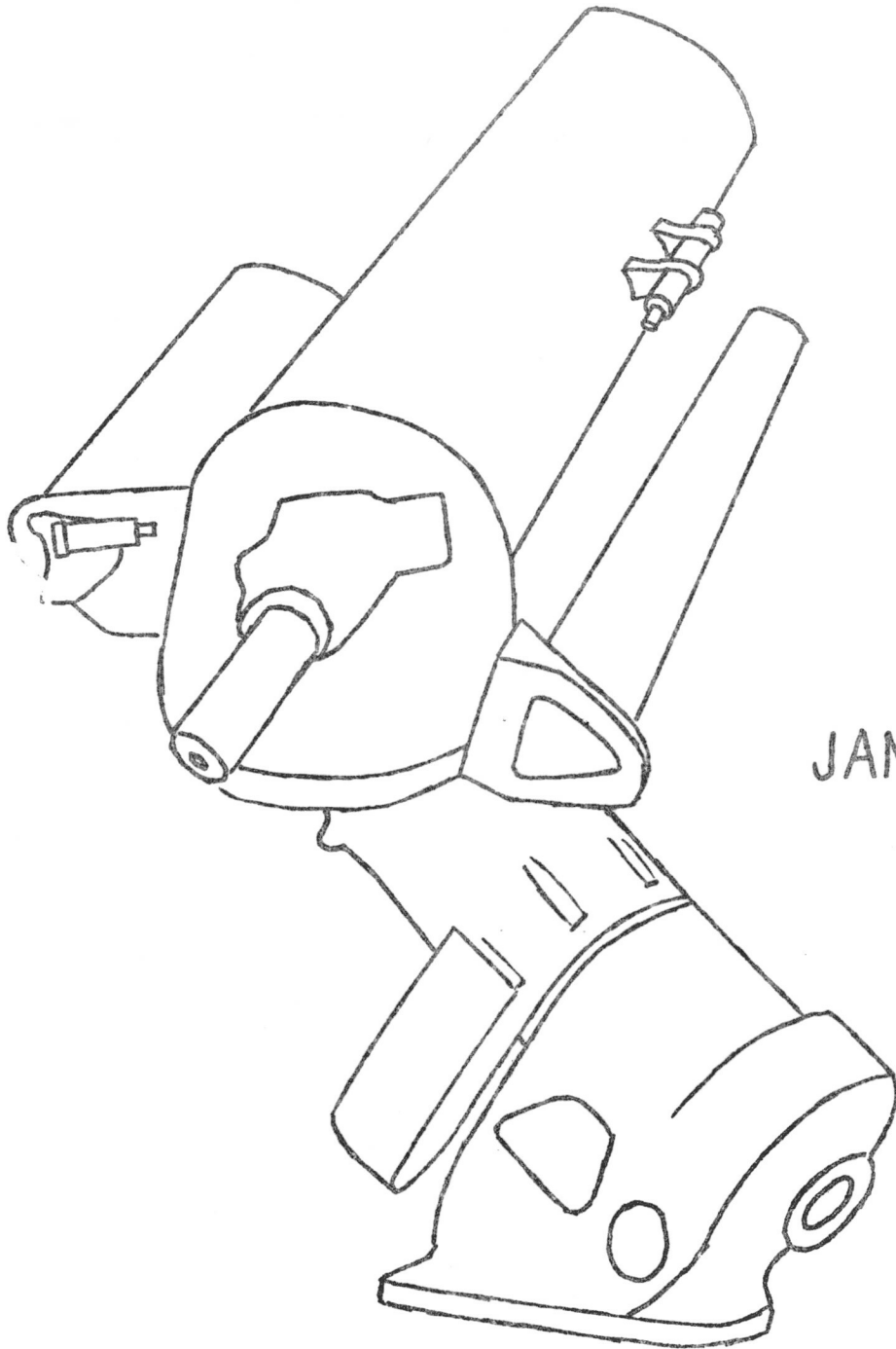


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EDITORIAL

As many of you may have noticed, Sky and Telescope magazine dues are being increased one dollar as of July 1. Along with this, postage has also increased and material used in the newsletter is also climbing. As a result, club dues will probably be raised about \$2.00. This is due to the above reasons and this also covers each member's dues for the Astronomical League, of which our club is now a member. (You will probably be receiving the Reflector magazine soon, this is the League's quarterly newsletter.) Also, any extra money will be used in the purchase of equipment for the club's telescope.

There has also been discussion as to the formation of a Junior section with its own dues. This seems like a good idea, and if you wish to express your views, be sure to do so at the meeting.

Another reminder that there is an upcoming visit to a private observatory in Hamburg, Iowa along with the Omaha Astronomical Society and clubs from St. Jo and Kansas City, Missouri. The date will probably be some Sunday in February or perhaps in March. Due to the need of good observing, the event will be rather a spur of the moment affair. So, if you wish to come, please leave your name and phone number at the meeting so you may be contacted.

Good observing and I'll see you at the meeting.

-Scott Coatsworth

THE MEETING

Our meeting will be held on January 30, 1968, at Nebraska Wesleyan's old Science Building at 7:30 p.m. This month we will have color slides of the grazing occultation of Saturn in November, high power pictures of the moon taken by Rick Johnson, a lens auction, and if the order arrives on time, we will have a high-speed Schmidt lens system.

Refreshments will be served so be sure to attend.

THE PRESIDENT'S REPORT

There is not much to report this month since the cold weather has limited our outdoor activities. I have had a bout with the flu, so I have really been staying indoors.

There is a good write up about the Nov. 12th Saturn-Moon graze in the January-February Popular Astronomy magazine. The photos though were not the best. Rick showed his pictures at the Dec. meeting and they were far better than even the cover picture. Rick said that he would show them again at our January meeting.

I received a letter from David Dunham. He has my movies of the occultation and will send them on to the Naval Observatory. Mr. Dunham also sent along some detailed information on occultations for 1968 and 1969. These are for Z.C. stars. I will bring this up at the meeting, since I am not sure what Z.C. stars are. (zinc coated?)

Is anyone interested in reporting to the American Meteor Society? If so I will write for cards as requested on page 10 of the Jan.-Feb. issue of Popular Astronomy.

We have now repaid \$420 of the \$800 loan on the telescope. I want to thank everyone who has helped thus far and am looking forward to hearing from those who still wish to contribute to our club telescope.

-Earl Moser

P.S. I just found out that Z.C. means Zodiacal Catalogue-1951.

THE MID-STATES REGION CONVENTION

of the Astronomical League has been changed to Fulton, Missouri on July 19, 20, and 21. This is on a Friday through a Sunday so be sure to make it.

ASTROPHOTOGRAPHY

Part I- Stellar photography without a telescope

Scott asked me to write something for the newsletter so I decided to write on what I know the most about, astrophotography. It is impossible to tailor this article to the needs of all potential astrophotographers, as the equipment available to each individual varies widely. I will try and start simply giving some basic techniques which can be the foundation to a successful and enjoyable branch of our basic hobby of Astronomy.

Basics are even a problem as there are several basic methods available and they again vary with equipment and personal taste of the photographer. If anyone has ideas that I have not thought of, and there are many, they should send them into Scott so they too may be published in the newsletter. I hope that this can develop into a comprehensive guide to astrophotography including the knowledge gained by all the members who have attempted both successfully and unsuccessfully to take pictures of the heavens.

Obviously the easiest type of astrophotography is a picture of star trails. All this takes is any camera held steady by a tripod, wood blocks, or even rubber bands. If the lens opening is variable, use about F8 on Plus-X film if taking from in town. If you can get out of town, open the lens up all the way. The biggest problem is keeping the shutter open on simple cameras with only a bulb (b) setting, as the shutter stays open only as long as the shutter release button is held down. If the camera has a provision for a cable release, buy a locking release. These can be locked so as to hold the release button down. If

no such provision exists, try a rubber band, string, or anything you can think of to hold the button down without jarring the camera. The shutter should be left open for at least an hour or all night if possible. Try all areas of the sky. Try a shot at the celestial equator--notice that north of it the trails curve one way and below it, the opposite way, while at the middle, they are straight. If your camera will take color transparencies, try it, it is very colorful. Color prints lose much of the color so stick to the transparencies. If you can put a wide angle lens in the camera, try this and point it so the North Star is to one edge. Expose for several hours. The picture will give the illusion of a tunnel.

The next step is to stop the trailing so the constellations may be photographed. Without a drive this requires a camera with a fast lens. Also, fast film is necessary. An exposure of 15 seconds is the maximum before trailing becomes noticeable. Open the lens all the way and again be sure the camera does not move during the exposure. I have found that most constellations can be picked up this way using Tri-X film and an F-ratio of 1.9. A Poloroid camera will work fine with black and white film. But develop the film for at least 30 seconds instead of the recommended 10-15 seconds. This will greatly increase the contrast between the stars and the sky. Poloroids with electric eyes require the release button to be held down to keep the shutter open. I have found a large rubber band works fine for this purpose. The Poloroid color film is useless for astrophotography as it will not pick up a star in an hour long exposure.

While it is possible to pick up most naked eye stars using this method, there is such a vast distance between them that an average of only about fifteen stars will be picked up in the small area covered by the camera. Much more spectacular pictures can be taken if the camera tracks the stars across the sky. Those of you who own equatorial mounts with clock drives have a distinct advantage here. Rig up some method of rigidly attaching the camera to the mounting or telescope tube itself. As long as a telephoto lens is not used, the mount need only be roughly aligned on the pole. Unguided exposures of up to ten minutes are possible this way. Using Tri-X film and an lens opening of around F2, a limiting magnitude of about 10 can be reached. If it is impossible to get out into the country and away from the city lights the lens will have to be stopped down as sky fog will ruin the picture. Actually when the lens is stopped down it has a surprisingly small effect on the stars, but will greatly decrease the brightness of extended objects such as nebula and even sky fog. Also the star images will be much sharper if the lens is stopped down about three F stops from its widest opening.

If it is possible to set up out of town, longer exposures are possible. Because the star images spread on the film, drive inaccuracies will not show but faint stars will be lost. Thus for best results and all exposures over 10 minutes, the mount should be set up very accurately and/or manual corrections should be made. The making of manual corrections of this type are easy to make if you have a telescope on the mount. Just put a

high power and dirty eyepiece in the telescope and point it so the star appears as a round blob of light. Center the blob over the shadow image of a dust particle on the eyepiece, now whenever the blob moves off the shadow image, move the telescope tube until the star is recentered. This method will work quite well with lenses of up to 250mm. focal length. For longer focal lengths, a cross-hair eyepiece will be necessary. Again be sure to try color transparencies if at all possible. I have found that out of all the brands that I have tried, High Speed Ektachrome is by far the best for general purpose work. Kodachrome-X is better for exposures longer than thirty minutes in warm weather. Also it has better contrast and somewhat stronger colors though generally slower than High Speed Ektachrome. My experience with Anscochrome 500 indicates that it is much faster on short exposures but has little color and the sky is not very black.

Astronomy in the News

"Magazine of the Midlands", part of the Sunday World Herald, on January 14, ran an article concerning the Omaha Astronomical Society's part in observing the grazing occultation of Saturn. Also included was an article on Walter Behlen and his astronomical interests.

The January 12th issue of Time magazine had an article on the Japanese comet seekers Ikeya and Seki. This is a very interesting article so be sure to find it.

The Club's Telescope

It now appears that we are going to retain our present 12½ inch telescope. It is in need of some new optical elements and also needs mechanical adjustments plus many other small bugs which must be worked out. Therefore, it would be a great help if any one of you could donate your time and knowledge in making this a first class instrument.