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The

Prairie

Astronomer

W. Severns
3717 So. 18
city



Ed. Woerner
4530 Adams
city

March 27, 1969

The Prairie Astronomer

Editorial Staff

Ed. Werner

M. Cole

R. Severns

Our February meeting was held in the new Olin science hall at Wesleyan. Thanks to Carroll Moore for providing a fine lecture hall for our club meeting. Prof. Moore also gave the club a fine demonstration of the new planetarium and its equipment.

He will observe the Moon and Pleiades graze at the location near Tobias Nebr. on March 22. As far as I know we will have three teams at different sites along the graze path. Anyone is welcome to come along and help. For further information call Ed. Werner or Monte Cole.

Remember to mark your calendar for the star party at my place on May 9, weather permitting.

Earl Moser,
President

The upper Atmosphere.

Early in the century we were taught that "naturally" the atmosphere keeps getting thinner and colder as we ascend, until the cold void of cosmic space is reached. But as it customary in science, reality deviates from the seemingly logical scheme. If we could ascend into the air freely, we would find as we rose the temperature fell, until, after 30 Kilometers up, the thermometer stood at -50 ; but at the same time, twice this height, it would suddenly become so hot that we could fry an egg simply by holding the pan outside.

This suprising rise in temperature is caused by the ozone in this layer. Ozone is a product of the ultra-violet radiation of the Sun. The oxygen molecules of the air combine into three, O_3 , ozone, and this transformation produces heat.

The ozone layer is about 25 kilometers deep. Beyond it the temperature again sinks to about the freezing point, but thereafter it rises once more and at 100 kilometers the temperature is about the same as we experience here on earth. With further ascent the temperature rises steadily and reaches degrees that contradicts all expected ones of previous times. It is assumed that at 300 kilometers the temperature is above 1000° and that at higher levels the temperature is more than 2000 or even 3000 degrees.

Jess Williams

Prof. Moore has obtained a special speaker for our next meeting. Because of this special speaker our meeting will be held MARCH 27, at Olin lecture hall. Everyone should plan to come.

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To those members to whom it applies;
" He who knows all, knows he knows nothing."

On the 22-23 of this month there will be two grazing occultations. On that night, the moon will occult the Pleiades, and at a spot about five miles north of Tobias, Nebraska, the path of the moon will pass tangent to two of the stars of that cluster.

These two occultations, shown on the map on page 62 of the January, 1969 Sky and Telescope, will occur within about 40 minutes of each other with the first around 9:30 pm C.S.T. The recommended observing procedure for observing the grazes is to split up into three or more groups (the number depending upon the number of observers, tape-recorders, and WWV receivers) and have each group travel to a predetermined site to observe the first graze. When that graze is over, this group should immediately begin loading up their equipment and travel to another predetermined site to observe the second graze. One group will be located at a site where both grazes can be seen and will not have to move.

The magnitudes of the grazed stars are 3.0 and 5.9. The brighter star is grazed on the bright side of the 23% illuminated moon, and the fainter star is grazed on the dark side of the moon. Both should be very easy to observe in a 2.4" refracting telescope.

The purpose of observing these grazes is to enable better charts of the areas near the moon's limb to be made. This is done by timing disappearances and reappearances of grazed stars. In addition, our knowledge of the moon's orbit can be made more precise by comparing the location of the moon given by theory with that observed relative to the fixed stars.

The Tobias area is the only place where both of these grazes can be seen, and therefore we have a responsibility to get accurate timings of all graze phenomena observed.

We will need as many observers, tape-recorders, and WWV receivers as possible. This is a good opportunity for anyone interested in the grazing occultation program to gain valuable observing experience. Nobody should let lack of experience at observing grazes or lack of a large telescope stop them from coming along on this undertaking. This will be a good experience for our club and a chance for us to do something with real scientific value. Anyone interested in this undertaking should call Earl Moser, Ed Woerner, or Monte Cole.

On Saturday, April 19, and Sunday, April 20, our club will have an exhibit at the annual Lincoln Hobby and Sports Show, at the State Fair grounds exhibition building. Last year we had a slide show, an exhibit on telescope making, and a number of telescopes and astrophotos on display. Anybody with pictures they would like displayed, or a telescope they would like on display, or any ideas for a display should contact Ed Woerner. Also, they should contact Ed for half price tickets.

The Sky for April, 1969

- Mercury On the 1st. is in R.A. 0h 14m, Decl. $0^{\circ} 28' S$, and on the 15th. is in R.A. 1h 57m, Decl. $12^{\circ} 11' N$. During the latter half of the month Mercury will be increasingly visible as an evening star low in the west at sunset, having an altitude of 18° .
- Venus On the 1st. is in R.A. 1h 13m, Decl. $16^{\circ} 20' N$. and on the 15th. is in R.A. 0h 45m, Decl. $11^{\circ} 35' N$., mag. -3.3, and transits shortly before noon, therefore being poorly placed for observation, but visible 13° above the horizon as a morning star.
- Moon Full-April 2; 3d.-April 9; New Moon-April 16; 1st.-April 24. Occultation of Pleiades; see special report.
- Mars On the 15th. is in R.A. 16h 59m, Decl. $22^{\circ} 27' S$., mag. -0.6, and transits at 3h 26m, rising before midnight. On the 26th. it is stationary in R.A. and begins its retrograde motion in Ophiucus.
- Jupiter On the 15th. is in R.A. 11h 56m, Decl. $2^{\circ} 08' N$., mag. -2.0, and transits at 10h 19m, being well up in the east at sunset, in Virgo.
- Saturn On the 15th. is in R.A. 1h 48m. Decl. $8^{\circ} 43' S$., mag. 2, but too near the sun for observation.
- Uranus On the 15th. is in R.A. 12h 05m, Decl. $0^{\circ} 19' N$., mag. 5.9, and transits at 10h 28m. With a disk of $3.9''$, Uranus is located in Virgo.
- Neptune On the 15th. is in R.A. 15h 45m, Decl. $18^{\circ} 03' S$., mag. 8.0, in Libra, and transits at 2h 12m.

April will certainly be the last time to glimpse most of the winter-time showpieces until next year. So if you have any "old friends" in the winter sky, now is the time to say good-bye for another year.

With the passing of the winter milky way, you have the choice of being satisfied with viewing the moon and planets for a few months, or delving into the fascinating area of galaxy hunting. In the region of Virgo, Coma Berenices, and Leo, literally hundreds of these faint wisps of light are to be found. And while it is naturally advantageous to have a telescope of large aperture, it is surprising just what can be seen with a 'scope as small as a $2.4''$ refractor. Using just such an instrument I have located a nebula as faint as magnitude 11.4, under favorable conditions. But whatever the case may be, the important thing is to be out there looking.