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RASC Meetings are held in the auditorium of the Manitoba Museum of Man and Nature on the second Friday of each Month. The agenda consists of guest speakers, films, discussion, also amateur projects, telescope making etc. The last few minutes are spent in the Planetarium theatre, where we review the sky for the coming month. This is followed by refreshments and get-to-gether. Membership fees are $10.00 for adults and student fees are $5.00. Fees include the Journal RASC, the Observers Handbook, and Winnicentrics.

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   One 6 inch telescope, f/6. Secondary aluminized on fused quartz, primary resilvered by Consolidated Plate Glass this spring. Driven. Fully portable. Performs almost as a "rich field" instrument due to short focal length.

   Neither of the above telescopes were designed in mounting for photographic work, and the drives hold for visual observing but would need modification for camera use.

   - Frank Shinn 233-4384



1972

PROGRAMME FOR SEPTEMBER

Meeting Time: Friday, September 15, 1972, at 8:00 p.m.

Meeting Place: Room 100, Fletcher Argue Building, University of Manitoba

SPECIAL EVENT:

We are to have the privilege of hearing Dr. Josef Smak of the Institute of Astronomy, Polish Academy of Sciences, Warsaw, Poland. Dr. Smak will be in Winnipeg for the express purpose of attending the "Copernicus" celebrations.

(The Solar Eclipse programme will be given at our October meeting.)

NOTE: Budding Authors:

- Winnicentrics will welcome well-written articles on your favourite discipline, i.e. Solar, Lunar, Planetary, Variable Stars, etc. Such articles, if of high calibre and considered suitable, would then be forwarded to Toronto for inclusion in the National News Letter (the green pages in the Journal).

OBSERVING NOTES:

Aquila - "The Eagle" - The brilliant star in this constellation is Altair, which with Vega in Lyra and Deneb in Cygnus, forms an isoosceles triangle. Altair, which lies at the apex of this triangle, is a first magnitude star, 18 light years distant and is about ten times as bright as our sun. In this constellation will be found a number of double stars, a very interesting short period Variable star changing from 3.5 mag. to 4.5 and back again within a period of 7.2 days, and a lovely cluster.

Corona Borealis - "The Northern Crown" - This constellation lies between Hercules and Bootes and is composed of seven stars. The "Pearl of the Crown" is Gemma, a second magnitude star. In this area will also be found some interesting double stars.

Hercules - "The Kneeler" - Perhaps one of the most fascinating features in this constellation is the Globular Cluster designated as M12. This is reputed to be the finest globular cluster in the Northern Hemisphere. It is readily discernible in an opera glass or binoculars, but a 4" telescope easily resolves the stars. Herschel estimated that it contained 14,000 stars! but from photographs taken with the 60" reflector at Mt. Wilson, Shapley counted over 30,000 stars brighter than 21st mag. However, the cluster now is thought to contain at least 100,000 stars!

Sagittarius - "The Archer" - lies on the ecliptic between Capricornus and Scorpius. As the Milky Way is in this constellation there are a number of beautiful clusters to be observed by telescope,



EQUIPMENT LOAN STATUS:

| | |
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| 3 1/2 " Refractor | Available |
| 3" Kauffman | Available |
| Junior Planetarium | John Haines, 999 Dorchester Ave. |
| Orrery Shadowgraph | Available |

BOOKS AVAILABLE

The Museum of Man and Nature has some astronomical literature at reasonable prices. A few of these are:

| | |
|---|---|
| A Field Guide to the Stars and Planets | $6.95 |
| Between the Planets | 4.00 |
| Discover the Stars | 1.80 |
| Frontiers in Space | 2.69 |
| Our Sun | 5.00 |
| Sky Observer's Guide | 1.50 |
| Star and Satellite Pathfinder | .75 |
| The Solar System | 1.25 |
| Time in Astronomy | 1.00 |

In addition, there are several books and pamphlets on telescope making, as well as mirror-grinding kits, ranging in price from $18.00 to $75.00 each for sizes 6" to 12 1/2". Come and see for yourself!



such as M22, M24 and M25. M22 can also be seen with binoculars or with the unaided eye. Here you will also find M17 known as the "Horseshoe Nebula". Another glorious sight here is M18.

Aurora Borealis - On July 24/25, while visiting at a farm 2 1/2 miles north of Warren, I saw the most gorgeous Aurora. I first saw it at 23:15 when I happened to step out to take a look at the sky - it was a rich field, believe me. The Aurora was a beautiful bright white band of light stretching across the sky from the eastern horizon to within 5° of the western horizon - a band about 3° width with light waves shooting upward about 5° with faint green and light bands of rose across the bottom of the band at 23:25, three sharp bands appeared and at 23:30 a second band about 2° in width shot across the sky below the original band, containing considerable rose in its pattern which folded in pleats for a second. There was constant motion, at the west end it was somewhat hazy towards the horizon. At 23:50 it began to break up and at midnight it was more diffuse. Around the corner to the north-west were Ursa Major, Ursa Minor, Casseopaeia, Square of Pegasus While going southward Jupiter was very much in evidence, some 7° north of a nearby full moon, peeping through clouds to the south-east. It was a glorious sight!

## ASTEROIDS OR MINOR PLANETS

Asteroids are small planets whose orbits mostly lie between Mars and Jupiter.

Origin of the Asteroids - *Broadly speaking, they are from our own solar system. The Asteroids, or Minor Planets provide us with many valuable clues to the formation of the whole planetary system. While there are several theories regarding the origin of Asteroids, the two most plausible are: (1) the disintegration of a larger planet, and (2) the development of proto-planets between Mars and Jupiter during the early stages in the formation of the planetary system.

Orbits of Asteroids - Only for some 1,700 minor planets are the orbits known with any degree of accuracy.

Asteroids vary in size - from a few miles to several hundred miles in diameter. Four asteroids - Ceres, Pallas, Juno and Vesta - are listed in the "American Ephemeris and Nautical Almanac". Ceres the first to be discovered is the largest - about 480 miles; Pallas - about 300 miles, Juno - 115 miles and Vesta - 230 miles in diameter. Physical details to be noted when observing minor planets are, light variation, rotation, shape and optical factors. Light changes observed on Eros inspired scientists to attack the problem of light variations on minor planets in earnest. The rotational light changes of asteroids immediately raise the question of the true shape of these little satellites of the sun. In 1928 Bobronikoff revealed that sunlight on reflection from the surface of minor planets, underwent a slight change in colour. We now have strong evidence to support the assumption that light and the stream of particles emanating from the sun are able, in the long run to influence the motion of small bodies within the planetary system. Among such bodies in our system are tiny satellites, comets, meteors and minor planets.



Scientific Value of Minor Planets:

1. They provide the opportunity of proving mathematical regularities (calculation of perturbations - three-body problem); 2. Since asteroids may be regarded as interplanetary matter, their observation, particularly using photometry, is valuable in collecting astrophysical data; 3. the discovery of connections between the minor planets and other types of interplanetary matter leads to important conclusions about the structure of the solar system; 4. characteristics of the orbits of certain asteroids enable us to use these bodies as reference points for astronometry and distance measurements (the astronomical units).

Light Curves - The light curve of a minor planet, observed over the maximum lapse, is extremely valuable for the further investigation of the physical nature of the asteroid... The apparent brightness of a minor planet depends on four factors: (1) its distance from the sun; (2) its distance from the earth; (3) its phase; (4) possible rotation effects. Since the brightness varies over relatively short periods, estimates of the brightness of a certain asteroid must be undertaken several times on any one night for these to be of value.

Photography - So far as minor planets are concerned the basic work of astronomical observatories is today carried out by photographic methods. Photography is an important medium for studying the rotation period, length of axis, and shape of the asteroid.

Since they are so useful in these ways, the minor planets will for a long time to come, occupy a favoured status in the solar system. Their man-made relatives, the artificial planets ( satellites ) will eventually assume similar significance.

- E. Dack

Source Material: (1) "The Observer's Guide" by N & M Mayall, et al; and "The System of Minor Planets," by Gunther D. Roth.