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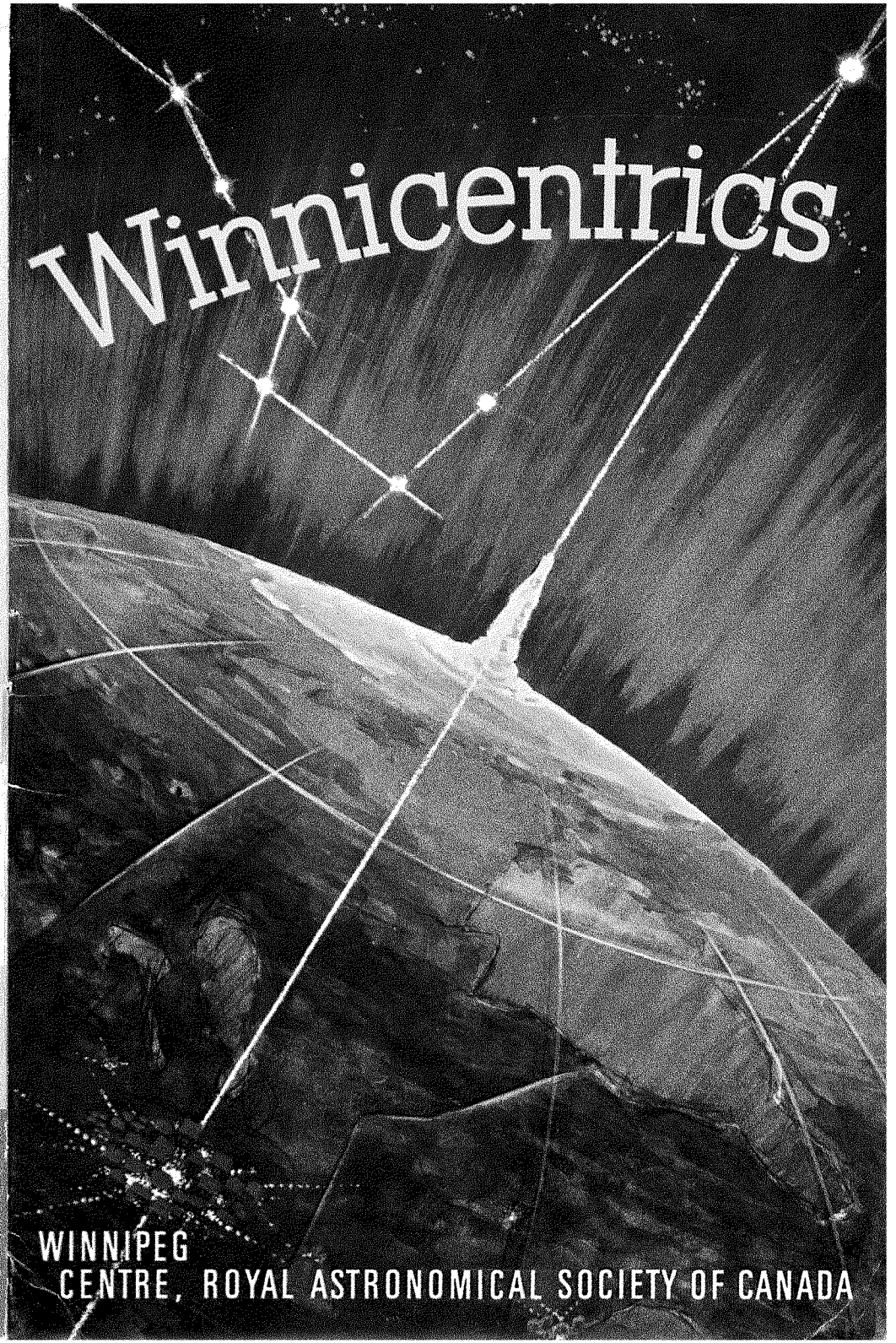

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RASC Meetings are held in the auditorium of the Manitoba Museum of Man and Nature on the second Friday of each Month. The agenda consists of guest speakers, films, discussion, also amateur projects, telescope making etc. The last few minutes are spent 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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JOHN N.R. SCATLIFF OBSERVATORY

The mount in the John N.R. Scatliff observatory is now back in operation. The saddle for the tube is fitted with leather straps capable of retaining tubes from about 5 inches in diameter up to about 12 inches.

These straps tighten through buckles that are spring mounted to the saddle, so that adequate tension is obtained at holes spaced on one-inch centres in the straps. The tube is most easily inserted if the saddle is placed horizontal on the south side of the pier.

Slow motion controls on both axes are operative, the declination control being of the tangent screw type, used for fine adjustment. Declination locking is by a hand wheel surrounding the counterweight rod. THIS WHEEL SHOULD NEVER BE REMOVED AS THE BALLBEARINGS ARE LOOSE BALLS THAT WILL FALL OUT. Without the balls the lock is inoperative. It should be tightened just sufficiently to retain the balanced tube, and in this condition the tube can be shifted by hand to approximate the positon, the clutch overriding easily. Once the star has been found, the position can be corrected by the slow motion control.

Right ascension lock is by means of a nut with wings fitted to it below the declination drive gear. If the telescope is rotated to the west, this nut does not follow and the drive tightens up. It is easily released by moving the tube to the east.

An additional counterweight may be required for larger instruments. A great deal of work is required on the come rotation and general maintenance of the building.

The writer is in some fear of stating warnings such as that with regard to the ballbearings above. A similar warning in the 3 1/2 inch telescope against demounting the objective, where air-spacers could be lost, was found to have been ignored, the spacers were lost, and the lenses returned to the instrument in the wrong position DURING THE PAST YEAR! This is your equipment but you cannot expect your executive to spend useless hours repairing damage done in defiance of cautions.

– B.F. Shinn

1972

Programme for October

Meeting Time: Friday, October 13, 1972 at 8:00 p.m.

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

Topic: The Solar Eclipse of July 10, 1972 as observed from:

(a) Baker Lake, N.W.T. by Dr. Scatliff, Mr. Jack Newton, Mr. Del Stevens, et al.

(b) Prince Edward Island and Nova Scotia by Mr. B.F. Shinn, Mr. Tom Cairns, et al.

(c) Winnipeg-Assiniboine Park by Mr. & Mrs. Roy Belfield, Mr. Paul Moffat et al.

Slides will be shown.

NOTE:

We have not yet been able to replace our Librarian, Mrs. Robertson. Have we any volunteers for the job? Please phone Mr. Jack Newton at 888-8026.

Eclipsing Binaries - by Dr. Josef Smak

At our meeting September 15th we had the pleasure of hearing a very interesting lecture on Binaries by Dr. Josef Smak, who is an authority on Binaries. Dr. Smak is Associate Professor at the Institute in Warsaw, Poland.

Unfortunately, due to acoustical difficulties and Dr. Smak's rather mild voice, it was difficult to hear all he said, but we shall endeavour to give you the high-lights of his address.

The first Binaries were discovered some 300 years ago by a well-known British astronomer, and since that time they have been the objects of considerable intensive study. The major efforts are being concentrated on Eclipsing Binaries.

Eclipsing Binaries - In this class there is, of course one star whose luminosity we can determine with sufficient accuracy and that is our Sun, which has a companion star.

Evolution of Binary Stars: While both stars are in the same state of evolution, one will expand and grow while the rate of evolution of the second star will be very slow and remain constant. The first star in the system then becomes so large that a certain type of instability occurs and the mass of the one starts flowing to the second one thus, one increases and the other decreases in mass.

Determining the Masses of Stars: Dr. Smak then commented on masses of stars and referred briefly to the peculiarities of the Binary System in Beta Lyrae and its inconsistancies, i.e.: one star, apparently revolves around something, but the second body does not appear to be like a normal star..... He stated further, that Beta Lyrae is believed to be losing mass into outer space...The questions then were posed as to what would be the density of a

Triangulum: A small triangular constellation, beneath Andromeda. The double stars in this constellati are both spectroscopic binaries. The Nebula M33, discovered by Messier MI764, is also worth observing; it is 30' in extent.

Cetus: The Whale. In addition to several fine double stars, this constellation contains the famous Variable Star, "Mira" the "Wonderful Star". Mira was discovered by Fabricius on August 13, 1596 and has been closely observed since that date. On October 19th, 1923, Professor Artkin of the Lick Observatory discovered that Mira had a companion of a bluish colour, I"distant. Mira itself is about 250 light years distant. It is red in colour, as are most long-period variables, and is a Giant Star.

EQUIPMENT LOAN STATUS

3 1/2 inch Refractor	- Available
3" Kauffman	- Available
Orrery Shadowgraph	- Available
Spitz Junior Planetarium	- Available

The equipment is now stored at the University of Manitoba, courtesy of Professor D. Richard Bochonko, (474-9831). Enquiries re loan and availability will have to be directed to that office.

OBSERVING NOTES:

Cassiopeia - "The Lady of the Chair". This constellation is the same distance from the Pole as Ursa Major. It consists of 2nd and 3rd magnitude stars forming a rude figure resembling the letter "W". It is a rich and interesting constellation as it lies midway between Polaris and the Zenith in the Milky Way. For both the binocular and telescope observer, this is a rich-field as it contains many double stars and cluster, note particularly the double cluster near Perseus.

Perseus: "The Champion". This figure is composed of three stars. It contains an object of great interest to the Variable Star observer, namely the short-period Variable Star Algol which usually is of 2.3 magnitude, but regularly at intervals of 2 days 20 hours, and 48 minutes, its brightness decreases. It remains minimum for 20 minutes then increases to its original brightness. There are several beautiful clusters in Perseus, and, of course, the famous Perseid Meteor Showers radiate from Perseus at the maximum about mid-August. (An entire family is corgregated in this area, namely, Cassiopeia, Cepheus, Andromeda, Perseus and Pegasus (a square) - the winged horse.)

Cepheus: "The King". This constellation contains a great number of double stars, also some interesting Variables, notably, Delta Cephei. At maximum its magnitude is 3.8 while at minimum it is 4.5, having a period of 5.4 days. Its variableness is attributed by Eddington to the fact that it pulsates. It is this star which gives its name to the class of variable stars known as Cepheids.

Andromeda: "The Chained Lady". This is not a particularly "artistic" constellation. Its chief object of interest is the great nebula of Andromeda, now known to be not a Nebula but a Galaxy (M31).

star's matter? What should be the luminosity of a star having ten times the mass of our Sun? Twice the mass of the sun produces ten times the radiation... Referring briefly to star clusters (stars which were all formed at the same time), for instance, astronomers will determine how much nuclear energy is stored in them... Dr. Smak also said that, apart from the Sun we have no direct information whatever on how massive a star may be...the less massive star travels in a wider orbit, while the more massive star travels in a smaller orbit. (This is explained in Kepler's law of universal gravitation). With regard to the Sirius Binary System - this is a very widely -spread system - the two stars being so far apart no mass is exchanged, as is the case with a smaller binary system. As to the end result of a Binary System the answer is that it all depends on how much is being lost by the system's momentum is lost, the two stars would come closer together...With regard to spectroscopic binaries these can only be resolved by the use of a spectroscope.

Reference was also made to White Dwarfs - the final product of stellar evolution - a star with little or no hydrogen...If there is no hydrogen a star has to contract and, as a result, the final product will be a very dense star - temperatures of such objects are relatively low...Outbursts occur when a white dwarf accumulates hydrogen too slowly...it all depends on the amount of matter and energy that can be accumulated in such discs.

In what he termed his "commercial" address Dr. Smak spoke briefly of the celebrations to be held in his native land next year to commemorate the birth of Poland's famous astronomer-priest, Nicolaus Copernicus, born February 19, 1473. There will be many events in Warsaw celebrating

the 500th anniversary of Copernicus' birth. Of particular significance will be the Annual General Assembly of the World Astronomical Union to be held in Warsaw, Poland, September 4th to 12th, 1973. A cordial invitation to participate was extended.

It will be noted that Dr. Smak's visit to Winnipeg is in connection with the gift of a solar telescope to be donated by Winnipeg's Polish-Canadian Community to xxx Souvenir pennants (priced at $1.00 are being sold by the special Copernicus Memorial Committee. This wonderful gift to our city's Planetarium will cost in the neighbourhood of $20,000.00.

xxx - Commemorate the 500th Anniversary of the birth of Nicalous Copernicus, February 19, 1473.

Bolides - Martin Saboiloff reports having seen a Bolide on August 28/29th at 22:50 about 50° above the horizon, having a magnitude of -6, tail fading rapidly and leaving a cloud of light. The Bolide's direction was westward in the vicinity of Bootes.

Meteor Shower - August 11/12th. Unfortunately due to illness, it was not possible to organize a meteor shower observing party for the well-known Perseid Shower. However, faithful Mr. and Mrs. Roy Belfield and Paul Moffat made an "all-night" observing session of it and by shortly after midnight had clocked up some 65 meteors - in 15 minutes. Clouds necessitated discountinuing the observations. Jack Newton reported having seen some five meteors immediately after midnight. In the magnificent Aurora which Mr. Newton photographed August 8/9th he observed a Perseid meteor in the Aurora.

KEPLER'S THREE LAWS

(1) The orbit of a planet is an ellipse with the Sun

at one focus.

(2) A line joining a planet to the Sun sweeps out in equal areas in equal intervals of time.

(3) The squares of the periods of revoultion of the planets about the Sun are in the same ratio as the cubes of their mean distances.

Star Observing Tips:

1. While binoculars are very helpful in viewing stars and clusters, they are limited. A 3-6 inch refractor or a 6 to 12-inch reflector naturally would be much better. The "rich-field" telescope - a type of instrument with short focus and a very wide field, provides fine views of clusters and nebulae.
2. The longest period of good observing over the entire sky is between the last quarter and first quarter of the moon. As the moon nears full, observe that part of the sky farthest away from it.
3. Observe double stars when the stars look like steady points of light and do a minimum of twinkling.
4. When at the telescope, keep botheeyes open to relieve the strain. Learn to make the most of a quick glance. If the observing eye tires, close it for a moment occasionally to rest it, and then open it at the eyepiece. If you have a refractor, observe with the dew cap. This helps to keep out extraneous light, and darken the background so that faint objects can be seen better.
5. Use averted vision. Look a little to the side of the object and it will be brighter and clearer.

The foregoing is from, "The Sky Observer's Guide", by N. and M. Mayall and J. Myckoff.