S T A R D U S T

A monthly publication of the

EDMONTON CENTRE, ROYAL ASTRONOMICAL SOCIETY OF CANADA

The next general meeting of the Centre will be held in Room V 107, Math.-Physics Building, University of Alberta at 8:15 pm on Monday, February 10, 1969.

GUEST SPEAKER: Dr. George Cumming.

TOPIC: The Age of the Solar System.

PRESIDENT'S MESSAGE

It takes a very hardy amateur Astronomer to be out observing in 20° to 30° below zero weather so I am sure that there are very few of us that have done any active observing in the past month or more.

There is one thing we can all look forward to and that is clear, warm nights in July and August and although you won't be able to observe long it will be better than no observing.

I would like to thank Mr. Cable and the Planetarium for their assistance in making Friday nights such a great success and those of you who haven't seen Ralph and Dave in action on these nights are missing out on excellent meetings.

Don't forget that these nights are ideal for taking in Bill's new show at the Planetarium and you can sit back in the warm and relax and soak in the clear sky.

Angus Smith

OBSERVER'S GROUP

With the observing conditions in such a sad state the Friday night sessions at the Planetarium are very popular and during January the following sessions were held.

January 10--Lecture and demonstration in the Star Theatre by Bill Cable, on Constellations. 15 in attendance.

January 17--Discussion and demonstration on mirror grinding and telescope building given by Dave Bruner with 18 attending.

January 24--How to make pitch for polishing a mirror--B. Veilleux and R. Haeckel. Lecture on Lunar occultations by Ralph Haeckel.

January 31--The Solar System and a discussion on on building and the different types of domes--R. Haeckel and D. Bruner.

Let us hope the weather improves and we are able to enjoy some observing of the winter sky.

D. Bruner.

SPACE NOTES

ISIS-A (International Satellite for Ionospheric Studies).

This is the third Canadian Ionospheric Satellite to be placed in orbit and follows Alouette 1 & 2. ISIS-A carries 5 Canadian and 5 U.S. experiments. The Satellite was placed in a near perfect polar orbit. This orbit is highly eliptical, having a high point of 2,200 miles and a low of 300 miles. The ionisphere becomes very unbalanced during the periods of Solar disturbances. This effects the reflecting properties of this region thus causing communication blackouts that may be quite long in duration.

Of the five Canadaian experiments, four are being conducted by the Defence Research Telecommunications Establishment and one by the National Research Council. The ISIS series are far more complex than the Alouetta Satellites and may be compared to an observatory in space.

Depending on the success of Apollo 9 to be launched on February 28th, the National Aeronautics & Space Administration have said that the May flight of Apollo 10 may be a Lunar Landing.

PLANETARIUM NOTES

The Queen Elizabeth Planetarium is pleased to have on display from the National Research Council in Ottawa an exceptionally fine display of the Algonquin Radio Observatory. The display features the large 150 foot Radio Telescope, the 33 foot telescope and the interferometer used to study the Sun.

Canadian Scientists have scored a scientific first in radio Astronomy in the study of Quasars. To measure the small diameters of Quasars a very long base line is needed and at distances of over 100 miles it is impractical to link two receivers together. Canadian Scientists however, overcame the problem. The Algonquin 150 Ft., the Penticton 84 Ft. and the Shirley Bay 60 Ft. Radio telescopes combined to measure the diameter of 3C273B with a base line of 2,000 miles. Signals were recorded on magnetic tape at the widely separated sights. The timing accuracy was gained by synchronizing atomic clocks at each sight with an accuracy of one millionth of a second.

From the observations made by the Canadian team a value of .02 seconds off arc was given the Quasar. 3C272B is believed to be one of the nearest Quasars and if it lies at a distance of one and a half billion light years this Quasar is no larger than 100 light years in diameter.

CONSTELLATION OF THE MONTH

Auriga, the Charioteer. Mythology tells us that Auriga represents Erechthonius, the son of Vulcan. He was born deformed and he war reared by Minerva. He became King of Athensand invented the four-horse chariot. As a reward Jupiter placed him in the sky. The star Capella makes identification of the Constellation easy. Capella is a binary star and lies 45 light years away. The Constellation contains two fine Messier objects; M37 an open cluster visible with binoculars and M38 a loose cluster. The star Epsilon is the largest star known to us, having a diameter of 1,800,000,000 miles.

FINDING THE EFFECTIVE f-VALUE OF OPTICAL COMBINATIONS

To find the f-value of a camera/binocular or camera/telescope combination is not a difficult operation. You will require to know the diameter of the exit pupil of your telescope, this will change with various powers of magnification. The focal length of your camera lens is also used, this is generally marked on the front of the lens housing. For example: f/2.8 60mm Topcor lens. The f/2.8 indicates the widest opening of the lens, 60mm is the required focal length and Topcor is the brand-name of the lens. Let us say we have a camera of 50mm F/L and wish to combine it with a 4-inch reflector of 48-inch F/L to be used at 25 power.

STEP #1..Determine the exit pupil. (a) Convert your objective diameter to mm. 4 x 25.4 mm per inch = 101.6 mm. (b) Divide this value by the magnifing power. 25÷101.6=4.4mm is the diameter of the exit pupil at this power.

STEP #2..Determine f-value of the combination. Divide the camera F/L by the exit pupil ...4÷50=12.5 or f/12 for all practical purposes.

For prime-focus photography the f-value is found by dividing the objective diameter into the focal length of the telescope...4÷48=12 or a f/12 system.

DETERMINING YOUR EXPOSURE FROM A KNOWN VALUE: You may have seen a photo and would like to try for the same but your system is of a different f/value. For example their exposure was 1 sec. at f/4.5, your combination is f/12. Divide f/12 by 4.5 and square the result: 4.5÷12=3X3=9. The exposure must be 9 times as long or 9 seconds. If you have computed the exposure from a film of a different ASA rating than the one you plan to use, just compare the two ASA speeds and increase or decrease exposure time by that amount. Example: Tri-X ASA 400 requires an exposure of 1 sec., then Super XX ASA 200 requires 2 seconds since Tri-X is twice as fast. When using your camera in conjunction with a binocular or telescope open the camera to its greatest aperture, closing it down has no effect and may cause vitnetting at the corners or sides. For each f-step you close down the exposure time doubles.

PLEASE:

IF YOU HAVE NOT PAID YOUR MEMBERSHIP--SEE THE TREASURER!!!!!