ASTRONOMICAL SOCIETY OF TASMANIA

BULLETIN 162 OCTOBER, 1955.

Patron: His Excellency the Governor,
Rt. Hon. Sir Ronald Cross, Bart., K.C.V.O., K.C.M.G.
President: Mr. J. L. Hull, F.R.A.S.,
Secretary, Treasurer and Editor: Mr. C. E. Bisdee, Room 301, C.M.L. Building, 18 Elizabeth Street, Hobart. 'Phone B-5277.

NEXT MEETING

Monday, 31st October, 1955, 7.45 p.m. in the Adult Education Rooms, Ground Floor, C.M.L. Building, cr. Elizabeth & Macquarie Streets.

Subjects: Mr. B. B. Robinson will introduce the first of a series of short talks by members on the Relativity Theory.

Dr. Reber will talk on his work in Tasmania on Radio Astronomy prior to his departure to the U.S.A.

Mr. Bisee will talk on the Quartz Crystal Monochromator.

Dr. Reber: Members will be glad to know Dr. Reber expects to return to Tasmania early next year to carry out further work on radio astronomy. Our Society feels grateful to him for the interest he has shown in our activities.

REPORT OF MEETING HELD ON 26.9.55:

This was a general discussion evening and following members gave short talks:

Mr. G. C. Lindridge discussed what constellations and stars are now visible in the sky at night.

Mr. J. L. Hull talked on the Zeiss Planetorium for London, and showed on the screen some of the planetariums in the U.S.A. A brief description was given on how the planetarium was operated.

Mr. T. Scholz gave a clear mathematical treatise on the blackboard of how the formula is derived for finding the difference between a spherical and parobalic curve at any given diameter and focal length. Mr. Scholz pointed out that where the spherical surface is within one two hundredth thousandth of an inch of a parabolic surface the mirror surface will be within the Rayleigh limit, a figure given by eminent authority Lord Rayleigh as the maximum tolerance allowable before loss of definition in the telescope image.

Mr. B. B. Robinson talked on the various aspects of getting members to give short talks on the Relativity theory.

HOW ACCURATE SHOULD A TELESCOPE MIRROR BE PARABOLISED

A. G. Ingalls writing in The Scientific American Sept. '54. states that it has been shown that, for the faintest perceptible contrasts, the efficiency of a mirror rises from 62% when corrected to the Rayleigh limit, to 92% when the correction is carried to one fourth of that limit.

Ingalls also quotes the optical designer J. G. Baker who says at very low contrast levels, such as obtain on the planetary disk, a mirror made as poorly as the Rayleigh limit will not perform well and a much better mirror should be the goal.

Recent research has refined the rule-of-thumb tolerances express by Conrady in favour of more exact rules - French observations in the laboratory indicate that there is no real lower limit to the accuracy requirements for the observation of maximum contrast of point details. For example if the contrast level is as low as 1.01 to 1 it may be necessary to have the optical system perfect to within one fiftieth of a wave length, against the Rayleigh limit of one quarter of a wave length. Ingalls concludes by saying that investigation of the easy difficult sides

of the Rayleigh limit has shown that there is no cut-and dried, standard of quality for a telescope mirror. Instead there must be a separate standard for each observer. A rather poor mirror will give pleasing images of stars and nebulae and of the moon and planets when viewed as a whole. But those who wish to resolve close double stars or observe details on the moon and planets, as well as those who take pride in their workmanship, will not aim at anything less than perfection.

MEMBER GOING ABROAD:

Congratulations to Stan Mather, one of our new members in being awarded the H.M. Bamford 1955 "Travel Grant" (100 guineas and access to large electrical companies in England) to enable him to further his studies in electrical engineering in England.

Stan holds a Diploma in Electrical Engineering from the Hobart Technical College and is employed with the Hydro Electric Commission. He is a keen telescope maker and while away will keep up his interest in astronomy and mirror making.

Our Society wishes Stan every success and safe return.

CANALS ON MARS VERIFIED:

The old controversity of the existence of canals on Mars crops up now and again. Some tangible evidence other than visual evidence was always lacking. However, E. C. Slipher of Lowell Observatory Arizona U.S.A. who made over 20000 photographs of Mars from the Lamont - Hussey Observatory 4880 ft. up at South Africa during the months May - September 1954 when Mars was only 39,800,000 million miles from us has this to say about canals on Mars in an article written by him in the National Geographic Magazine September 55.

"Most astronomers now agree on the existence, if not the nature, of this strange network of faint lines, which interlace the green areas and the desert regions as well. They do not meander like normal stream drainage. One runs for 1500 miles without a bend - half the distance across the U.S.A.

Sometimes one canal will run right through another, something no sensible river would do.

Generally these delicate lines are hard to catch in photography, but enough have been photographed successfully through the years, not only to prove their reality but also to demonstrate that they change in intensity" (End of quotation). Slipher mentions that in a photograph he shows taken in 1907 fails to show the Thoth Canal, but on the one he made in South Africa in 1954, this canal stands out with an intensity and size rivaling almost any marking on the face of Mars".

Next September, Mars will be even closer and further photographic evidence will be made, chiefly with the great telescopes in the Northern Hemisphere, as Mars will be better situated for northern hemisphere observation.

ATLAS OF THE UNIVERSE:

National Geographic Magazine Aug. '55 gives an account of the work which is nearly completed in photographing the heavens to a depth of 600 million light years with the 48" Schmidt telescope on Mt. Palomer. The first sections of this atlas each composed of 200 photographic prints containing billions of star images, are being send to observatories, universites and scientific institutions on every Continent. Over the next few months the remaining sections of the 1758-plate atlas will be delivered. This work has taken 7 years and includes all the sky that can be seen from Mt. Palomar from the North Celestial Pole to 27 degrees below the Equator.

The article mentions that in the first few months of the Survey more than two-thirds of the photographic plates exposed had to be discarded because of flaws in the emulsion, errors in focus, or a slight blurring of the star images caused by motion during exposure. The atlas will also prove of great value to radio astronomers in locating radio noises from interstellar space, and in fact it is said that there is enough material in this atlas to keep astronomers busy for over 100 years.