

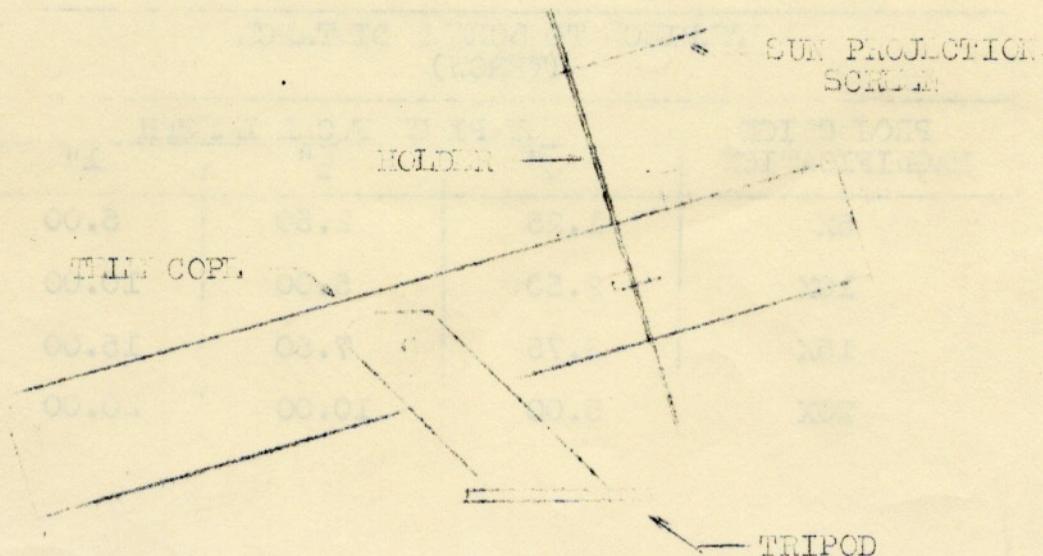
MONTHLY NEWSLETTER

HALIFAX CENTRE

ROYAL ASTRONOMICAL SOCIETY OF CANADA

FEBRUARY 1961

Our sun is one of approximately 5000 stars that are visible, on a clear night, to the naked eye. On the Russell Diagram it appears in the main sequence as a Type G Star having a surface temperature of 6000 degrees F. and is in the classification known as dwarfs. It differs from the thousands of other stars chiefly because it is relatively close to us at a mere 93,000,000 miles. The sun has an apparent magnitude of -26.7 and before we attempt to observe it through our telescope proper precautions must be taken to cut down this light to a level which will not be harmful to the eyes. There are many ways of doing this but probably the safest, for the amateur, is that known as sun projection. The following diagram shows the method of carrying out this procedure:



The diameter of the sun's image in the focal plane is given by the following formula:

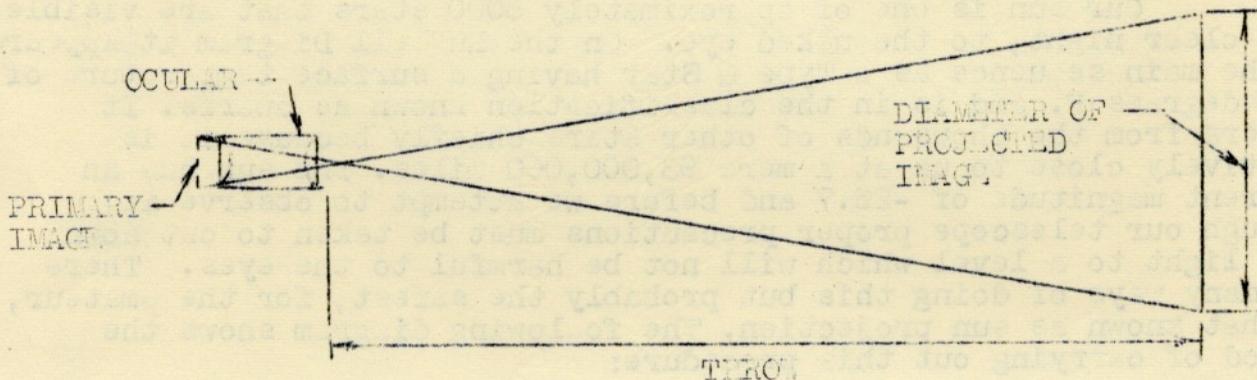
$$d = 0.009 (F)$$

d = Diameter of Sun's Image in Focal Plane.

F = Focal Length of Objective.

DIAMETER OF SUN IMAGE

OBJECTIVE FOCAL LENGTH	PRIMARY IMAGE	PROJECTED IMAGE			
		5X	10X	15X	20X
30	0.270	1.35	2.70	4.05	5.40
40	0.360	1.80	3.60	5.20	7.20
50	0.450	2.25	4.50	6.75	9.00
60	0.540	2.70	5.40	8.10	10.80



WYPIECE TO SCREEN DISTANCE
(THROW)

PROJECTIVE MAGNIFICATION	WYPIECE FOCAL LENGTH		
	1/2"	1"	1 1/2"
5X	1.25	2.50	5.00
10X	2.50	5.00	10.00
15X	3.75	7.50	15.00
20X	5.00	10.00	20.00

THE ROYAL ASTRONOMICAL SOCIETY OF CANADA

HALIFAX CENTRE

List of Members - February 1, 1961

Dr. R. L. Aikens	42 Bellevue Ave., Halifax.
Mr. David Aikens	42 Bellevue Ave., Halifax.
Mr. B. W. Allen	419 Windsor Street, Halifax.
Mr. V. W. Bowers	65 Glenwood Ave., Westphal.
Mr. Howard Cameron	64 Queen Street, Halifax.
Miss Margo Dunsworth	10 Regina Terrace, Halifax.
Mr. Allan Dunsworth	10 Regina Terrace, Halifax.
Mr. P. E. Divine	Kingston, Nova Scotia.
Mr. Hugh Frase	18 George Dauphinee Ave., Halifax.
Mr. D. V. Gordon	1112 Maine Street, Moncton, N.B.
Mr. A. S. Hopkins	261 Tower Road, Halifax.
Mr. D. Hughes	P. O. Box 1180, North Sydney, N.S.
Mr. Brian O'Hagean	19 Hammonds Plains Rd., Bedford.
Mr. Michale Hardman	4 Pine Street, Bedford.
Mr. Wayne Jackson	32 Robert Murphy Drive, Halifax.
Mr. James McGuigan	39 Bellevue Ave., Halifax.
Mr. B. MacTavish	140 Edwards Street, Halifax.
Mr. John Ryan	New Victoria, N.S.
Dr. L. H. Wheeloch	S.S. No. 1, Armdale.
Mr. Brian Wheeloch	S.S. No. 1, Armdale.
Mr. Richard Waugh	42 Brenton Street, Halifax.

THE DAVID DUNLAP OBSERVATORY

of the

University of Toronto

Richmond Hill, Ontario.

The David Dunlap Observatory was the magnificent gift of the late Mrs. Jessie Dunlap to the University of Toronto as a memorial to her husband, David Alexander Dunlap. The plan was organised by Dr. C. A. Chant, first Director of the Observatory. The site and equipment were decided upon with three objects in view: astronomical research, the training of advanced students at the University, and the fostering of public interest in astronomy.

The Observatory is twelve miles north of the city limits of Toronto, a mile south of Richmond Hill, and five-eighths of a mile east of Yonge Street. It is about 800 feet above sea level, or 500 feet above downtown Toronto.

The main telescope of the Observatory is a 74-inch reflector. At the time of its installation in 1935 this was the second largest telescope in the world, surpassed in size only by the 100-inch at Mount Wilson, California. Since then, an 82-inch has been put into operation in Texas, and a 200-inch in California.

The primary optical element of the telescope is the mirror. This is a disc of glass over 74 inches in diameter, twelve inches thick, and weighing nearly two and a half tons. The upper surface is ground and polished to a concave optical surface, with a concavity about one inch deep in the centre. This upper surface, accurate to within two one-millionths of an inch, is coated under vacuum with a thin, highly-reflecting layer of aluminum.

The mirror rests in a steel cell at the bottom of the telescope tube. The tube is made as an open framework, to permit free circulation of air. Light from the stars comes down the tube, is reflected back from the aluminum surface, up the tube to a smaller secondary mirror near the top, back down the tube again, and through a seven-inch hole drilled through the centre of the main mirror. The stars may then be viewed through an eyepiece below the great mirror, or the light may be analysed by means of a spectrograph attached to the bottom of the telescope.

To permit setting the telescope to any part of the sky, it is mounted to move about two axes at right angles to each other. One of these axes is parallel to the earth's axis. Divided circles mounted on the two axes allow the position of any object to be set directly from catalogue positions. A clock keeps the telescope rotating at the rate of one revolution each twenty-four hours, to counteract the rotation of the earth. Thus, once the telescope is set on a star, the clock-drive automatically keeps it pointing to that star.

The telescope is covered by a hemispherical dome 61 feet in diameter. This protects it from the weather. For observation purposes there is a great opening, 15 feet by 50 feet. The whole dome, weighing about 80 tons, can be rotated so that this opening may give access to the heavens in whatever direction the telescope points. When the telescope is not in use, the opening is covered by two large shutters, which roll together horizontally.

The research work of this Observatory has been until now chiefly in two fields: the study of the spectra of stars and the study of the light variations of variable stars. Spectra are studied by photographs taken with the spectrograph of the 74-inch telescope and from records made with a photoelectric spectrophotometer also located at the base of the large telescope. From these studies are obtained the speeds of approach or recession of the stars and the physical and chemical conditions of the stars' atmospheres. Light variations of variable stars are studied from direct photographs taken with the large telescope and also with a photoelectric photometer attached to one of the smaller telescopes. Recently the Observatory has also embarked upon research in radio astronomy. To the east of the main buildings are several radio telescopes used for this purpose.

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