

ANNUAL REPORT OF THE UNION OBSERVATORY

1916

Director Mr. R.T.A. Innes
(Union Astronomer)

Instrumental Equipment. This remains unchanged.

9-inch Refractor. Measurements of double stars have been continued upon the usual lines, and the phenomena of Jupiter's Galilean Satellites have been regularly observed. Miscellaneous observations were also made.

2.5/8-inch Talcott Telescope. This has been used for the Time-Service. The observations for variation of latitude 1910 March-1914 December have now all been reduced and the final results have been sent to press.

Franklin-Adams Star Camera and Twin-Telescope. These two instruments have been in partial use for the observation of minor planets, variable stars, etc.

Time Service, Meteorological and Seismological Observations. These have been continued without change. The shocks due to past mining operations have decreased from 893 in 1915 to 414 in 1916, and both public anxiety and interest in them have abated, although several shocks have been strong enough to rattle the whole town.

Staff. Mr. Van der Spy, who has left the observatory, has been awarded the Military Cross. Mr. Wood volunteered and was accepted in April, and Mr. Johnson in January, for service in German East Africa, and they have not yet returned. Mr. Worsell volunteered both in England and here, but was rejected on account of his myopia. Mr. Worsell and the two lady assistants have maintained the routine work, and all reductions are up to date. The state of the staff was such that in 1916 little besides routine work could be undertaken. Mr. Worsell has, however, photographed some minor planets, and observed southern variable stars and some occultations.

Observatory Circulars. Nos. 33 to 35 were actually distributed in 1916, and No. 36 is in the hands of the Government printers. No. 33 contains the fifth series of Double Star measures, lunar occultations of stars in 1915, and some miscellaneous observations. No. 34 contains the observations of Jupiter's Galilean Satellites during the opposition of 1915 and here it might be added that a complete comparison with Sampson's Tables is now available; this number also included observations of minor planets and miscellaneous matter. No. 35 contains the result of a blink examination of pairs of plates loaned by the Astronomer Royal for the determination of proper motions, and marks the

beginning of a systematic piece of work which has been continued throughout the year and is still in progress. The Astronomer Royal has proposed that we should examine here the whole zone $+66^\circ$ as far as any suitable pairs of plates are available, and other pairs to the North Pole of any very good pairs of plates. The zone $+66^\circ$ is now completed to 18h. 36m. Three further excellent pairs of plates from H.M. Astronomer at the Cape have been examined, and the results are ready for publication; one of the regions of these plates had previously been measured by Professor Kapteyn, and the comparison of the two results is instructive. The Director of the Melbourne Observatory has already sent some selected pairs of plates, and will be sending more. It has been agreed with the Director of the Sydney observatory that the whole of the Sydney zone shall be blinked here, and a start has already been made. Hence there is already on hand a number of unpublished proper motions. A list of those exceeding half a second a year and previously unpublished is given here : -

Centennial Proper Motion

		B.D. $+66^\circ$	34'				
	M	h	m	°	'		
Anon	13	13	50	+66	7		178".6
“	10.4	0	56	- 53	2		57.5
"	11	6	11	- 65	9		88.6
"	10	11	39	- 64	8		82.0
	CPD	-65°	1714:				269.0
							55.0 : = double star.

A good deal of work with the blink microscope has been done on variables near η Argus and near Corona Australis; and in the latter region over 150 new variables have been found, and in the hard work of looking them up on our 28 plates of the region is half completed.

Miscellaneous.- Some experimental work on the proposed charts of the southern sky was done, and the Government printer has imported a finer screen. The original idea was to reproduce on the scale of $l'=1$ mm (carte du ciel scale), but at present a scale of $l^\circ = 36$ mm is in favour; this latter is practically the scale of the Wolf Palisa charts.

Desk work has included an algebraical or literal development of the perturbative functions required in the theory of Jupiter and Saturn, and some attempts to produce eclipse tables for Jupiter's Satellites on the lines of Damoiseau's Tables, but with modern constants derived from Sampson's and de Sitter's work.