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ANNUAL REPORT OF THE UNION OBSERVATORY

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Instrumental Equipment. This remains virtually unchanged. A photographic enlarger was obtained late in the year, with which it is purposed to reproduce a map of the southern sky on a scale of l'=1 mm. (astrographic scale).

9-inch Refractor. Measurements of double stars have been continued, and during the year satisfactory sets have been obtained on at least two nights of 310 pairs. Mr. Voute's list has already been published, and the remainder will appear in Circular No.33, now in the hands of the Government printer.

The phenomena of Jupiter's Galilean satellites have been observed regularly. A comparison of the whole series (1908 to date) with Sampson's Tables is nearly completed.

Comets (Delavan) 1913 f, (Mellish) l915 a, (Winnecke) 1915 b, and 1915 e (Taylor) were assiduously observed, and the results are despatched promptly to the Government printer for publication.

Miscellaneous observations such as observations of nebulae and variable stars, occultations of stars by the Moon, a near approach of Mercury to Spica, etc., were also made.

2.5/8-inch Talcott Telescope. - This has only been used for time-service. Latitude observations were discontinued in December 1914. During the year the late Professor Albrecht published a first discussion of the observations made here, in a paper entitled “Ergebnisse der Breitenbeobachtungen auf dem Observatorium in Johannesburg vom März 1910 bis März 1913." He arrives at the conclusion: "Das Resultat dieser Beobachtungsreihe ist hiernach ein e wertvolle Bestätigung dafur, dass man die Beobachtungsresultate auf der Nordhalbkugel ohne weiteres auch auf die Südhalbkugel ubertragen kann."

Franklin-Adams Twin Telescope. - Spectrograms of bright stars on panchromatic plates have been obtained. A selected list of variable stars was observed.

Franklin-Adams Star-Camera. - Exposures have been made on selected regions of the sky for minor planets, variable stars, and stars showing proper motion. Photographs were obtained of Comets Delavan, Mellish, Winnecke, and a new comet discovered by Taylor at Cape Town on 1915 November 22. A preliminary orbit for this comet was computed and cabled to Greenwich. With the 6-inch guiding telescope visual observations were made of the phenomena of Jupiter's satellites, of the variable R Normae, and of occultations of stars by the Moon.

Observatory Circulars. - Nos. 22 to 32 were actually distributed in 1915. On account of the necessity for strict economy, these circulars await convenient moments for printing in the Government printing-office; there is therefore sometimes an enforced delay of about three months between the despatch of the MS and the issue of the printed circular. The chief contents of these circulars are:- No.23, Observations of Jupiter's satellites and a comparison of the eclipses of Satellite I. during 1909-1911 with Damoiseau's and Sampson's Tables; it is here sufficient to remark that Damoiseau's Tables show up better than might have been anticipated; Nos. 24 and 27, Measures of southern double stars; Nos. 25, 28, and 30 Proper motions found and measured with the blink-microscope. The following large proper motions were disclosed, besides many other smaller proper motions: -

Star	Photogr. Mag.	1875 α	1875 δ	Proper Motion
-42° 4101	8.2	9 46.0	-42 54	0.65 " to 131°.2
Anon.	12.0	14 21.0	-62 8	5.10 " 283.8
-46 8446	9.7	17 3.1	-46 23	0.77 " 180.0

In these circulars (especially in No. 28) the essential economy of the blink-method is insisted on, evidence being advanced to show that what is wanted is not bulky catalogues of the astrographic co-ordinates of stars, but astrographic charts which convey far more information in a less bulky form; that on the whole, even when completed the astrographic catalogues will only afford a distorted view of the sidereal universe, because they are limited to a one-sided selection of some 3,000,000 of the 50,000,000 stars which will be charted. The question really put in Circular 28 is whether the completion of the astrographic catalogue is worth while, and whether it would not be preferable to concentrate on the reproduction of the charts in a permanent form, as is done by the Tacubaya Observatory. Circulars 26 and 31 continue the previous "blink" examinations of the regions near Argüs and Corona Australis for the detection of variable stars. No. 29 contains an extended table for the conversion of right ascension and declination (1900) to a strictly invariable system of galactic co-ordinates. A reference list of the best photographs obtained with the Franklin-Adams star-camera in 1914 is given in circular No.25.

Time-Service, Meteorological and Seismological Observations.

These have continued unchanged. The large number and increasing force of the local earthquakes caused by mining operations near Johannesburg led to the appointment of a

committee of inquiry, the Union astronomer being nominated as one of the members. During the year 893 shocks, due to local causes, some of which were sufficiently violent to cause alarm, were registered.

Staff.- Mr. Van der Spuy having been appointed a flight captain, has finally left the Observatory. Mr. E.L. Johnson was absent during the German South-West African campaign, and has been passed for the German East Africa Expedition. Mr. W.M. Worssell has taken vacation and special leave to join the army in Europe. Mr. H.E. Wood has been temporarily rejected by the medical authorities. Thus at present the staff is reduced to Mr. Innes and Mr. Wood, with two lady assistants who do the clerical and meteorological work. Mr. Innes observes with the 9-inch refractor, and Mr. Wood is now charged with the time-service in addition to his work with the Franklin-Adams star-camera. It follows that the time which can be given to research work is greatly reduced.