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ANNUAL REPORT OF THE UNION OBSERVATORY

JOHANNESBURG,

1957

(Director, Dr W. S. Finsen, Union

Astronomer)

Staff

Dr W. H. van den Bos retired on superannuation on 1956 December 31.

Miss E. M. Bernardy was appointed Library Assistant on 1957 July 1. At the end of the year the staff was as follows : W. S. Finsen, J. Hers, J. A. Bruwer, P.C. Seligmann, J. Churms, N. van Delen (Mechanician), Miss D. M. Howe, Miss E. M. Bernardy. Two professional posts were vacant.

As in previous years, a close liaison was maintained with the Transvaal Centre of the Astronomical Society of Southern Africa and it is a pleasure to acknowledge once again the valuable help rendered to the Observatory by the following Members : Messrs H. C. Lagerweij, J. H. Botham, I. R. H. Brickett, G. F. G. Knipe, M.D. Overbeek, C. N. Williams, K. G. Fuhr, A. Johnston and C. Pikoos.

Dr A. M. J. Gehrels of the Department of Astronomy, University of Indiana, worked at the Observatory as a guest astronomer from the middle of April to the end of June on an investigation of Trojan minor planets. During his stay he worked also at the Radcliffe and Boyden Observatories.

Leiden Southern Station.

During the year the Rockefeller Telescope of the Leiden Southern Station was transferred from the Union Observatory grounds in Johannesburg to the Hartbeespoort Annexe, where it occupies a site in close proximity to the Franklin Adams Telescope and the Leiden Observatory's "Light Collector". The new Southern Station was formally opened on September 9 by the Hon. J. H. Viljoen, Minister of Education, Arts and Science. at a ceremony graced by the presence of Dr J. E. Baron de Vos van Steenwijk, President Curator of the University of Leiden and Chairman of the Leiden Observatory Foundation.

Instrumentation.

A photo~electric photometer, embodying an E.M.I. photo-multiplier tube, was built for use with the Franklin Adams 6 and 7-inch Twin Telescope. With the assistance of Dr A. Muller, Bruwer completed his photo-electric photometer for use with the Franklin Adams Telescope at Hartbeespoort. Knipe adapted his photo-electric photometer for use with the 9-inch telescope.

Two cameras were constructed with lenses of 20-inch focal length and aperture $f/5.6$ using 20 x 20 cm plates. One has been mounted on the 9-inch telescope.

A Markowitz dual rate Moon Camera was received on loan from the U.S. Naval Observatory and has been adapted for the Franklin Adams Twin Telescope by means of a specially constructed breechpiece.

A heavy-duty lathe and a surface grinder were acquired for the workshop.

Astronomical research.

With the 26½-inch refractor, Churms made 191 micrometer measures of double stars, and Finsen used his eyepiece interferometer for one or two short periods on 107 nights in the continuation of his systematic search for new close pairs and the re-measurement of known pairs.

The Franklin Adams Telescope at Hartbeespoort was used by Bruwer on 29 nights and 192 plates were obtained, mainly of minor planet fields. A few plates were also taken with the Franklin Adams Twin Telescope by Churms for miscellaneous purposes.

With the 9-inch and Franklin Adams Twin Telescopes, 107 occultations of Nautical Almanac and fainter stars were observed by Churms, Knipe, Brickett, Botham and Bruwer ; predictions for the fainter stars were supplied by Lagerweij, Overbeek, Knipe, Johnston and Pikoos.

Photo-electric photometry was carried out by Knipe with the 9-inch telescope on 36 nights (minor planets and variable stars) and by Churms on 11 nights with the 6-inch photovisual component of the Twin Telescope. Bruwer tested his photometer on several nights with promising results.

Physical observations of Jupiter, Saturn, Venus, the Moon, and comets were made on 79 nights, principally with the 9-inch telescope, by Brickett, Botham and Churms.

International Geophysical Year.

Apart from service on committees, the Observatory's participation was necessarily on a restricted scale. A Moonwatch team was organized under the leadership of Williams and Botham and 22 Moonwatch telescopes were constructed, using optical components of the recommended type supplied by the South African National Committee for the I.G.Y. The launching of the Russian satellites brought the team into almost immediate operation and the rocket " casings" were usefully observed on 32 occasions ; doubtful sightings of the satellite of Sputnik I were obtained on two occasions. Nine successful photographs of the "casings" were obtained by Finsen, and one by Churms. Predictions for Moonwatch teams were supplied by Finsen.

At the end of the year the Markowitz Moon Camera had not yet been brought into

operation.

Time service.

Seligmann was in sole charge of the Time Service throughout the year, with occasional assistance from other members of the staff, and activities were therefore limited largely to maintenance. He found time, however, to design and build a motor-driven mains voltage stabilizer with a rating of 2 KVA and accuracy of better than $\frac{1}{2}$ per cent for supplying all critical units of the time installation, and a console centralizing switching and display apparatus for comparing all clocks with radio time signals.

All-electronic timing devices using cold-cathode valves were made by Hers and run on test with a view to eventual substitution for the phonic motors at present in use.

The Post Office installed a 100 Mc transmitter to serve as a radio link with the P.O. Transmitting Station at Olifantsfontein for the dual purpose of supplying time signals to the artificial satellite tracking station and for the high-power transmission of time signals and standard frequencies in the near future.

Publications.

Union Observatory Circular No. 116, with contributions by van den Bos, Bruwer and Finsen, and four time signal and standard frequency bulletins were issued during the year. A note by Finsen on New Double Stars appeared in M.N.A.S.S.A., Vol. 16, No.9.

Civil Astronomy.

The numerous routine duties under this head continue to expand at the expense of research.

The Observatory was open to the public on 23 nights ; here, again, members of the Astronomical Society lent invaluable help to the staff as demonstrators and guides.

Annual Report for 1957 - Jan Hers