

## ANNUAL REPORT OF THE REPUBLIC OBSERVATORY

### JOHANNESBURG

#### Formerly Union Observatory

1961

*(Director, Dr W. S. Finsen)*

#### STAFF

Three professional posts were vacant throughout the year. However, as in previous years the following amateurs gave their services as demonstrators on public nights and in other ways, and their willing help is gratefully acknowledged: Messrs. H. C. Lagerweij, W. Bell, I. R. H. Brickett, J. Vollmer, J. H. Botham, M.D. Overbeek and P.C. Seligmann.

The Director was an official delegate to the 11th General Assembly of the International Astronomical Union and participated in Symposium No.17 on Visual Double Stars.

#### ASTRONOMICAL RESEARCH

With the 26½-inch refractor Knipe obtained 583 micrometer measures of double stars in 94 hours on 54 nights, while Finsen used it for 229 hours on 168 nights for interferometer measures of close pairs and the continuation of the interferometer survey. The telescope was also used on a few occasions for photographing the full and earth-lit Moon at the request of Dr J. E. Merrill of the Frarililin Institute, Philadelphia.

The Franklin Adams telescope at Hartbeespoort was used by Bruwer and Mr J. Ponsen of the Leiden Southern Station. Bruwer obtained 200 plates of minor planet and comet fields on 25 nights, resulting in 172 minor planet and comet positions. Mr Ponsen obtained 283 plates of variable star fields.

The 9-inch refractor was used by Knipe on 43 nights for photoelectric photometry, mainly of eclipsing variables and 2784 readings were obtained. Knipe, Botham, Lagerweij and Dr K. G. Fuhr observed 47 occultations, mainly with the 9-inch and 6/7-inch refractors; predictions the fainter stars were again supplied by Lagerweij. These telescopes were also used by Botham and Brickett for physical observations of Mars, and Saturn and for observing mutual phenomena of Jupiter's satellites.

A new measuring machine by Messrs. C. F. Casella & Co. Ltd. was delivered early in the year and is now in regular use. It has a capacity of 20 x 20 cm and either direct vision or projection may be used as desired. Measurement is based on the Ferranti moiré fringe digital system, and the reading, to single microns, is displayed on a decimal counter.

### TIME SERVICE

In accordance with the scheme for international co-ordination of radio time and standard frequency stations, the time signals transmitted by station ZUO were kept within 1 millisecond of the high-frequency transmissions of WWV as from 1961 January 1.

In order to comply as far as possible with the requirements for international co-ordination of frequency Hers designed and constructed apparatus for giving a continuous record of the phase difference between the 16 kc/s transmissions of GBR and the observatory frequency standard with an accuracy of about 5 microseconds or better.

A significant improvement was made in the performance of some of the oscillators employing GT crystals by placing the crystal ovens together with the associated series capacitors in hermetically sealed containers.

### PUBLICATIONS

Union Observatory Circular No.120 and twelve Time Service bulletins were issued during the year. The following papers appeared elsewhere:

Knipe, G.F.G., Observations of Nova Herculis 1960.

*Mon.Notes.astr.Soc.Sth.Afr.* **19**, 177.

Botham, J. H., Observations of the Planets Jupiter and Saturn in 1960.

*Mon.Notes.astr.Soc.Sth.Afr.* **19**, 175.

Finsen, W. S., Colour Photographs of Mars. "The Solar System", Vol.III, Ed. G. P. Kuiper

and B. M. Middlehurst, The University of Chicago Press, 1961, Ch. 17.

New Double Stars (XVII, XVIII).

*Mon.Notes astr.Soc.Sth.Afr.* **19**, 178; **20**, 42.